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Columbian College of Arts and Sciences

Health Sciences Programs in the School of Medicine and Health Sciences

School of Engineering and Applied Science

Graduate School of Education and Human Development

School of Business

Elliott School of International Affairs

Milken Institute School of Public Health

College of Professional Studies

School of Nursing

This bulletin covers GW's degree programs and courses for the schools listed here, with the regulations that pertain to academic programs. For information on GW's professional schools that are not part of this bulletin, see the following websites: www.law.gwu.edu and www.smhs.gwu.edu. The website www.gwu.edu contains institutional information as well as updated and expanded information on all GW schools, departments, and programs.

Information in this bulletin is generally accurate as of August 2016. The university reserves the right to change courses, programs, fees, and the academic calendar, or to make other changes deemed necessary or desirable, giving advance notice of change when possible.

TABLE OF CONTENTS

About the University 17
University Regulations 21
Advanced Placement Equivalents 35
International Baccalaureate Equivalents 36
University General Education Requirement 38
Undergraduate Admissions 44
Fees and Financial Regulations 47
Financial Aid 51
Interdisciplinary and Special Programs 63
GWTeach and STEM Teaching 63
Naval Science 65
Sustainability 66
Minor in Sustainability 67
University Honors Program 69
Women's Leadership Program 71
Columbian College of Arts and Sciences 73
General Education Curriculum (G-PAC) 86
Africana Studies 97
Bachelor of Arts with a Major in Africana Studies 97
Minor in Africana Studies 98
American Studies 99
Bachelor of Arts with a Major in American Studies ... 104
Combined Bachelor of Arts/Master of Arts in American Studies 105
Minor in American Studies 105
Master of Arts in the Field of American Studies 105
Doctor of Philsophy in the Field of American Studies 105
Anatomy and Regenerative Biology 106
Master of Science in the Field of Anatomical and Translational Sciences 108
Graduate Certificate in Anatomical and Translational Sciences 109
Anthropology 109
Bachelor of Arts with a Major in Anthropology 117
Bachelor of Arts with a Major in Archaeology 117
Bachelor of Science with a Major in Biological Anthropology 119
Combined Programs 121
Minor in Anthropology 121
Minor in Archaeology 121
Minor in Biological Anthropology 122
Minor in Cross-Cultural Communication 122
Minor in Sociocultural Anthropology 123
Master of Arts in the Field of Anthropology 124
Doctor of Philosophy in the Field of Anthropology 125
Art Therapy 125
Master of Arts in the Field of Art Therapy 128
Master of Arts in the Field of Art Therapy Practice 128
Biochemistry and Molecular Medicine 128
Master of Science in the Field of Molecular Biochemistry and Bioinformatics 130
Biological Sciences 131
Bachelor of Arts with a Major in Biology 137
Bachelor of Science with a Major in Biology 139
Combined Program 141
Minor in Biology 141
Master of Science in the Field of Biological Sciences 141
Doctor of Philosophy in the Field of Biological Sciences 142
Biomedical Sciences 142
Doctor of Philosophy in the Field of Biochemistry and Systems Biology 143
Doctor of Philosophy in the Field of Microbiology and Immunology 143
Doctor of Philosophy in the Field of Molecular Medicine 144
Biostatistics 146
Master of Science in the Field of Biostatistics 146
Doctor of Philosophy in the Field of Biostatistics 148
Chemistry 150
Bachelor of Arts with a Major in Chemistry 154
Bachelor of Science with a Major in Chemistry 156
Combined Bachelor of Science with a Major in Chemistry / Master of Forensic Sciences with a Concentration in Forensic Chemistry 160
Minor in Chemistry 160
Master of Science in the Field of Chemistry 161

Master of Science in the Field of Environmental and Green Chemistry 161
Doctor of Philosophy in the Field of Chemistry 162
Classical Acting 163
Master of Fine Arts in the Field of Classical Acting ... 165
Classical and Near Eastern Languages and Civilizations 165
Bachelor of Arts with a Major in Arabic Studies 166
Bachelor of Arts with a Major in Classical Studies 167
Minor in Arabic and Hebrew Languages and Cultures 168
Minor in Arabic Studies 168
Minor in Classical Studies 168
Corcoran School of the Arts and Design 169
Bachelor of Fine Arts with a Major in Digital Media Design 170
Bachelor of Fine Arts with a Major in Fine Art 171
Bachelor of Fine Arts with a Major in Fine Art Photography 172
Bachelor of Fine Arts with a Major in Graphic Design 173
Bachelor of Fine Arts with a Major in Photojournalism 173
Master of Arts in the Field of Exhibition Design 174
Master of Arts in the Field of New Media Photojournalism 175
Data Science 176
Master of Science in the Field of Data Science 177
Graduate Certificate in Data Science 178
East Asian Languages and Literatures 178
Bachelor of Arts with a Major in Chinese Language and Literature 179
Bachelor of Arts with a Major in Japanese Language and Literature 180
Minor in Chinese Language and Literature 181
Minor in Japanese Language and Literature 182
Minor in Korean Language and Literature 182
Master of Arts in the Field of Chinese Language and Culture 183
Economics 183
Bachelor of Arts with a Major in Economics 190
Bachelor of Science with a Major in Economics 191
Combined Programs 192
Minor in Economics 193
Master of Arts in the Field of Applied Economics 193
Master of Arts in the Field of Economics 193
Master of Science in the Field of Economics 194
Doctor of Philosophy in the Field of Economics 194
English 195
Bachelor of Arts with a Major in Creative Writing and English 204
Bachelor of Arts with a Major in English 206
Combined Program 208
Minor in Creative Writing 208
Minor in English 209
Master of Arts in the Field of English with optional concentrations in English or American literature 210
Doctor of Philosophy in the Field of English with optional concentrations in English or American literature 210
English for Academic Purposes 211
Environmental Resource Policy 212
Master of Arts in the Field of Environmental Resource Policy 213
Graduate Certificate in Contexts of Environmental Policy 213
Graduate Certificate in Environmental Resource Policy 214
Environmental Studies 215
Bachelor of Arts with a Major in Environmental Studies 215
Combined Bachelor of Arts with a Major in Environmnental Studies and Master of Arts in the Field of Environmental Resource Policy 216
Film Studies 216
Minor in Film Studies 217
Fine Arts and Art History 217
Bachelor of Arts with a Major in Art History 218
Bachelor of Arts with a Major in Fine Arts 220
Bachelor of Arts with a Combined Major in Art History and Fine Arts 223
Combined Programs 226
Minor in Art History 226
Minor in Fine Arts 226
Combined Minor in Art History and Fine Arts 227
Master of Arts in the Field of Art History 227

Master of Fine Arts in the Field of Fine Arts 228
Forensic Sciences 228
Master of Forensic Sciences 233
Master of Forensic Sciences in the Field of Forensic Chemistry 234
Master of Forensic Sciences in the Field of Forensic Molecular Biology 234
Master of Forensic Sciences in the Field of Forensic Toxicology 235
Master of Forensic Sciences in the Field of Friction Ridge Analysis 235
Master of Science in the Field of Crime Scene Investigation 236
Master of Science in the Field of Digital Forensics 236
Master of Science in the Field of Friction Ridge Analysis 237
Graduate Certificate in Bloodstain Pattern Analysis 237
Graduate Certificate in Digital Investigations 238
Graduate Certificate in Forensic Investigation 238
Graduate Certificate in Latent Print Examination 238
Geography 239
Bachelor of Arts with a Major in Geography 243
Minor in Geographic Information Systems 244
Minor in Geography 244
Master of Arts in the Field of Geography 245
Master of Science in the Field of Geography 246
Combined Master of Science in the Field of Geography and Graduate Certificate in Geographical Information Systems 246
Graduate Certificate in Geographical Information Systems 246
Geological Sciences 247
Bachelor of Arts with a Major in Geological Sciences 249
Bachelor of Science with a Major in Geological Sciences 249
Minor in Geological Sciences 250
History 250
Bachelor of Arts with a Major in History 262
Minor in History 274
Master of Arts in the Field of History 274
Doctor of Philosophy in the Field of American Religious History 275
Doctor of Philosophy in the Field of History 275
Human Paleobiology 275
Master of Science in the Field of Human Paleobiology 276
Doctor of Philosophy in the Field of Human Paleobiology 276
Interior Architecture and Design 278
Bachelor of Fine Arts with a Major in Interior Architecture and Design 280
Master of Fine Arts in the Field of Interior Architecture and Design 281
Judaic Studies 281
Bachelor of Arts with a Major in Judaic Studies 282
Minor in Judaic Studies 283
Master of Arts in the Field of Jewish Cultural Arts 284
Mathematics 284
Bachelor of Arts with a Major in Mathematics 289
Bachelor of Science with a Major in Mathematics 290
Minor in Mathematics 291
Master of Arts in the Field of Mathematics 292
Master of Science in the Field of Applied Mathematics 292
Doctor of Philosophy in the Field of Mathematics 292
Graduate Certificate in Financial Mathematics 292
Graduate Certificate in Mathematics 293
Media and Public Affairs 293
Bachelor of Arts with a Major in Journalism and Mass Communication 298
Bachelor of Arts with a Major in Political Communication 300
Combined Programs 301
Dual Bachelor of Arts and Master of Arts Degree Programs 301
Minor in Journalism and Mass Communication 303
Master of Arts in the Field of Media and Strategic Communication 304
Museum Studies 304
Master of Arts in the Field of Museum Studies 306
Graduate Certificate in Exhibit Design 306
Graduate Certificate in Museum Collections Management and Care 307

Graduate Certificate in Museum Studies 307
Music 308
Bachelor of Arts with a Major in Music 312
Minor in Jazz Studies 312
Minor in Music 313
Organizational Sciences and Communication 313
Bachelor of Arts with a Major in Communication 314
Bachelor of Arts with a Major in Organizational Sciences 315
Minor in Communication 317
Minor in Organizational Communication 317
Minor in Organizational Sciences 318
Master of Arts in the Field of Communication Management 318
Master of Arts in the Field of Leadership Education and Development 320
Master of Arts in the Field of Organizational Sciences 320
Doctor of Philosophy in the Field of Psychology with a Concentration in Industrial/Organizational Psychology 321
Peace Studies 322
Bachelor of Arts with a Major in Peace Studies 323
Minor in Peace Studies 325
Philosophy 326
Bachelor of Arts with a Major in Philosophy 332
Bachelor of Arts with a Major in Philosophy (Public Affairs Focus) 332
Combined Program 343
Minor in Applied Ethics 343
Minor in Logic 344
Minor in Mind–Brain Studies 344
Minor in Philosophy 345
Master of Arts in the Field of Philosophy 345
Master of Arts in the Field of Public Policy with a Concentration in Philosophy and Social Policy 346
Physics 346
Bachelor of Arts with a Major in Physics 347
Bachelor of Science with a Major in Astronomy and Astrophysics 348
Bachelor of Science with a Major in Biophysics 349
Bachelor of Science with a Major in Physics 349
Minor in Astronomy and Astrophysics 350
Minor in Biophysics 350
Minor in Physics 351
Master of Science in the Field of Physics 351
Doctor of Philosophy in the Field of Physics 352
Political Science 352
Bachelor of Arts with a Major in Political Science 361
Bachelor of Arts with a Major in Political Science (Public Policy Focus) 363
Bachelor of Science with a Major in Political Science 365
Combined Program 367
Minor in Political Science 368
Minor in Public Policy 368
Master of Arts in the Field of Legal Institutions and Theory 369
Master of Arts in the Field of Political Science 369
Doctor of Philosophy in the Field of Political Science 370
Professional Psychology 370
Master of Arts in the Field of Forensic Psychology ... 371
Doctor of Psychology in the Field of Clinical Psychology 372
Graduate Certificate in LGBT Health Policy and Practice 373
Psychology 373
Bachelor of Arts with a Major in Psychology 380
Combined Program 381
Minor in Psychology 381
Doctor of Philosophy in the Field of Psychology 381
Doctor of Philosophy in the Field of Psychology with a Concentration in Applied Social 382
Doctor of Philosophy in the Field of Psychology with a Concentration in Clinical Psychology 382
Doctor of Philosophy in the Field of Psychology with a Concentration in Cognitive Neuroscience 383
Public Policy and Public Administration 384
Master of Public Administration 389
Master of Public Policy 390
Dual Master of Public Administration and Graduate Certificate in Homeland Security Emergency Preparedness and Response 390

Doctor of Philosophy in the Field of Public Policy and Administration 391
Graduate Certificate in Budget and Public Finance 392
Graduate Certificate in Nonprofit Management 392
Religion 393
Bachelor of Arts with a Major in Religion 398
Minor in Religion 399
Master of Arts in the Field of Islamic Studies 400
Graduate Certificate in Islamic Studies 401
Romance, German, and Slavic Languages and Literatures 401
Bachelor of Arts with a Major in French Language, Literature, and Culture 402
Bachelor of Arts with a Major in German Language and Literature 403
Bachelor of Arts with a Major in Russian Language and Literature 404
Bachelor of Arts with a Major in Spanish and Latin American Languages, Literatures, and Cultures 405
Minor in French Language, Literature, and Culture 406
Minor in German Language and Literature 406
Minor in Italian Language and Literature 407
Minor in Russian Language and Literature 407
Minor in Spanish and Latin American Languages, Literatures, and Cultures 408
Sociology 409
Bachelor of Arts with a Major in Criminal Justice 409
Bachelor of Arts with a Major in Human Services and Social Justice 410
Bachelor of Arts with a Major in Sociology 411
Combined Program 411
Minor in Criminal Justice 411
Minor in Human Services and Social Justice 412
Minor in Law and Society 412
Minor in Sociology 413
Master of Arts in the Field of Criminology 413
Master of Arts in the Field of Sociology 413
Speech and Hearing Science 414
Bachelor of Arts with a Major in Speech, Language, and Hearing Sciences 418
Minor in Speech, Language, and Hearing Sciences 419
Master of Arts in the Field of Speech–Language Pathology 419
Speech–Language Pathology Post-Baccalaureate Program 420
Statistics 421
Bachelor of Science with a Major in Statistics 425
Minor in Statistics 426
Master of Science in the Field of Statistics 426
Doctor of Philosophy in the Field of Statistics 426
Graduate Certificate in Survey Design and Data Analysis 427
Theatre and Dance 427
Bachelor of Arts with a Major in Dance 432
Bachelor of Arts with a Major in Theatre 433
Minor in Dance 434
Minor in Theatre 435
Master of Fine Arts in the Field of Dance 435
Master of Fine Arts in the Field of Production Design 436
University Writing 436
Women's, Gender, and Sexuality Studies 437
Bachelor of Arts with a Major in Women’s, Gender, and Sexuality Studies 441
Combined Program, Women's, Gender, and Sexuality Studies 443
Minor in LGBT and Sexuality Studies 443
Minor in Women's, Gender, and Sexuality Studies 443
Master of Arts in the Field of Public Policy–Women's, Gender, and Sexuality Studies 444
Master of Arts in the Field of Women's, Gender, and Sexuality Studies 445
Graduate Certificate in Women's, Gender, and Sexuality Studies 445
School of Business 447
Undergraduate Programs 452
Bachelor of Business Administration 452
Accountancy 456
Business Analytics 456
Business Economics and Public Policy 457
Finance 458

Individualized Field 459
Information Systems and Technology Management 459
Innovation and Entrepreneurship 460
International Business 460
Marketing 461
Sport, Event, and Hospitality Management 462
Bachelor of Science with a Major in Finance 463
Dual Degree Programs 467
Minor in Business Administration 468
Graduate Programs 468
Master of Accountancy 469
Master of Science in Business Analytics 470
Master of Science in Finance 470
Master of Science in Information Systems Technology 471
Master of Science in Government Contracts 472
Master of Science in Project Management 472
Master of Tourism Administration 473
Global Master of Business Administration 474
Healthcare Master of Business Administration 480
Professional Master of Business Administration 481
World Executive Master of Business Administration 487
Joint Degree Programs 488
Doctor of Philosophy in Business Administration 488
Certificates 489
Graduate Certificate in Business Analytics 489
Graduate Certificate in Nonprofit Management 489
Graduate Certificate in Responsible Management 490
Graduate Certificate in Walkable Urban Development 491
SAS Certificate in Business Analytics 491
Accountancy 491
Decision Sciences 494
Finance 497
Information Systems and Technology Management 501
Dual Bachelor of Business Administration and Master of Science in Information Systems Technology 504
International Business 504
Management 507
Marketing 509
Strategic Management and Public Policy 511
Graduate School of Education and Human Development ... 514
Master's Programs 519
Assessment, Testing, and Measurement in Education 520
Clinical Mental Health Counseling 521
Clinical Rehabilitation Counseling 521
Curriculum and Instruction 522
Curriculum and Instruction, Elementary Education Concentration 522
Curriculum and Instruction, Interdisciplinary Studies of Literacy and Reading Education Concentration 523
Curriculum and Instruction, Secondary Education Concentration 524
Early Childhood Special Education 524
Education Policy Studies 525
Educational Leadership and Administration 526
Educational Technology Leadership 526
Elementary Education 527
Experiential Education and Jewish Cultural Arts 528
Higher Education Administration 528
Individualized Program 529
International Education 530
Museum Education 530
Organizational Leadership and Learning 531
Rehabilitation Counseling 532
School Counseling 533
Secondary Education 534
Special Education and Transition Services 535
Special Education for Children with Emotional and Behavioral Disabilities 537
Special Education for Culturally and Linguistically Diverse Learners 538
Education Specialist Programs 538
Education Specialist in the Field of Educational Leadership and Administration 539
Education Specialist in the Field of Special Education 539
Doctoral Programs 540

Doctor of Education in the Field of Curriculum and Instruction 541
Doctor of Education in the Field of Educational Administration and Policy Studies 542
Doctor of Education in the Field of Higher Education Administration 544
Doctor of Education in the Field of Human and Organizational Learning 545
Doctor of Education in the Field of Special Education 547
Doctor of Philosophy in the Field of Counseling 548
Doctor of Philosophy in the Field of Educational Science 549
Juris Doctor and Master of Arts in Education and Human Development in the Field of Education Policy Studies 550
Certificate Programs 550
Assessment, Measurement, and Teaching in Education 551
Autism Spectrum Disorders 551
Brain Injury: Educational and Transition Services 552
Counseling 552
Counseling and Life Transitions 552
Design and Assessment of Adult Learning 553
Educational Leadership and Administration 553
E-Learning 554
Global Leadership in Teams and Organizations 554
Incorporating International Perspectives in Education 554
Instructional Design 555
Integrating Technology into Education 555
Job Development and Placement 556
Leadership Development 556
Leadership in Educational Technology 556
Multimedia Development 557
Organizational Learning and Change 557
Secondary Special Education and Transition Services 557
Special Education for Culturally and Linguistically Diverse Learners 558
STEM Master Teacher 558
Teaching English to Speakers of Other Languages 559
Training and Educational Technology 559
Counseling and Human Development 560
Curriculum and Pedagogy 563
Educational Leadership 568
Human and Organizational Learning 575
Special Education and Disability Studies 578
School of Engineering and Applied Science 584
Biomedical Engineering 595
Bachelor of Science with a Major in Biomedical Engineering 598
Minor in Biomedical Engineering 599
Combined Bachelor of Science with a Major in Biomedical Engineering and Master of Engineering in the Field of Regulatory Biomedical Engineering 600
Master of Engineering in the Field of Regulatory Biomedical Engineering 600
Master of Science in the Field of Biomedical Engineering 601
Doctor of Philosophy in the Field of Biomedical Engineering 601
Civil and Environmental Engineering 602
Bachelor of Science with a Major in Civil Engineering 609
Bachelor of Science with a Major in Civil Engineering, Environmental Engineering Option 611
Bachelor of Science with a Major in Civil Engineering, Medical Preparation Option 613
Bachelor of Science with a Major in Civil Engineering, Sustainability Option 615
Bachelor of Science with a Major in Civil Engineering, Transportation Engineering Option 617
Combined Bachelor of Science with a Major in Civil Engineering and Master of Science in the Field of Environmental Engineering 619
Combined Bachelor of Science with a Major in Civil Engineering and Master of Science in the Field of Structural Engineering 620
Combined Bachelor of Science with a Major in Civil Engineering and Master of Science in the Field of Transportation Engineering 622
Master of Science in Civil and Environmental Engineering 624
Doctor of Philosophy in the Field of Civil and Environmental Engineering 625

Graduate Certificate in Environmental Engineering 625
Graduate Certificate in Geoenvironmental Engineering 626
Graduate Certificate in Structural Engineering 627
Graduate Certificate in Transportation Engineering 627
Computer Science 628
Bachelor of Arts with a Major in Computer Science 638
Bachelor of Science with a Major in Computer Science 640
Minor in Computer Science 642
Master of Science in the Field of Computer Science 643
Master of Science in the Field of Cybersecurity in Computer Science 643
Doctor of Philosophy in the Field of Computer Science 644
Graduate Certificate in Computer Security and Information Assurance 644
Electrical and Computer Engineering 645
Bachelor of Science with a Major in Computer Engineering 655
Bachelor of Science with a Major in Electrical Engineering 656
Bachelor of Science with a Major in Electrical Engineering, Energy Option 657
Bachelor of Science with a Major in Electrical Engineering, Medical Preparation Option 659
Minor in Computer Engineering 660
Minor in Electrical Engineering 660
Master of Science in the Field of Computer Engineering 661
Master of Science in the Field of Electrical Engineering 662
Master of Science in the Field of Telecommunications Engineering 664
Doctor of Philosophy in the Field of Computer Engineering 665
Doctor of Philosophy in the Field of Electrical Engineering 665
Graduate Certificate in High-Performance Computing 665
Engineering Management and Systems Engineering 666
Bachelor of Arts with a Major in Applied Science and Technology 667
Bachelor of Science with a Major in Systems Engineering 669
Minor in Operations Research 671
Minor in Systems Engineering 671
Online Master of Engineering in the Field of Cybersecurity Policy and Compliance 671
Master of Science in the Field of Data Analytics 672
Master of Science in the Field of Engineering Management 673
Master of Science in the Field of Systems Engineering 674
Doctor of Engineering in the Field of Engineering Management 675
Doctor of Philosophy in the Field of Systems Engineering 676
Doctor of Philosophy in the Field of Engineering Management 676
Graduate Certificate in Emergency Management and Public Health 677
Graduate Certificate in Engineering and Technology Management 677
Graduate Certificate in Enterprise Information Assurance 678
Graduate Certificate in Environmental and Energy Systems Management 678
Graduate Certificate in Greenhouse Gas Management 678
Graduate Certificate in Homeland Security, Emergency Preparedness, and Response 679
Graduate Certificate in Systems Engineering 679
Mechanical and Aerospace Engineering 679
Bachelor of Science with a Major in Mechanical Engineering 688
Bachelor of Science with a Major in Mechanical Engineering, Aerospace Option 689
Bachelor of Science with a Major in Mechanical Engineering, Biomechanical Option 691
Bachelor of Science with a Major in Mechanical Engineering, Medical Preparation Option 692
Bachelor of Science with a Major in Mechanical Engineering, Patent Law Option 693
Bachelor of Science with a Major in Mechanical Engineering, Robotics Option 695

Minor in Mechanical Engineering 696
Combined Bachelor of Science with a Major in Mechanical Engineering and Master of Science in the Field of Mechanical Engineering 696
Master of Science in the Field of Mechanical and Aerospace Engineering 697
Doctor of Philosophy in the Field of Mechanical and Aerospace Engineering 698
Certificate in Computer-Integrated Design in Mechanical and Aerospace Engineering 699
Graduate Certificate in Energy Engineering and Management 699
Elliott School of International Affairs 701
Undergraduate Programs 709
Bachelor of Arts with a Major in Asian Studies 709
Bachelor of Arts with a Major in International Affairs 711
Bachelor of Arts with a Major in Latin American and Hemispheric Studies 712
Bachelor of Arts with a Major in Middle East Studies 713
Minors 714
Graduate Programs 717
Master of Arts in the Field of Asian Studies 717
Master of Arts in the Field of European and Eurasian Studies 724
Master of Arts in the Field of Global Communication 729
Master of Arts in the Field of International Affairs 734
Master of Arts in the Field of International Development Studies 747
Master of Arts in the Field of International Science and Technology Policy 750
Master of Arts in the Field of International Trade and Investment Policy 751
Master of Arts in the Field of Latin American and Hemispheric Studies 752
Master of Arts in the Field of Middle East Studies 753
Master of Arts in the Field of Security Policy Studies 754
Master of International Policy and Practice 756
Master of International Studies 756
Dual Master of Arts and Master of Public Health 757
Joint Master of Arts and Juris Doctor 757
Joint Master of Arts and Master of Business Administration Degree Program 757
Certificate Programs 757
Graduate Certificate in Global Gender Policy 758
Graduate Certificate in International Science and Technology Policy 758
Graduate Certificate in Nuclear Policy 759
School of Medicine and Health Sciences 760
Undergraduate Programs 768
Associate in Science in the Field of Histotechnology 769
Associate in Science in the Field of Health Sciences 769
Associate in Science in the Field of Health Sciences Laboratory Technology 770
Bachelor of Science in Health Sciences with a Major in Bioinformatics 771
Bachelor of Science in Health Sciences with a Major in Clinical Health Sciences 772
Bachelor of Science in Health Sciences with a Major in Clinical Management and Leadership 773
Bachelor of Science in Health Sciences with a Major in Clinical Research Administration 774
Bachelor of Science in Health Sciences with a Major in Cytotechnology 775
Bachelor of Science in Health Sciences with a Major in Emergency Medical Services Management 776
Bachelor of Science in Health Sciences with a Major in Health Intervention and Disaster Response 777
Bachelor of Science in Health Sciences with a Major in Medical Informatics 778
Bachelor of Science in Health Sciences with a Major in Medical Laboratory Science 779
Dual Bachelor of Science in Health Sciences and Master of Science in Health Sciences in Clinical Research Administration 780
Dual Bachelor of Science in Health Sciences with a Major in Clinical Management and Leadership and Master of Science in Health Sciences in the Field of Health Care Quality 782
Dual Bachelor of Science in Health Sciences with a Major in Clinical Research Administration and Master of Science in Health Sciences in the Field of Regulatory Affairs 783
Dual Bachelor of Science in Health Sciences with a Major in Emergency Health Services Management and

Master of Science in Health Sciences in the Field of Clinical Management and Leadership 785
Minor in Anatomy 785
Minor in Blood Banking for Medical Laboratory Science 785
Minor in Clinical Research Administration 785
Minor in Chemistry for Medical Laboratory Science 785
Minor in Emergency Health Services 786
Minor in Health Sciences 786
Minor in Hematology for Medical Laboratory Science 786
Minor in Microbiology for Medical Laboratory Science 786
Graduate Programs 787
Master of Science in Health Sciences in the Field of Clinical Management and Leadership 787
Master of Science in Health Sciences in the Field of Clinical Microbiology 788
Master of Science in Health Sciences in the Field of Clinical Research Administration 788
Master of Science in Health Sciences in the Field of Clinical and Translational Research 789
Master of Science in Health Sciences in the Field of Emergency Medical Services Leadership 790
Master of Science in Health Sciences in the Field of Health Care Quality 790
Master of Science in Health Sciences in the Field of Immunohematology 791
Master of Science in Health Sciences in the Field of Immunohematology and Biotechnology 792
Master of Science in Health Sciences in the Field of Integrative Medicine 792
Master of Science in Health Sciences in the Field of Medical Laboratory Science 793
Master of Science in Health Sciences in the Field of Molecular Diagnostic Science 793
Master of Science in Health Sciences in the Field of Physician Assistant 794
Master of Science in Health Sciences in the Field of Regulatory Affairs 795
Master of Science in Health Sciences in the Field of Translational Microbiology 795
Dual Master of Science in Health Sciences in the Field of Physician Assistant and Master of Public Health 796
Doctor of Philosophy in the Field of Translational Health Sciences 799
Doctor of Physical Therapy 800
Advanced Practice Clinical Doctorate in Occupational Therapy 801
Certificate Programs 802
Post-baccalaureate Certificate in Blood Banking for Medical Laboratory Science 802
Post-baccalaureate Certificate in Chemistry for Medical Laboratory Science 803
Undergraduate Certificate in the Field of Health Sciences Laboratory Technology 803
Post-baccalaureate Certificate in Hematology for Medical Laboratory Science 804
Post-baccalaureate Certificate in Medical Laboratory Science 804
Post-baccalaureate Certificate in Microbiology for Medical Laboratory Science 805
Post-baccalaureate Certificate in Pre-Medicine 805
Graduate Certificate in Clinical Research Administration 805
Graduate Certificate in Clinical Research Practice 806
Graduate Certificate in Clinical and Translational Research 806
Graduate Certificate in Health Care Quality 806
Graduate Certificate in Integrative Medicine 807
Graduate Certificate in Regulatory Affairs 807
School of Nursing 808
Undergraduate Programs 824
Associate's Degree in Nursing Pathway to Bachelor of Science in Nursing 824
Associate's Degree in Nursing Pathway to Bachelor of Science in Nursing and Master of Science in Nursing Adult-Gerontology Primary Care Nurse Practitioner 825
Associate's Degree in Nursing Pathway to Bachelor of Science in Nursing and Master of Science in Nursing Family Nurse Practitioner 826
Associate's Degree in Nursing Pathway to Bachelor of Science in Nursing and Master of Science in Nursing Nurse Midwifery 827
Associate's Degree in Nursing Pathway to Master of Science in Nursing 828
Bachelor of Science in Nursing 829
Graduate Programs 829

Master of Science in Nursing in the Field of Adult-Gerontology Acute Care Nurse Practitioner 830
Master of Science in Nursing in the Field of Adult-Gerontology Primary Care Nurse Practitioner 831
Master of Science in Nursing in the Field of Family Nurse Practitioner 832
Master of Science in Nursing in the Field of Nurse-Midwifery 834
Master of Science in Nursing in the Field of Nursing Leadership and Management 835
Dual Master of Science in Nursing in the Field of Adult-Gerontology Acute Care Nurse Practitioner and Doctor of Nursing Practice 836
Doctor of Nursing Practice 837
Certificate Programs 839
Post Master's Certificate in Adult-Gerontology Acute Care Nurse Practitioner 840
Post Master's Certificate in Adult-Gerontology Primary Care Nurse Practitioner 840
Post Master's Certificate in Family Nurse Practitioner 840
Post Master's Certificate in Family Specialty for Nurse Practitioners 840
Post Master's Certificate in Nursing Education 841
Post Master's Certificate in Palliative Care Nurse Practitioner 841
Post-Master's Certificate in Psychiatric Mental Health Nurse Practitioner 841
College of Professional Studies 843
Undergraduate Programs 846
Bachelor of Professional Studies with a Major in Cybersecurity 847
Bachelor of Professional Studies with a Major in Integrated Information, Science, and Technology 847
Bachelor of Professional Studies with a Major in Police and Security Studies 848
Bachelor of Arts with a Major in Political Communication and Master of Professional Studies in the Field of Political Management 849
Bachelor of Arts with a Major in Political Science and Master of Professional Studies in the Field of Advocacy in the Global Environment 849
Bachelor of Arts with a Major in Political Science and Master of Professional Studies in the Field of Legislative Affairs 850
Bachelor of Arts with a Major in Political Science and Master of Professional Studies in the Field of Political Management 850
Graduate Programs 851
Master of Professional Studies in the Field of Bioinformatics and Biotechnology 851
Master of Professional Studies in the Field of Cybersecurity Strategy and Information Management 852
Master of Professional Studies in the Field of Homeland Security 852
Master of Professional Studies in the Field of Landscape Design 854
Master of Professional Studies in the Field of Law Firm Management 854
Master of Professional Studies in the Field of Paralegal Studies 855
Master of Professional Studies in the Field of Paralegal Studies with a concentration in health care corporate compliance 857
Master of Professional Studies in the Field of Publishing 858
Master of Professional Studies in the Field of Sustainable Urban Planning 859
Graduate School of Political Management 862
Master of Professional Studies in the Field of Advocacy in the Global Environment 862
Master of Professional Studies in the Field of Legislative Affairs 863
Master of Professional Studies in the Field of Political Management 864
Master of Professional Studies in the Field of Political Communication and Governance (only Spanish language) 869
Master of Professional Studies in the Field of Strategic Public Relations 870
Dual Master of Professional Studies in the Field of Political Management and Graduate Certificate in Survey Design and Analysis 870
Certificate Programs 871
Undergraduate Certificate in Cyber Attacks and Cyber Threats Analysis 871
Undergraduate Certificate in Investigation of Cyber Security Incidents 871
Undergraduate Certificate in Protection and Defense of Computer Networks 872

Graduate Certificate in Climate Change Management and Policy 872
Graduate Certificate in Digital Politics 872
Graduate Certificate in Global Public Relations 873
Graduate Certificate in Health Care Corporate Compliance 873
Graduate Certificate in Justice and Public Safety Information Management 874
Graduate Certificate in Landscape Design 874
Graduate Certificate in PACs and Political Management 874
Graduate Certificate in Paralegal Studies 875
Graduate Certificate in Public Relations 875
Graduate Certificate in Strategic Management and Executive Leadership for Law Enforcement 876
Graduate Certificate in Sustainable Landscapes 876
Graduate Certificate in Sustainable Urban Planning 876
Milken Institute School of Public Health 878
Undergraduate Programs 885
Bachelor of Science with a Major in Exercise Science 885
Bachelor of Science with a Major in Exercise Science, Pre-athletic Training/Sports Medicine 887
Bachelor of Science with a Major in Exercise Science, Pre-medical Professional Concentration 890
Bachelor of Science with a Major in Exercise Science, Pre-physical Therapy Concentration 892
Bachelor of Science with a Major in Public Health 895
Combined Bachelor of Science in Public Health and Master of Public Health 897
Minor in Exercise Science 897
Minor in Nutrition 898
Minor in Public Health 898
Graduate Programs 899
Master of Arts in the Field of International Affairs and Master of Public Health 899
Master of Public Health: MPH@GW 900
Master of Health Administration with a Graduate Certificate in Health Care Corporate Compliance 902
Master of Science in the Field of Health Policy with a Graduate Certificate in Health Care Corporate Compliance 903
Master of Science in Health Sciences in the Field of Physicians Assistant and Master of Public Health 903
Master of Public Health in the Field of Health Policy with a Graduate Certificate in Corporate Compliance 907
Peace Corp Masters International Program and Master of Public Health 908
Doctor of Medicine and Master of Public Health 909
Joint Juris Doctor and Master of Public Health 909
Graduate Certificate in Public Health 910
Environmental and Occupational Health 911
Master of Public Health in the Field of Environmental Health Science and Policy 912
Master of Public Health in the Field of Global Environmental Health 916
Doctor of Public Health in the Field of Environmental and Occupational Health 920
Epidemiology and Biostatistics 921
Master of Public Health in the Field of Biostatistics 925
Master of Public Health in the Field of Epidemiology 927
Master of Science in the Field of Biostatistics 930
Master of Science in the Field of Epidemiology 931
Master of Science in the Field of Public Health Microbiology and Emerging Infectious Diseases 933
Doctor of Philosophy in the Field of Biostatistics 935
Doctor of Philosophy in the Field of Epidemiology 937
Exercise and Nutrition Sciences 940
Master of Public Health in the Field of Physical Activity in Public Health 941
Master of Public Health in the Field of Public Health Nutrition 944
Master of Science in the Field of Exercise Science with a Concentration in Strength & Conditioning 947
Global Health 948
Master of Public Health in the Field of Global Environmental Health 951
Master of Public Health in the Field of Global Health Communication 955
Master of Public Health in the Field of Global Health Epidemiology and Disease Control 958
Master of Public Health in the Field of Global Health Policy 960

Master of Public Health in the Field of Global Health Program Design, Monitoring, and Evaluation 962

Doctor of Public Health in the Field of Global Health 965

Health Policy and Management 967

Master of Health Administration 968

Master of Health Administration – Online/Executive Program 971

Master of Public Health in the Field of Health Policy 972

Master of Science in the Field of Health Policy 978

Master of Science in the Field of Management of Health Informatics Analytics 979

Health Services Administration Specialist 979

Doctor of Philosophy in the Field of Public Policy and Administration (Health Policy Track) 980

Doctor of Public Health in the Field of Health Policy 981

Graduate Certificate in Health Administration Generalist 982

Graduate Certificate in Health Policy 983

Graduate Certificate in Long-Term Care 984

Prevention and Community Health 985

Master of Public Health in the Field of Community Oriented Primary Care 1003

Master of Public Health in the Field of Health Promotion 1007

Master of Public Health in the Field of Maternal and Child Health 1009

Master of Public Health in the Field of Public Health Communication and Marketing 1011

Doctor of Public Health in the Field of Health Behavior 1013

Doctor of Philosophy in the Field of Social and Behavioral Sciences in Public Health 1014

Academic Calendar 1017

Courses 1018

Academy for Classical Acting (ACA) 1018

Accountancy (ACCY) 1019

Africana Studies (AFST) 1021

American Studies (AMST) 1022

Anatomy & Regenerative Biology (ANAT) 1027

Anthropology (ANTH) 1029

Applied Science (APSC) 1036

Arabic (ARAB) 1037

Art History (AH) 1038

Art Therapy (ARTH) 1043

Astronomy (ASTR) 1045

Biochemistry (BIOC) 1046

Biological Sciences (BISC) 1047

Biomedical Engineering (BME) 1054

Biomedical Sciences (BMSC) 1056

Biostatistics (BIOS) 1057

Business Administration (BADM) 1058

Chemistry (CHEM) 1059

Chinese (CHIN) 1063

Civil Engineering (CE) 1066

Classical Studies (CLAS) 1072

Clinical Management & Leadership (CML) 1073

Clinical Research Admin (CRA) 1074

College of Professional Studies (CPS) 1075

Columbian College (CCAS) 1076

Communication (COMM) 1076

Computer Science (CSCI) 1079

Corcoran Art History (CAH) 1088

Corcoran Arts & Humanities (CAS) 1096

Corcoran Art and the Book (CBK) 1102

Corcoran Continuing Education (CCE) 1105

Corcoran Ceramics (CCR) 1111

Corcoran Design (CDE) 1112

Corcoran Digital Media Design (CDM) 1113

Corcoran Art Education (CED) 1117

Corcoran Exhibition Design (CEX) 1125

Corcoran Fine Art (CFA) 1127

Corcoran First Year Foundation (CFN) 1136

Corcoran Graphic Design (CGD) 1137

Corcoran Interior Design (CID) 1139

Corcoran Photography (CPH) 1145

Corcoran Photojournalism (CPJ) 1150

Corcoran Printmaking (CPR) 1153

Corcoran Painting (CPT) 1157

Corcoran Sculpture (CSL) 1159

Counseling (CNSL) 1161
Curriculum and Pedagogy (CPED) 1164
Data Science (DATS) 1168
Decision Sciences (DNSC) 1169
East Asian Language and Literature (EALL) 1172
Economics (ECON) 1173
Educational Leadership (EDUC) 1179
Electrical & Computer Engring (ECE) 1186
Emergency Health Services (EHS) 1194
Engineering Management and Systems Engineering (EMSE) 1196
English (ENGL) 1204
English for Academic Purposes (EAP) 1213
Environmental Resource Policy (ENRP) 1213
Epidemiology (EPID) 1214
Exercise and Nutrition Sciences (EXNS) 1214
Film Studies (FILM) 1218
Finance (FINA) 1219
Fine Arts (FA) 1222
Forensic Psychology (FORP) 1228
Forensic Sciences (FORS) 1230
French (FREN) 1234
Geography (GEOG) 1236
Geology (GEOL) 1240
Germanic Language and Literature (GER) 1242
Government Contracts (GCON) 1244
Greek (GREK) 1245
Health Care Quality (HCQ) 1245
Health Care Science (HCS) 1246
Health Sciences Programs (HSCI) 1247
Health Services Management and Leadership (HSML) 1250
Health and Wellness (HLWL) 1253
Hebrew (HEBR) 1254
History (HIST) 1255
Hominid Paleobiology (HOMP) 1266
Honors (HONR) 1267
Human Development (HDEV) 1268
Human Organizational Learning (HOL) 1269
Human Services&Social Justice (HSSJ) 1272
Information Systems Technology Management (ISTM) 1273
Interior Architecture and Design (IAD) 1276
Interior Design (INTD) 1278
International Affairs (IAFF) 1279
International Business (IBUS) 1283
Italian (ITAL) 1286
Japanese (JAPN) 1287
Judaic Studies (JSTD) 1288
Korean (KOR) 1289
Latin (LATN) 1289
Law (LAW) 1290
Leadership Education and Development (LEAD) 1326
Legislative Affairs (LGAF) 1327
Lifestyle, Sport, and Physical Activity (LSPA) 1328
Linguistics (LING) 1329
Management (MGT) 1330
Marketing (MKTG) 1332
Master of Business Administration (MBAD) 1334
Mathematics (MATH) 1336
Mechanical and Aerospace Engineering (MAE) 1341
Medical Laboratory Science (MLS) 1349
Microbiology, Immunology, and Tropical Medicine (MICR) 1353
Molecular Medicine (MMED) 1353
Museum Studies (MSTD) 1354
Music (MUS) 1355
Naval Science (NSC) 1358
Nursing (NURS) 1359
Organizational Sciences (ORSC) 1365
Occupational Therapy (OT) 1367
Patent Practice (PATN) 1368
Peace Studies (PSTD) 1368
Persian (PERS) 1369
Pharmacogenomics (PHRG) 1369
Pharmacology (PHAR) 1370
Philosophy (PHIL) 1371
Physical Therapy (PT) 1376
Physician Assistant (PA) 1379
Physics (PHYS) 1382

Physiology (PHYL) 1386
Political Management (PMGT) 1387
Political Psychology (PPSY) 1391
Political Science (PSC) 1391
Portuguese (PORT) 1399
Professional Studies-Advocacy Global Environment (PSAD) 1400
Professional Studies-Healthcare Corporate Complaince(PSHC) 1401
Professional Studies-Homeland Security (PSHS) 1401
Professional Studies-Integrated Information, Science, and Technology (PSIS) 1402
Professional Studies-Landscape Design (PSLD) 1403
Professional Studies-Law Firm Management (PSLM) 1404
Professional Studies-Molecular Biology (PSMB) 1404
Professional Studies-Paralegal Studies (PSLX) 1405
Professional Studies-Public Leadership (PSPL) 1406
Professional Studies-Physics Education (PSPH) 1407
Professional Studies-Public Relations (PSPR) 1407
Professional Studies-Publishing (PSPB) 1408
Professional Studies-Middle-School Math (PSMM) 1408
Professional Studies-Middle-School Science (PSMS) 1409
Professional Studies-Security & Safety Leadership (PSSL) 1409
Professional Studies-Urban Sustainability (PSUS) 1410
Professional Psychology (PSYD) 1412
Psychology (PSYC) 1414
Public Health (PUBH) 1420
Public Policy and Public Admin (PPPA) 1438
Regulatory Affairs (RAFF) 1442
Religion (REL) 1443
School of Engineering & Applied Science (SEAS) 1448
School of Media and Public Affairs (SMPA) 1448
Slavic Languages and Literature (SLAV) 1453
Sociology (SOC) 1455
Spanish (SPAN) 1459
Special Education (SPED) 1462
Speech and Hearing Science (SPHR) 1467
Statistics (STAT) 1470
Strategic Management and Public Policy (SMPP) 1474
Sustainability (SUST) 1476
Teacher Education (TRED) 1476
Theatre and Dance (TRDA) 1476
Tourism Studies (TSTD) 1481
Turkish (TURK) 1483
Translational Health Sciences (THS) 1483
University Writing (UW) 1485
Vietnamese (VIET) 1485
Women and Leadership Program (WLP) 1486
Women's Studies (WSTU) 1486
Yiddish (YDSH) 1489
Biology Electives 1489
CCAS Admission Requirements 1490
CCAS General Education Requirements 1491
CPS Certificate Programs 1501
CPS Graduate Programs 1501
CPS Undergaduate Programs 1502
Chemistry, BA Prerequisites 1502
Chemistry, BS Prerequisites 1502
Civil Engineering Electives 1502
Corcoran 4-Year Plan 1503
DRPH Graduation Requirements 1504
Disclaimer 1504
ESIA Curriculum Requirements for the First Two Years 1504
ESIA Graduate Certificate Programs 1505
ESIA Graduate Program Requirements 1505
ESIA MA General Requirements 1505
ESIA Undergraduate Programs 1506
Education Specialist 1506
Explanation of Course Numbers 1507
GESHD Certificate Programs 1507
GSEHD Doctoral Programs 1507
GSEHD Master's Programs 1509
GWSB Certificate Programs 1510
GWSB Graduate Programs 1510
GWSB Undergraduate Programs 1510
MFS Core Requirements 1510
MPH Graduation Requirements 1511

MS Biostatistics 1511
MS Exercise Science Graduation Requirements 1512
PhD Biostatistics 1512
PhD Epi Graduation Requirements 1514
SMHS Certificate Programs 1514
SMHS Graduate Programs 1515
SMHS Undergraduate Programs 1515
SPH - Exercise Science Guided Electives 1516
SPH - Global Environmental Health 1517
SPH - Global Environmental Health Competencies 1518
SPH - Global Environmental Health Overview 1520
SPH - University General Education Requirements 1521
SPH Course Number Explanation 1521
SPH DrPH Core Competencies 1521
SPH Graduate Degree Programs 1523
SPH Undergraduate Programs 1523
Index 1525

ABOUT THE UNIVERSITY

George Washington was determined to have a great national university in the nation's capital. His hope was that students from all parts of the country would gain a first-hand knowledge of the practice as well as the theory of republican government while being instructed in the arts and sciences. He bequeathed 50 shares of The Potomac Company "towards the endowment of a University to be established within the limits of the District of Columbia, under the auspices of the General Government, if that government should incline to extend a fostering hand towards it." Despite Washington's intentions, The Potomac Company folded and Congress never extended a "fostering hand," so the University did not take shape until a group of Baptist clergymen led by Reverend Luther Rice took up the cause. They raised funds for the purchase of a site and petitioned Congress for a charter. Congress insisted on giving the institution a nonsectarian charter stating "That persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor, or pupil, be refused admittance into said College, or denied any of the privileges, immunities, or advantages thereof, for or on account of his sentiments in matters of religion."

Columbian College, as it was originally named, took up residence on College Hill, a 46-acre tract between the present 14th and 15th Streets extending from Florida Avenue to Columbia Road. The name of the institution was changed in 1873 to Columbian University and in 1904 to The George Washington University.

In 1912, the University purchased 2023 G Street and rented 2024 Street, N.W., establishing what would become its Foggy Bottom campus. Today, more than 100 buildings are situated on 43 acres in the heart of Washington, D.C., bordered by the White House, John F. Kennedy Center for the Performing Arts, State Department, and World Bank, as well as numerous federal agencies and national galleries and museums.

GW's Virginia Science and Technology Campus (http://virginia.gwu.edu), initiated for graduate studies, research projects, and professional development programs, is located along the high-tech corridor on Route 7, just to the west of Route 28, in Loudoun County. In 1998, GW established The George Washington University at Mount Vernon College; the Mount Vernon Campus (http://www.gwu.edu/mount-vernon-campus) is on Foxhall Road in Northwest Washington.

Currently, the University's enrollments total more than 26,200, of which 10,900 are undergraduates, about 14,800 are graduate and professional students, and some 500 are non-degree students. GW students come from all 50 states and about 130 different countries.

MISSION

Mission Statement

The George Washington University, an independent academic institution chartered by the Congress of the United States in 1821, dedicates itself to furthering human well-being. The University values a dynamic, student-focused community stimulated by cultural and intellectual diversity and built upon a foundation of integrity, creativity, and openness to the exploration of new ideas.

The George Washington University, centered in the national and international crossroads of Washington, D.C., commits itself to excellence in the creation, dissemination, and application of knowledge.

To promote the process of lifelong learning from both global and integrative perspectives, the University provides a stimulating intellectual environment for its diverse students and faculty. By fostering excellence in teaching, the University offers outstanding learning experiences for full-time and part-time students in undergraduate, graduate, and professional programs in Washington, D.C., the nation, and abroad. As a center for intellectual inquiry and research, the University emphasizes the linkage between basic and applied scholarship, insisting that the practical be grounded in knowledge and theory. The University acts as a catalyst for creativity in the arts, the sciences, and the professions by encouraging interaction among its students, faculty, staff, alumni, and the communities it serves.

The George Washington University draws upon the rich array of resources from the National Capital Area to enhance its educational endeavors. In return, the University, through its students, faculty, staff, and alumni, contributes talent and knowledge to improve the quality of life in metropolitan Washington, D.C.

ACCREDITATION

Accreditation

The George Washington University is accredited by its regional accrediting agency, the Middle States Commission on Higher Education (http://www.msche.org).

Columbian College of Arts and Sciences

In Columbian College of Arts and Sciences (http://columbian.gwu.edu), the bachelor and master of fine arts degree programs in interior architecture and design are accredited by the Council for Interior Design Accreditation (http://accredit-id.org). The Department of Chemistry is on the approved list of the American Chemical Society. (http://www.acs.org) The doctor of philosophy program in clinical psychology in the Department of Psychology is accredited by the American Psychological Association. (http://www.apa.org) The master of arts degree program in speech–language pathology is accredited by the Education and

Training Board of the Boards of Examiners in Speech–Language Pathology and Audiology. The master in public administration and the master of public policy degree programs are on the approved list of the National Association of Schools of Public Affairs and Administration (http://www.naspaa.org). The master of forensic science degree programs in forensic chemistry, forensic molecular biology, and forensic toxicology are accredited by the Forensic Science Education Programs Accreditation Commission. The Art Therapy program is accredited by the American Art Therapy Association (http://arttherapy.org). The art and design programs in the former Corcoran College of Art and Design are accredited by the National Association of Schools of Art and Design.

School of Business

The School of Business (http://business.gwu.edu) is a member of AACSB International–The Association to Advance Collegiate Schools of Business (http://www.aacsb.edu); the Association accredits its undergraduate and graduate business administration and accountancy programs. The programs in accountancy satisfy the educational requirements for the certified public accountant and the certified management accountant professional examinations.

Graduate School of Education and Human Development

The Graduate School of Education and Human Development (http://gsehd.gwu.edu) is a charter member of the American Association of Colleges for Teacher Education (http://aacte.org) and is accredited by the Council for the Accreditation of Educator Preparation (http://www.ncate.org) and the District of Columbia State Education Agency, Office of the State Superintendent of Education (http://osse.dc.gov), for its eligible master's, specialist, and doctoral degree programs; the master's programs in school counseling and clinical mental health counseling and the doctoral program in counseling are accredited by the Council for Accreditation of Counseling & Related Educational Programs (http://www.cacrep.org); the master's program in rehabilitation counseling is accredited by the Council on Rehabilitation Education (http://www.core-rehab.org).

School of Engineering and Applied Science

In the School of Engineering and Applied Science (http://www.seas.gwu.edu), the bachelor of science programs in civil, mechanical, electrical, biomedical, and computer engineering are accredited by the Engineering Accreditation Commission of ABET, Inc (http://www.abet.org). The bachelor of science in computer science curriculum is accredited by the Computing Accreditation Commission of ABET, Inc (http://www.abet.org).

Elliott School of International Affairs

The Elliott School of International Affairs (http://elliott.gwu.edu) is a member of the Association of Professional Schools of International Affairs (http://www.apsia.org).

Law School

The Law School (http://www.law.gwu.edu) is a charter member of the Association of American Law Schools (http://www.aals.org) and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association (http://www.americanbar.org).

School of Medicine and Health Sciences

The School of Medicine and Health Sciences (http://smhs.gwu.edu) has had continuous approval by its accrediting body, which is currently the Liaison Committee on Medical Education (http://www.lcme.org), sponsored jointly by the American Medical Association (http://www.ama-assn.org) and the Association of American Medical Colleges (https://www.aamc.org). The medical laboratory science program is accredited by the National Accrediting Agency for Clinical Laboratory Science (http://www.naacls.org). The Commission on Accreditation of Allied Health Education Programs (http://www.caahep.org) has accredited the program in physician assistant. The physical therapy program is accredited by the Commission on the Accreditation of Physical Therapist Education (http://www.capteonline.org) of the American Physical Therapy Association.

School of Nursing

In the School of Nursing (https://nursing.gwu.edu), the bachelor of science and master of science degree programs in nursing, and the doctor of nursing practice are accredited by the Commission on Collegiate Nursing Education (http://www.aacn.nche.edu/ccne-accreditation). The bachelor of science program in nursing is approved by the Virginia Board of Nursing (http://www.dhp.virginia.gov/nursing); the master of science and the doctor of nursing practice are approved by the Washington, DC Board of Nursing (http://doh.dc.gov/service/board-nursing).

Milken Institute School of Public Health

The Milken Institute School of Public Health (http://publichealth.gwu.edu) is accredited by the Council on Education for Public Health. The master of health administration program is accredited by the National Association of Long Term Care Administrator Boards and the Commission on Accreditation of Healthcare Management Education (http://www.cahme.org).

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School of Nursing—Pamela R. Jeffries

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Degrees offered by the George Washington University

Columbian College of Arts and Sciences: Bachelor of Arts (B.A.), Bachelor of Fine Arts (B.F.A.), Bachelor of Science (B.S.), Master of Arts (M.A.), Master of Fine Arts (M.F.A.), Master of Forensic Sciences (M.F.S.), Master of Public Administration (M.P.A.), Master of Public Policy (M.P.P.), Master of Science (M.S.), Master of Philosophy (M.Phil.), Master of Psychology (M.Psy.), Doctor of Philosophy (Ph.D.), and Doctor of Psychology (Psy.D.)

School of Medicine and Health Sciences: Bachelor of Science in Health Sciences (B.S.H.S.), Master of Science in Health Sciences (M.S.H.S.), Doctor of Medicine (M.D.), Doctor of Occupational Therapy (O.T.D.), Doctor of Philosophy (Ph.D.), and Doctor of Physical Therapy (D.P.T.)

Law School: Juris Doctor (J.D.), Master of Laws (LL.M.), Master of Studies in Law (M.S.L.), and Doctor of Juridical Science (S.J.D.)

School of Engineering and Applied Science: Bachelor of Science (B.S.), Bachelor of Arts (B.A.), Master of Science (M.S.), Master of Engineering (M.Eng.), Engineer (Engr.), Applied Scientist (App.Sc.), Doctor of Engineering (D.Eng.), and Doctor of Philosophy (Ph.D.)

Graduate School of Education and Human Development: Master of Arts in Education and Human Development (M.A.Ed.&H.D.), Master of Arts in Teaching (M.A.T.), Master of Education (M.Ed.), Education Specialist (Ed.S.), Doctor of Education (Ed.D.), and Doctor of Philosophy (Ph.D.)

School of Business: Bachelor of Accountancy (B.Accy.), Bachelor of Business Administration (B.B.A.), Bachelor of Science (B.S.), Master of Accountancy (M.Accy.), Master of

Business Administration (M.B.A.), Master of Science in Business Analytics (M.S.B.A.), Master of Science in Finance (M.S.F.), Master of Science in Government Contracts (M.S.G.C.), Master of Science in Information Systems Technology (M.S.I.S.T.), Master of Science in Project Management (M.S.P.M.), Master of Tourism Administration (M.T.A.), and Doctor of Philosophy (Ph.D.)

Elliott School of International Affairs: Bachelor of Arts (B.A.), Master of Arts (M.A.), Master of International Policy and Practice (M.I.P.P.), and Master of International Studies (M.I.S.)

Milken Institute School of Public Health: Bachelor of Science (B.S.), Master of Science (M.S.), Master of Public Health (M.P.H.), Master of Health Administration (M.H.A.), Doctor of Public Health (Dr.P.H.), and Doctor of Philosophy (Ph.D.)

College of Professional Studies: Associate in Professional Studies (A.P.S.), Bachelor of Professional Studies (B.P.S.), and Master of Professional Studies (M.P.S.)

School of Nursing: Bachelor of Science in Nursing (B.S.N.), Master of Science in Nursing (M.S.N.), Doctor of Nursing Practice (D.N.P.)

UNIVERSITY REGULATIONS

Students enrolled in the University are required to conform to the following regulations and to comply with the requirements and regulations of the school in which they are registered. Students who withdraw or are suspended, or who, for any other reason, are not registered at the University for one semester or more, may reapply and, if readmitted, continue their program only under the regulations and requirements in force at the time of return.

If a student knowingly makes a false statement or conceals material information on an application for admission or any other University document, the student's registration may be canceled. If such falsification is discovered after the student has matriculated at the University, the student may be subject to dismissal from the University. Such a student will be ineligible (except by special action of the faculty) for subsequent registration in the University.

Undergraduate

- Registration (p. 21)
- Eligibility for Registration (p. 21)
- Completion of Registration (p. 22)
- Registration for Consortium Courses (p. 22)
- Adding and Dropping Courses (p. 22)
- Changes in Programs of Study (p. 22)
- Grades (p. 23)
- Undergraduate Grading System (p. 23)
- Incompletes (p. 23)
- The Grade-Point Average (p. 23)
- Undergraduate Degree Requirements (p. 23)
- University General Education Requirement (p. 23)
- Residence Requirement (p. 24)
- Academic Workload and Student Status (p. 24)
- Academic Standing (p. 24)
- Dean's List (p. 24)
- Latin Honors (p. 24)
- Special Honors (p. 25)
- Double Majors (p. 25)
- Minors (p. 25)
- Double Degrees (p. 25)
- Study Abroad (p. 25)
- Continuous Enrollment Status (p. 26)
- Leave of Absence (p. 26)
- Policy Regarding Student Called to Active Military Duty (p. 26)
- Eligibility for Graduation (p. 26)
- Participation in the Commencement Ceremony (p. 26)
- Complete Withdrawal from the University (p. 26)
- Non-Degree Students (p. 27)
- University Policies and Definitions (p. 27)

Graduate (p. 29)

- Registration (p. 29)
- Eligibility for Registration (p. 29)
- Registration for Consortium Courses (p. 29)
- Adding and Dropping Courses (p. 30)
- Changes in Programs of Study (p. 30)
- Grades (p. 30)
- Graduate Student Grading System (p. 30)
- Incompletes (p. 30)
- The Grade-Point Average (p. 31)
- Eligibility for Graduation (p. 31)
- Participation in the Commencement Ceremony (p. 31)
- Graduate Thesis or Dissertation (p. 31)
- Academic Workload (p. 31)
- Study Abroad (p. 31)
- Continuous Enrollment Status (p. 31)
- Leave of Absence (p. 32)
- Policy Regarding Students Called to Active Military Duty (p. 32)
- Complete Withdrawal from the University (p. 32)
- Non-Degree Students (p. 32)
- University Policies and Definitions (p. 33)

Undergraduate

Registration

Information on registration procedures is stated on the Office of the Registrar's website (http://registrar.gwu.edu/how-register) and in the Schedule of Classes (http://my.gwu.edu/mod/pws), which is available in advance of each semester.

Registration in courses is open only to those persons formally admitted to the University by the appropriate admitting office and to continuing students in good standing. Students may not register concurrently in this University and another institution without the prior permission of the advising office of the school in which they are registered in this University. Registration is not complete until all financial obligations have been met. Individuals without a valid registration may not attend class or earn any course credit.

Eligibility for Registration

Registration for the following categories of on-campus students is held on the days of registration indicated on the Registrar's website (https://registrar.gwu.edu). A student who is suspended or whose record is encumbered for any reason is not eligible to register. Registration in a given course may be denied to non-degree students by the Office of Non-Degree Students (https://www.gwu.edu/non-degree) when space is needed for degree candidates.

New Student—Upon receipt of a letter of admission and payment of any required deposit, new students are eligible for registration on the stated days of registration. Registration for new freshmen is typically conducted on stated days as part of the Colonial Inauguration (http://ci.gwu.edu) orientation program.

Readmitted Student—A student previously registered in the University who was not registered for courses or continuous enrollment, or on an approved leave of absence, during the preceding semester must apply for and be granted readmission by the appropriate admitting office before being eligible for registration.

Continuing Student—A student registered on campus in the immediately preceding semester or the summer session preceding the fall semester is eligible to register assuming good standing and enrollment in a continuing program.

Completion of Registration

Registration is not complete until all financial obligations have been fulfilled. Students who do not fulfill their financial obligations in a timely manner may have their registration canceled and will not be permitted to attend class.

Registration for Consortium Courses

Degree students interested in taking courses at any of the other institutions in the Consortium of Universities of the Washington Metropolitan Area, Inc. (http://www.consortium.org/consortium), should consult the program announcements of the other institutions. In order to participate in the Consortium program, students must obtain the approval of an advisor and should ascertain from the department of the institution where the course is taught whether they are eligible for the course and whether there is space in the class. Consortium registration forms and detailed information concerning Consortium policy and procedures are available on the Office of the Registrar's website (http://registrar.gwu.edu/consortium). Specific inquiries should be addressed to the Office of the Registrar.

Adding and Dropping Courses

During the registration period and before the end of the second week of classes, students may add or drop courses using the GWeb Information System. (http://my.gwu.edu)

During the third and fourth weeks of classes (after the second week and prior to the end of the fourth week), students may continue to drop courses using the GWeb Information System (http://my.gwu.edu); students who wish to add a course must complete a Registration Transaction Form-EZ (RTF-EZ (https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/RTF-EZ.pdf)) and submit it to the Office of the Registrar in Colonial Central. Adding a course after the second week of classes requires the signature of the instructor or other authorized member of the department. A course dropped during the first four weeks of classes will not appear on the student's transcript.

After the fourth week of classes, students who wish to add a course must complete a Registration Transaction Form (https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/reg_transaction_form.pdf) (RTF) and submit it to their advising office. Adding a course after the fourth week of classes continues to require the signature of the instructor or other authorized member of the department. A course from which a student withdraws after the fourth week but before the end of the tenth week will be assigned a notation of *W* (Authorized Withdrawal). The deadline for withdrawing from a course is the end of the tenth week of classes in the fall and spring semesters.

After the end of the tenth week of classes, students who wish to withdraw from any or all of their courses must submit a petition, along with substantial supporting documentation, to their advising office for consideration. Submission of a petition does not guarantee approval. Appropriate withdrawal forms are available online (http://registrar.gwu.edu/forms). Failure to withdraw by the stated deadlines can result in an extended financial obligation and the recording of a grade of *F* (Failure) or a notation of *Z* (Unauthorized Withdrawal).

Students should consult the Office of the Registrar's website (http://registrar.gwu.edu) for academic deadlines for the fall and spring semesters. Academic deadlines for courses that are not offered during the traditional fall and spring semesters can be found at the respective school's advising office.

All charges for courses that the student drops are subject to the refund policy listed under Fees and Financial Regulations in the Bulletin.

Changes in Program of Study

Changes Within a School—A student may not substitute one course for another within an established program of study or change status from credit to audit or from audit to credit without the approval of the advising office of the school in which he or she is registered. Change from one major field to another within the same school may be made with the approval of the advising office.

Undergraduate Transfer Within the University— Students are admitted to a home school at the time of their admission to the University. Those who wish to change their home school must submit an internal transfer request (https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/internal_transfer.pdf) to the Office of the Registrar. A university-wide graduation requirement is that students must be registered in the college/school in which their primary major is housed. Some schools may require that certain prerequisite courses have been taken and that minimum grades have been earned before the transfer is processed. Transfer into a college/school does not guarantee placement in a limited-enrollment major and students will be transferred into an undeclared major. Requests to transfer schools will not be accepted prior to the second semester of the student's enrollment at GW. Students should meet with an academic advisor in both their current college/

school and the college/school into which they are requesting to transfer prior to submitting an internal transfer request. Additional information, including deadlines, limited-enrollment majors, and prerequisites for internal transfers, is available on the Office of the Registrar's website (http://registrar.gwu.edu/undergraduate-internal-transfer).

Grades

Grades are made available to students through the Office of the Registrar (http://registrar.gwu.edu) after the close of each semester.

Undergraduate Grading System

The following grading system is used for undergraduate students: *A,* Excellent; *B,* Good; *C,* Satisfactory; *D,* Low Pass; *F,* Fail; other grades that may be assigned are *A−, B+, B−, C+, C−, D+,* and *D−*. Symbols that may appear include *AU,* Audit; *I,* Incomplete; *IPG,* In Progress; *W,* Authorized Withdrawal; *Z,* Unauthorized Withdrawal; and *R,* Need to Repeat Course.

Repeating Courses for Credit—For courses that do not specifically state that repetition for credit is permitted, an undergraduate student may, with permission of the instructor teaching the course in question, repeat for credit a course in which a grade of B- (2.75) or lower was received. The student must complete an RTF form (https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/reg_transaction_form.pdf) to register. Credit for the repeated course will not count toward degree requirements; the grade earned in the repeated course will, however, be included in the student's cumulative grade-point average.

Unauthorized Withdrawal —The symbol of *Z* is assigned when students are registered for a course that they have not attended or have attended only briefly, and in which they have done no graded work. The symbol of *Z* is not a grade but an administrative notation.

Incompletes

The symbol *I* (Incomplete) indicates that a satisfactory explanation has been given to the instructor for the student's inability to complete the required work of the course during the semester of enrollment. At the option of the instructor, the symbol *I* may be recorded if a student, for reasons beyond the student's control, is unable to complete the work of the course, and if the instructor is informed of, and approves, such reasons before the date when grades must be reported. This symbol may be used only if the student's prior performance and class attendance in the course have been satisfactory. Any failure to complete the work of a course that is not satisfactorily explained to the instructor before the date when grades must be turned in will be graded *F,* Failure. If acceptable reasons are later presented to the instructor, the instructor may initiate a grade change to the symbol *I.* The work must be completed within the designated time period agreed upon by the instructor, student, and school, but no more than one calendar year from the end of the semester in which the course was taken. All students who receive an Incomplete must maintain active student status during the subsequent semester(s) in which the work of the course is being completed. If not registered in other classes during this period, the student must register for continuous enrollment status.

When work for the course is completed, the instructor will complete a grade change form and submit it to the Office of the Registrar. Beginning with the fall 2014 semester, the final grade will replace the symbol of *I*. If work for the course is not completed within the designated time, the grade will be converted automatically to a grade of *F,* Failure, 0 quality points, and the grade-point average and academic standing recalculated.

Grade-Point Average

The following credit values are used in computing the undergraduate grade-point average: *A*, 4.0; *A−*, *3.7*; *B+*, 3.3; *B*, 3.0; *B−*, 2.7; *C+*, 2.3; *C*, 2.0; *C−*, 1.7; *D+*, 1.3; *D*, 1.0; *D−*, .7; *F*, 0. Quality points are computed based upon the credit value for each credit taken. Quality points divided by the number of credits for which the student has registered as a degree-seeking student equals the GPA. Both quality points and credits used in this calculation are based on the student's record in this university.

Although credit value for a course in which a grade of F is earned appears on the transcript for the purpose of calculating the grade-point average, no academic credit is awarded. In the case of a student who is allowed to repeat a course, the first grade received remains on the student's record and both the first grade and that received in the repeated course are included in calculating the grade-point average. Courses marked *AU*, *I*, *IPG*, *P*, *NP*, *R*, *W*, or *Z* are not considered in determining the GPA; however, once a final grade is recorded for a course originally marked I, the grade will be considered in that determination. With the exception of Consortium courses, grades in courses taken at other institutions are not considered in computing the grade-point average.

Undergraduate Degree Requirements

To earn a bachelor's degree, students must complete 120 academic credits; meet the University General Education Requirement; school-specific requirements of their home school and requirements of at least one major within their home school; fulfill the residence requirement; and have a cumulative grade point average of at least 2.0. Additional school-specific regulations may apply.

University General Education Requirement

Under the University General Education Requirement, undergraduate students are required to take 19 credits in approved courses in the areas of written communication, critical analysis in the humanities, critical analysis in the social sciences, quantitative reasoning, and scientific reasoning. The general education curriculum engages students in active intellectual inquiry across the liberal arts. Students achieve a set

of learning outcomes that meaningfully enhance their analytical skills, develop communication competencies, and familiarize them with modes of inquiry.

The distribution for the General Education Requirement is as follows: Written communication—one university writing course (UW 1020 or HONR 1015) and two writing-in-the-disciplines (WID) courses; critical analysis in the humanities—one course in the humanities; quantitative reasoning—one course in either mathematics or statistics; scientific reasoning—one natural or physical science course with laboratory; and critical analysis in the social sciences—two courses in the social sciences. The list of approved courses for each area can be found online (https://advising.columbian.gwu.edu/general-education-courses) and students should check the list before registering for classes. Students should address questions about this requirement to their advising office.

Residence Requirement

To earn a bachelor's degree, students must earn at least 60 credits at or through GW, which may include a University-authorized study abroad and study away program. At least 30 of the 60 credits earned at or through GW must be in upper-level courses (numbered 2000 or above); at least 12 credits in upper-level courses must be in the major field, and at least 6 credits in upper-level courses must be in the minor field, if sought.

Academic Workload and Student Status

For the purpose of defining student status, undergraduates taking 12 or more credits per semester are considered to be full-time, those taking 6 to 11 credits per semester are considered to be half-time, and all others are considered to be part-time. Generally, an undergraduate becomes a sophomore upon completion of 30 credits, a junior upon completion of 60 credits, and a senior upon completion of 90 credits.

A full-time undergraduate student on academic probation may register for up to 13 credits.

Undergraduates taking more than 17 credits per semester will be charged at the rate of 1 credit for each credit exceeding that limit. Undergraduates are not charged for an eighteenth credit if their program includes UW 1020, nor are those in the School of Engineering and Applied Science charged for the eighteenth and nineteenth credits if required by their program. Undergraduate students in the Corcoran School of the Arts and Design who entered before the 2015–16 academic year are not charged for an eighteenth credit. Corcoran undergraduate students who entered in or after the 2015–16 academic year are charged for an eighteenth credit.

Unless otherwise indicated under the program, all programs of study are offered on both a full-time and part-time basis. International students in F-1 or J-1 immigration status may pursue only full-time programs of study, and such students must register for and complete a full course load each semester as defined by federal regulations.

Academic Standing

An undergraduate student who is not on academic probation or suspension for poor scholarship is considered to be in good academic standing.

Academic probation: Students are placed on probation if their semester or cumulative grade-point average is below 2.0 in any given semester.

Suspension for poor scholarship: Students will be subject to suspension if their semester grade-point average is below 1.0 in any given semester; they have two consecutive semesters of grade-point averages below 2.0; or they have three semesters of probationary status on their academic transcript.

Readmission after suspension for poor scholarship: A student suspended for poor scholarship may apply for readmission after at least one semester following the term of suspension and after having earned a minimum of 12 credits at an accredited institution of higher education. No credit will be assigned for academic work completed while the student is suspended. The student may petition their advising office to transfer in no more than 9 credits or three courses from other colleges or universities (see Earning Transfer Credit after Matriculation). A student suspended twice for poor scholarship will not be readmitted.

Dean's List

Undergraduate students who, in any one semester, earn 12 credits or more and attain a minimum semester grade point average of 3.75 in letter-graded course work, pass all non-graded credit courses, and do not have any Unauthorized Withdrawals (*Z*) or Incompletes (*I*), are placed on the Dean's List for that semester.

Latin Honors

Bachelor's degrees with honors are awarded to students whose academic records give evidence of particular merit. The student's grade-point average determines the level of honors as follows: *cum laude*, 3.4–3.59; *magna cum laude*, 3.6–3.79; *summa cum laude*, 3.8–4.0. The grade-point average includes all course work completed at GW. To be eligible for an honors designation, a student must complete at least 60 credits of course work with letter grades (grades included in calculating the grade-point average) at GW.

The grade-point average is calculated by the Office of the Registrar, and the honors designation is entered on the transcript and diploma of those students who earn an honors designation. If Latin honors are entered in the commencement program, honors status will be determined on the basis of work completed by the end of the seventh term and entered only for those students who have completed seven-eighths of the credits required for the degree. Latin honors indicated on the diploma are calculated on the basis of all course

work completed. The diploma and transcript are the official indication that a degree was conferred and Latin honors awarded.

Special Honors

Special Honors may be awarded by the faculty to any undergraduate member of the graduating class for outstanding achievement in the student's major field on recommendation of the major department. The student must fulfill all of the following requirements: (1) Candidacy for Special Honors must be approved by the faculty member representing the major department or field no later than the beginning of the senior year; (2) such other conditions as may be set at the time the candidacy is approved must be met; (3) at least one-half of the courses required for the degree must have been completed at GW; and, (4) the specific minimum requirement of the school in which the student is registered must be fulfilled as follows: (a) Columbian College of Arts and Sciences—a minimum grade-point average of 3.0 on all course work taken at GW; (b) the Elliott School of International Affairs—a minimum grade-point average of 3.7 on all course work taken at GW; (c) the Milken Institute School of Public Health—a minimum grade-point average of 3.25 on all course work taken at GW. Special Honors awards appear on the transcript.

Double Majors

Undergraduates can declare no more than two majors; they can pursue minors in addition to the two majors if they wish, but generally are advised against pursuing too many specializations.

Students who graduate with the requisite credits for one degree, having fulfilled the major requirements in more than one department, program, and/or school, will receive one degree. They must select a primary degree and major, as only the primary degree will be noted on the transcript and diploma, along with the two majors.

Students who complete the major requirements in their home school and the major requirements in a second school will receive the degree in the major of their home school and a notation on the transcript and diploma that testifies to completion of requirements for a secondary major. It is understood that requirements of the secondary major do not include the general education requirements of the second school.

Students who complete the major requirements for a degree different from the one they will receive in their home school will receive the degree of the relevant major in their home school. For example, a SEAS student completing the degree requirements for a B.S. in computer science and the major requirements for a B.A. in fine arts will receive a B.S. in computer science with a secondary major in fine arts.

Students who complete two majors in the same school also receive one degree with two majors; if one major leads to a B.A. and one to a B.S., the student must declare a primary major and will receive the degree associated with that major.

Students whose first major leads to a B.S. degree must complete the B.S. curriculum for a second major if the second major offers both a B.A. and B.S. curriculum. For example, students whose primary degree and major is a B.S. in finance who want a second major in economics, chemistry, biology, or computer science, must complete the B.S. curriculum for these majors.

Minors

Students may not declare a minor in the same subject in which they have declared a major. Students should address specific questions about this policy to the school's advising office.

Double Degrees

To earn two bachelor's degrees at the same time, students must be admitted to the college or school that offers the second degree; satisfy the general and major requirements for both degrees; complete at least 30 additional credits beyond the credits required to earn one degree or a total of 150 credits; and earn 90 credits in residence at GW. Students interested in pursuing this option must have a cumulative grade-point average of at least 3.3. Requests for consideration should be sent to the student's advising office.

Study Abroad

Undergraduates who wish to study abroad during the academic year should contact the Office for Study Abroad (https://studyabroad.gwu.edu) concerning eligibility, procedures, and requirements for participation. Semester and Academic Year participants are billed GW tuition and a study abroad program fee rather than the tuition and fees indicated by the visited school or program. To be eligible for the transfer of academic credit from study abroad, GW students must select a program from the University's authorized list of study abroad programs and enroll in a full-time equivalent course load while abroad. Students must have a 2.75 cumulative grade-point average at the time of application and must have completed 45 credits prior to departure. Students who have a significant disciplinary history or who are on academic or disciplinary probation at the time of their planned study abroad are not eligible to participate. Non-GW course credits earned in authorized programs with a grade of C or above are transferable toward the appropriate degree at GW, provided there is no duplication of previous coursework and and the designated faculty determines a GW equivalent for each course. Participants agree to abide by all procedures and regulations for study abroad as indicated in the Study Abroad Handbook and Participation Agreement, which are included in the GW Passport application (http://passport.gwu.edu/index.cfm?FuseAction=programs.AdvancedSearch). In addition to semester and academic year programs, study abroad is available at varying locations during the summer.

Graduate students who wish to study abroad should consult their program's advising office.

Continuous Enrollment Status

Once entered in a degree program, a student is expected to be continuously enrolled and actively engaged in fulfilling the requirements for the degree each semester of the academic year until such time as the degree is conferred. A student is considered to be continuously enrolled when registered for courses through GW or when registered for continuous enrollment and engaged in and appropriately registered for activities such as the following, with the prior approval of the school in which the student is enrolled: cooperative work semester; study abroad program; attendance at another institution with prior approval to have work transferred back to the GW program; completion of outstanding work in courses in which a grade of Incomplete or In Progress was received; or non-course instructional activities unique to the particular school. This status is generally limited to one year. Should the student break continuous enrollment at the University and not request and be granted a leave of absence (see below), he or she must apply for readmission and, if granted, be subject to the requirements and regulations then in force.

Leave of Absence

A degree student who finds it necessary to interrupt active pursuit of the degree may petition his or her advising office for a leave of absence for a specific period of time, generally limited to one calendar year. A degree student who discontinues active enrollment in degree studies without being granted a leave of absence, or a student granted a leave who does not return to active study at the close of the period of approved absence, must apply for readmission and be subject to the regulations and requirements then in force. The right to the use of University facilities is suspended while the leave is in effect.

Policy Regarding Students Called to Active Military Duty

Any student who is a member of a military reserve unit or the National Guard and is activated or called to active duty early in a semester or summer session automatically will be entitled to a full refund of all tuition and fees that he or she has paid toward the expenses of that academic term. If the notification of the call to active duty comes after the mid-term examinations or after other substantial graded work has been completed, the student will have the option of either taking a full refund of tuition and fees or taking an Incomplete in his or her courses with the privilege of returning to complete all required course work at some future date without payment of any further tuition and fee charges. It is the responsibility of the student to present evidence of his or her activation to the Office of Student Accounts (http://studentaccounts.gwu.edu) and to request the appropriate refund.

Should a degree student called up for active duty find it necessary to interrupt active pursuit of the degree, the student may petition their academic advising office for a leave of absence for a specified period of time, generally limited to one calendar year. Academic advisors are encouraged to grant any request to extend the leave of absence for longer than the customary period should military service require an absence of more than one year. All students on active duty will be automatically exempted from the request for a voluntary library contribution without requiring any communication from them or their initials on the bill.

Eligibility for Graduation

Degrees are conferred in January, May, and August. To be eligible for graduation a student must have met the admission requirements of the school in which registered; completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree as stated in this bulletin; filed an application for graduation by the published deadline date; and be free from all indebtedness to the University. Enrollment is required for the semester or summer session at the close of which the degree is to be conferred and all degree requirements must be completed by the last day of final examinations for that semester or summer session. Undergraduates who pursue a double major across two schools must complete the primary major in their home school in order to graduate. A second major may supplement the primary major but may not substitute for it.

The minimum cumulative grade-point average required for graduation is 2.0 for undergraduate students.

Participation in the Commencement Ceremony

Participation in the annual commencement ceremony held in May is open to students who have applied to graduate in the current spring semester or who graduated the preceding fall semester or summer session. With the exception of doctoral candidates, all students, graduate or undergraduate, who need no more than 9 credits to complete their degree requirements, may participate in May commencement ceremonies if there is a reasonable expectation that they will be able to obtain the needed credits during the following summer. The maximum of 9 credit is firm and not subject to petition.

Complete Withdrawal from the University

A degree-seeking student who wishes to withdraw from all courses during a given semester must complete a Complete Withdrawal Form (https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/completewithdrawal.pdf) and submit it to the Office of the Registrar (http://registrar.gwu.edu). Forms are available on line, at advising offices, and in the Office of the Registrar. The deadline for complete withdrawal from all courses without academic penalty is the end of the tenth week of classes. Complete withdrawal after the tenth week requires a petition to the student's advising office.

All charges for courses from which the student withdraws are subject to the refund policy found at the Registrar's Office

website. Failure to complete a Complete Withdrawal Form (https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/completewithdrawal.pdf) can result in an extended financial obligation and the recording of grades of *F* (Failure) or notations of *Z* (Unauthorized Withdrawal).

The University is authorized to award the degree of associate in general studies under designated circumstances. This degree may be awarded to students in good standing who must leave GW after completing 60 credits in residence in a degree-granting GW school; students should consult their school's advising office about additional requirements for awarding of the associate in general studies.

Non-Degree Students

The Office of Non-Degree Students (http://www.gwu.edu/non-degree) makes credit-bearing courses available to those who are not degree candidates at GW and to students who have been admitted to the University for a future semester. Non-degree students are allowed a maximum per semester of 18 credits at the undergraduate level, except in special circumstances as approved by the director. Medical and law courses are not available to non-degree students. Special program credit limits may vary.

Non-degree applicants must have appropriate academic preparation prior to enrollment. Prerequisites are specified in this Bulletin in the course description. Contact the department concerned for further information regarding appropriate academic background for a particular course. An applicant who has previously attended this or another college or university must be in good standing at that institution. An applicant who has been suspended from any educational institution will not be eligible to enroll as a non-degree student for one calendar year after the effective date of the suspension. An applicant who has been denied admission within this university will not be eligible to enroll as a non-degree student for the same semester for which the application was denied. Applications and information on registration are available from the Office of Non-Degree Students (https://www.gwu.edu/non-degree). Prospective and registered students should acquaint themselves with the regulations concerning attendance and withdrawal stated in this section or at www.gwu.edu/non-degree (http://www.gwu.edu/non-degree). If a non-degree student takes a course for which the symbol *I* (Incomplete) is assigned, the instructor normally sets a period (maximum of one year) within which the uncompleted work must be made up. An Incomplete that is not changed within one calendar year becomes a grade of *F* on the student's record.

University Policies and Definitions

Right to Change Rules and Programs—The University reserves the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine. The right is reserved by the University to make changes in programs without notice whenever circumstances warrant such changes.

University Policy on Equal Opportunity—The George Washington University does not unlawfully discriminate against any person on any basis prohibited by federal law, the District of Columbia Human Rights Act, or other applicable law, including without limitation, race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, or gender identity or expression. This policy covers all programs, services, policies, and procedures of the University, including admission to education programs and employment.

Inquiries concerning this policy and federal and local laws and regulations concerning discrimination in education and employment programs and activities may be directed to the University's Office of Equal Employment Opportunity and Affirmative Action (http://hr.gwu.edu/equal-employment-opportunity) at (202) 994-9656. Inquiries may also be directed to the U.S. Department of Education Office for Civil Rights, the U.S. Equal Employment Opportunity Commission, or the applicable state or local agency (for example, the District of Columbia Office of Human Rights).

Questions regarding protections against discrimination on the basis of sex may be directed to the University's Title IX Coordinator, the Vice Provost for Diversity, Equity, and Community Engagement at (http://diversity.gwu.edu) (202) 994-7440.

Questions regarding the protections against discrimination on the basis of disability may be directed to the University's Disability Services Coordinators (http://gwired.gwu.edu/dss). Students may contact the Associate Dean of Students, Administrative Services, Office of the Dean of Students at (202) 994-6710; and other members of the University community may contact the Office of Equal Employment Opportunity and Affirmative Action at (202) 994-9633.

To request disability accommodations, students should contact the Office of Disability Support Services at (202) 994-8250 or dss@gwu.edu. Employees and other members of the University community should contact the Office of Equal Employment Opportunity and Affirmative Action at (202) 994-9656 or eeo@gwu.edu.

Academic Integrity—The University community, in order to fulfill its purposes, must establish and maintain guidelines of academic behavior. All members of the community are expected to exhibit honesty and competence in their academic work. Incoming students have a special responsibility to acquaint themselves with, and make use of, all proper procedures for conducting research, writing papers, and taking examinations. Members of the community will be presumed to be familiar with the proper academic procedures and held responsible for applying them. Deliberate failure to act in accordance with such procedures will be considered academic dishonesty. Acts of academic dishonesty are a legal, moral, and intellectual offense against the community and will be prosecuted through the proper University channels. The University Code of Academic Integrity (https://

studentconduct.gwu.edu/sites/studentconduct.gwu.edu/files/downloads/160912%20Code%20of%20Academic%20Integrity%20-%20Final.pdf) can be found at the Office of Academic Integrity (http://studentconduct.gwu.edu) at (202) 994-1977.

Patent and Copyright Policies—Students who produce creative works or make scientific discoveries while employed or supported by the University or through substantial use of University resources are subject to the University's patent and copyright policies. See The Office of the Vice President for Research (http://research.gwu.edu).

Human Research Requirements—Students who are planning to conduct research involving the use of human subjects (for a thesis, dissertation, journal article, poster session, etc.) must obtain Institutional Review Board (IRB) (http://humanresearch.gwu.edu/institutional-review-board-process) approval before collecting any data. For more information see The Office of the Vice President for Research (http://research.gwu.edu).

English for Academic Purposes—Undergraduate international students whose TOEFL, IELTS, or PTE scores fall below established cut-off points are required to take one or more courses in the English for Academic Purposes (EAP) program. Undergraduate students receive credit for EAP courses. For detailed information concerning this requirement consult the English for Academic Purposes Program website (http://eap.columbian.gwu.edu/placement-eap-courses).

Name of Record—A student's name of record includes the first name, middle initial or full middle name, and the family name. Nicknames may not be used. The University will change the name of a currently enrolled student on its official records but will require satisfactory evidence of a legal basis for the change. The diploma is awarded under the official name of record at the time of graduation.

Attendance—Students may attend only those classes for which they are officially registered. Regular attendance is expected. Students may be dropped from any course for undue absence. A student suspended for any cause may not attend classes during the period of suspension. Students are held responsible for all of the work of the courses in which they are registered, and all absences must be excused by the instructor before provision is made to make up the work missed.

Credit—A credit hour may be defined as one 50-minute class period, one laboratory period, or 1.5 hours of studio class a week for one semester. Credit is given only after completion of registration in a course and satisfactory completion of the required work, or upon the assignment of advanced standing in accordance with the regulations of the school concerned. Credit that has been applied to the completion of a degree may not subsequently be applied to another degree.

Auditing—A person who has been admitted to the University may be registered, with the permission of the instructor, as an auditor in a class (no academic credit). An auditor is not required to take active part or to pass examinations. A student who takes a course as an auditor may not repeat it later for credit. Tuition is charged at the prevailing rate. A student may not change from audit to credit status or vice versa after the end of the eighth week of classes.

Earning Transfer Credit after Matriculation—All students who plan to attend another institution while enrolled at GW and apply credits earned at that institution toward GW degree requirements must complete an Undergraduate Transfer Credit Approval Form (https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/transfercredit.pdf) and secure the written approval from the GW department that offers a comparable course and from the student's advising office. With the exception of credits earned from GW study abroad and study away programs, no more than 9 credits or three courses may be transferred from colleges or universities after matriculation.

Transcripts of Record—Official transcripts of student records are issued upon written request of the student or former student who has paid all charges, including any student loan installments, due the University at the time of the request. A nominal fee is charged for each official transcript. Unofficial copies of transcripts are available to students, by written request, at a nominal fee. Partial transcripts are not issued. Students have access to their unofficial student record through the GWeb Information System (https://banweb.gwu.edu/PRODCartridge/twbkwbis.P_WWWLogin).

Student Conduct—All students, upon enrolling and while attending this University, are subject to the provisions of the *Guide to Student Rights and Responsibilities,* which outlines student freedoms and responsibilities of conduct, including the Code of Student Conduct (http://studentconduct.gwu.edu/code-student-conduct), and other policies and regulations as adopted and promulgated by appropriate University authorities. Copies of these documents may be obtained from the Office of the Dean of Student Affairs (http://students.gwu.edu) or from advising offices. Sanctions for violation of these regulations may include permanent expulsion from the University. Regulations or requirements applicable only to a particular program, facility, or class of students may not be published generally, but such regulations or requirements shall be published in a manner reasonably calculated to inform affected students.

Right to Dismiss Students—The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable.

University Policy on the Release of Student Information—The Family Educational Rights and Privacy Act (FERPA) (http://registrar.gwu.edu/university-policies/#ferpa) applies to institutional policies governing access to and release of student education records.

The University may release the following directory information upon request: name, local address including e-mail, and telephone number; name and address of emergency contact; dates of attendance; school of enrollment; field of study; enrollment status; credits earned; degrees earned; honors received; participation in University-recognized organizations and activities (including intercollegiate athletics); and height, weight, and age of members of athletic teams, as well as likenesses used in University publications. Date of birth will be considered directory information only for the purpose of complying with applicable laws. A student who does not wish such directory information released must file written notice to this effect in the Office of the Registrar (http://registrar.gwu.edu).

The University's full policy statement on the release of student information is published in the *Guide to Student Rights and Responsibilities*, available in the Office of the Dean of Student Affairs or the offices of the academic deans. The full statement also appears on the Office of the Registrar's website.

Student Identification Number/Social Security Number—The University has converted from use of the Social Security Number (SSN) to identify records pertaining to individual students, although the SSN is still needed to identify the student for purposes of financial aid eligibility and disbursement and repayment of financial aid and other debts payable to the University. The SSN is required when applying for financial aid. The Internal Revenue Service requires the University to file information that includes a student's SSN and other information such as the amount paid for qualified tuition, related expenses, and interest on educational loans. This information is used to help determine whether a student, or a person claiming a student as a dependent, may take credit or deduction to reduce federal and/or state income taxes. Many efforts are made to protect the privacy of this number, and a student may request an alternate personal identifier. Further information may be obtained by contacting the Office of the Registrar.

Property Responsibility—The University is not responsible for the loss of personal property. A Lost and Found Office is maintained on campus in the University Police Department (http://police.gwu.edu).

Graduate

Students enrolled in the University are required to conform to the following regulations and to comply with the requirements and regulations of the school in which they are registered. Students who withdraw or are suspended, or who, for any other reason, are not registered at the University for one semester or more, may reapply and, if readmitted, continue their program only under the regulations and requirements in force at the time of return.

If a student knowingly makes a false statement or conceals material information on an application for admission or any other University document, the student's registration may be canceled. If such falsification is discovered after the student has matriculated at the University, the student may be subject to dismissal from the University. Such a student will be ineligible (except by special action of the faculty) for subsequent registration in the University.

Registration

Information on registration procedures is stated on the Office of the Registrar's website (http://registrar.gwu.edu/how-register) and in the Schedule of Classes (http://my.gwu.edu/mod/pws), which is available in advance of each semester.

Registration in courses is open only to those persons formally admitted to the University by the appropriate admitting office and to continuing students in good standing. Students may not register concurrently in this University and another institution without the prior permission of the advising office of the school in which they are registered in this University. Registration is not complete until all financial obligations have been met. Individuals without a valid registration may not attend class or earn any course credit.

Eligibility for Registration

Registration for the following categories of on-campus students is held on the days of registration indicated in the Schedule of Classes (http://my.gwu.edu/mod/pws). A student who is suspended or whose record is encumbered for any reason is not eligible to register. Registration in a given course may be denied to non-degree students by the Office of Non-Degree Students (http://www.gwu.edu/non-degree) when space is needed for degree candidates.

New Student—Upon receipt of a letter of admission and payment of any required deposit, new students are eligible for registration on the stated days of registration.

Readmitted Student—A student previously registered in the University who was not registered during the preceding semester must apply for and be granted readmission by the appropriate admitting office before being eligible for registration.

Continuing Student—A student registered on campus in the immediately preceding semester or the summer session preceding the fall semester is eligible to register assuming good standing and enrollment in a continuing program.

Registration for Consortium Courses

Degree students interested in taking courses at any of the other institutions in the Consortium of Universities of the Washington Metropolitan Area, Inc. (http://www.consortium.org/consortium) should consult the program announcements of the other institutions. In order to participate in the Consortium program, students must obtain the approval of an advisor and should ascertain from the department of the institution where the course is taught whether they are eligible for the course and whether there is space in the class. Consortium

registration forms and detailed information concerning Consortium policy and procedures are available on the Office of the Registrar's website (http://registrar.gwu.edu/consortium). Specific inquiries should be addressed to the Office of the Registrar.

Adding and Dropping Courses

During the registration period and before the end of the second week of classes, students may add or drop courses using the GWeb Information System. (http://my.gwu.edu)

During the third and fourth weeks of classes (after the second week and prior to the end of the fourth week), students may continue to drop courses using the GWeb Information System (http://my.gwu.edu); students who wish to add a course must complete a Registration Transaction Form-EZ (RTF-EZ (https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/RTF-EZ.pdf)) and submit it to the Office of the Registrar in Colonial Central. Adding a course after the second week of classes requires the signature of the instructor or other authorized member of the department. A course dropped during the first four weeks of classes will not appear on the student's transcript.

After the fourth week of classes, students who wish to add a course must complete a Registration Transaction Form (https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/reg_transaction_form.pdf) (RTF) and submit it to their advising office. Adding a course after the fourth week of classes continues to require the signature of the instructor or other authorized member of the department. A course from which a student withdraws after the fourth week but before the end of the tenth week will be assigned a notation of *W* (Authorized Withdrawal). The deadline for withdrawing from a course is the end of the tenth week of classes in the fall and spring semesters.

After the end of the tenth week of classes, students who wish to withdraw from any or all of their courses must submit a petition, along with substantial supporting documentation, to their advising office for consideration. Submission of a petition does not guarantee approval. Appropriate withdrawal forms are available online (http://registrar.gwu.edu/forms). Failure to withdraw by the stated deadlines can result in an extended financial obligation and the recording of a grade of *F* (Failure) or a notation of *Z* (Unauthorized Withdrawal).

Students should consult the Office of the Registrar's website (http://registrar.gwu.edu) for academic deadlines for the fall and spring semesters. Academic deadlines for courses that are not offered during the traditional fall and spring semesters can be found at the respective school's advising office.

All charges for courses that the student drops are subject to the refund policy listed under Fees and Financial Regulations in this Bulletin.

Changes in Program of Study

Changes Within a School—A student may not substitute one course for another within an established program of study or change status from credit to audit or from audit to credit without the approval of the advising office of the school in which he or she is registered. Change from one major field to another within the same school may be made with the approval of the advising office.

Graduate Transfer Within the University—Application for transfer to another school must be made to the appropriate admitting office on the form provided by the office concerned.

Grades

Grades are made available to students through the Office of the Registrar (http://registrar.gwu.edu) after the close of each semester.

Graduate Student Grading System

The following grading system is used for graduate Students: *A,* Excellent; *B,* Good; *C,* Satisfactory; *F,* Fail; other grades that may be assigned are *A−, B+, B−, C+, C−*. Symbols that may appear include *AU,* Audit; *I,* Incomplete; *IPG,* In Progress; *W,* Authorized Withdrawal; *Z,* Unauthorized Withdrawal; *CR,* Credit; *NC,* No Credit.

Unauthorized Withdrawal —The symbol of *Z* is assigned when students are registered for a course that they have not attended or have attended only briefly, and in which they have done no graded work. The symbol of *Z* is not a grade but an administrative notation.

Except for courses that specifically state that repetition for credit is permitted, a candidate for a degree at this University may not repeat a course in which a grade of *C−* or better was received, unless required to do so by the department concerned. A written statement, indicating that the student is required to repeat the course, must be submitted to the student's advising office by the appropriate department chair.

Incompletes

The symbol *I* (Incomplete) indicates that a satisfactory explanation has been given to the instructor for the student's inability to complete the required work of the course during the semester of enrollment. At the option of the instructor, the symbol *I* may be recorded if a student, for reasons beyond the student's control, is unable to complete the work of the course, and if the instructor is informed of, and approves, such reasons before the date when grades must be reported. This symbol may be used only if the student's prior performance and class attendance in the course have been satisfactory. Any failure to complete the work of a course that is not satisfactorily explained to the instructor before the date when grades must be turned in will be graded *F,* Failure. If acceptable reasons are later presented to the instructor, that instructor may initiate an appropriate grade change, which in all cases will include the symbol *I.* The work must be completed within the designated

time period agreed upon by the instructor, student, and school, but no more than one calendar year from the end of the semester in which the course was taken. All students who receive an Incomplete must maintain active student status during the subsequent semester(s) in which the work of the course is being completed. If not registered in other classes during this period, the student must register for continuous enrollment status.

When work for the course is completed, the instructor will complete a grade change form and turn it in to the Office of the Registrar. Beginning with the fall 2014 semester, the final grade will replace the symbol of *I*. If work for the course is not completed within the designated time, the grade will be converted automatically to a grade of *F,* Failure, 0 quality points, and the grade-point average and academic standing recalculated.

The Grade-Point Average

The following credit values are used in computing the graduate grade-point average: *A,* 4.0; *A–,* 3.7; *B+,* 3.3; *B,* 3.0; *B–,* 2.7; *C+,* 2.3; *C,* 2.0; *C–,* 1.7; and *F,* 0. Quality points are computed based on the credit value for each credit taken. Quality points divided by the number of credits for which the student has registered as a degree-seeking student equals the GPA. Both quality points and credits used in this calculation are based on the student's record in this university.

Although credit value for a course in which a grade of *F* is earned appears on the transcript for the purpose of calculating the grade-point average, no academic credit is awarded. In the case of a student who is allowed to repeat a course, the first grade received remains on the student's record and is included in the grade-point average. Courses marked *AU, CR/NC, I, IPG, W,* or *Z* are not considered in determining the average; however, once a final grade is recorded for a course originally marked I, the grade will be considered in that determination. With the exception of Consortium courses, grades in courses taken at other institutions are not considered in computing the grade-point average.

Eligibility for Graduation

Degrees are conferred in January, May, and August. To be eligible for graduation a student must have met the admission requirements of the school in which registered; completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree as stated in this bulletin; filed an application for graduation by the published deadline date; and be free from all indebtedness to the University. Enrollment is required for the semester or summer at the close of which the degree is to be conferred, and all degree requirements must be completed by the last day of final examinations for that semester or summer session.

The minimum cumulative grade-point average required for graduation is 3.0 for graduate students.

Columbian College of Arts and Sciences (CCAS) graduate students—For the purpose of graduation from the University, CCAS graduate students must maintain a minimum cumulative grade-point average of 3.0 in coursework counting toward the degree program.

Participation in the Commencement Ceremony

Participation in the annual commencement ceremony held in May is open to students who have applied to graduate in the current spring semester or who graduated the preceding fall semester or summer session. With the exception of doctoral candidates, all graduate students who need no more than 9 credit to complete their degree requirements, may participate in May commencement ceremonies if there is a reasonable expectation that they will be able to obtain the needed credits during the following summer. The maximum of 9 credits is firm and not subject to petition.

Graduate Thesis or Dissertation

Graduate students whose program includes a thesis or dissertation must meet the following Electronic Theses and Dissertations (ETD) deadlines for graduation in the respective semesters: for theses, May 15 for spring, January 15 for fall, and August 15 for summer; for dissertations, April 1 for spring, January 15 for fall, and August 15 for summer.

Doctoral candidates who have not successfully defended their dissertation and met the ETD deadline may not participate in either the May commencement or hooding ceremony.

Students who apply after the published deadlines are not guaranteed commencement materials. Summer graduates who elect to attend the preceding May ceremony must apply for graduation no later than February 1.

Graduate Thesis or Dissertation—A thesis or dissertation submitted in partial fulfillment of requirements for a degree must be presented in its final form by the deadline set by the school concerned. Accepted theses and dissertations, with accompanying files, become the property of the University. Accepted theses and dissertations are submitted electronically; the student pays a processing fee directly to Proquest/UMI. See the appropriate school in this Bulletin for regulations governing theses and dissertations.

Academic Workload

Graduate students should consult with their program's advising office to determine an academic workload that meets the requirements for their degree program.

Study Abroad

Graduate students who wish to study abroad should consult their program's advising office.

Continuous Enrollment Status

Once entered in a degree program, a student is expected to be continuously enrolled and actively engaged in fulfilling the requirements for the degree each semester of the academic

year until such time as the degree is conferred. A student is considered to be continuously enrolled when registered for courses through GW or when registered for continuous enrollment and engaged in and appropriately registered for activities such as the following, with the prior approval of the school in which the student is enrolled: cooperative work semester; study abroad program; attendance at another institution with prior approval to have work transferred back to the GW program; completion of outstanding work in courses in which a grade of Incomplete or In Progress was received; or non-course instructional activities unique to the particular school. This status is generally limited to one year. Should the student break continuous enrollment at the University and not request and be granted a leave of absence (see below), he or she must apply for readmission and, if granted, be subject to the requirements and regulations then in force.

Leave of Absence

A degree student who finds it necessary to interrupt active pursuit of the degree may petition his or her advising office for a leave of absence for a specific period of time, generally limited to one calendar year. A degree student who discontinues active enrollment in degree studies without being granted a leave of absence, or a student granted a leave who does not return to active study at the close of the period of approved absence, must apply for readmission and be subject to the regulations and requirements then in force. The right to use of University facilities is suspended while the leave is in effect.

Policy Regarding Students Called to Active Military Duty

Any student who is a member of a military reserve unit or the National Guard and is activated or called to active duty early in a semester or summer session automatically will be entitled to a full refund of all tuition and fees that he or she has paid toward the expenses of that academic term. If the notification of the call to active duty comes after the mid-term examinations or after other substantial graded work has been completed, the student will have the option of either taking a full refund of tuition and fees or taking an Incomplete in his or her courses with the privilege of returning to complete all required course work at some future date without payment of any further tuition and fee charges. It is the responsibility of the student to present evidence of his or her activation to the Office of Student Accounts (http://studentaccounts.gwu.edu) and to request the appropriate refund.

Should a degree student called up for active duty find it necessary to interrupt active pursuit of the degree, the student may petition their advising office for a leave of absence for a specified period of time, generally limited to one calendar year. Student advisors are encouraged to grant any request to extend the leave of absence for longer than the customary period should military service require an absence of more than one year. All students on active duty will be automatically exempted from the request for a voluntary library contribution without requiring any communication from them or their initials on the bill.

Complete Withdrawal from the University

A degree-seeking student who wishes to withdraw from all courses during a given semester must complete a Complete Withdrawal Form (https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/completewithdrawal.pdf) and submit it to the Office of the Registrar (http://registrar.gwu.edu). Forms are available on line, at advising offices, and in the Office of the Registrar. The deadline for complete withdrawal from all courses without academic penalty is the end of the tenth week of classes. Complete withdrawal after the tenth week requires a petition to the student's advising office.

All charges for courses from which the student withdraws are subject to the refund policy found at the Registrar's Office website. Failure to complete a Complete Withdrawal Form (https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/completewithdrawal.pdf) can result in an extended financial obligation and the recording of grades of *F* (Failure) or notations of *Z* (Unauthorized Withdrawal).

Non-Degree Students

The Office of Non-Degree Students (http://www.gwu.edu/non-degree) makes credit-bearing courses available to those who are not degree candidates at GW and to students who have been admitted to the University for a future semester. Non-degree students are allowed a maximum per semester of 12 credits at the graduate level, except in special circumstances as approved by the director. Medical and law courses are not available to non-degree students. Special program credit limits may vary.

Non-degree applicants must have appropriate academic preparation prior to enrollment. Prerequisites are specified in this Bulletin in the course description. Contact the department concerned for further information regarding appropriate academic background for a particular course. An applicant who has previously attended this or another college or university must be in good standing at that institution. An applicant who has been suspended from any educational institution will not be eligible to enroll as a non-degree student for one calendar year after the effective date of the suspension. An applicant who has been denied admission within this university will not be eligible to enroll as a non-degree student for the same semester for which the application was denied. Applications and information on registration are available online (http://www.gwu.edu/non-degree). Prospective and registered students should acquaint themselves with the regulations concerning attendance and withdrawal stated in this section or at www.gwu.edu/non-degree (http://www.gwu.edu/non-degree). If a non-degree student takes a course for which the symbol *I* (Incomplete) is assigned, the instructor normally sets a period (maximum of one year) within which the uncompleted work must be made up. An Incomplete that is not changed

within one calendar year becomes a grade of *F* on the student's record.

University Policies and Definitions

Right to Change Rules and Programs—The University reserves the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine. The right is reserved by the University to make changes in programs without notice whenever circumstances warrant such changes.

University Policy on Equal Opportunity—The George Washington University does not unlawfully discriminate against any person on any basis prohibited by federal law, the District of Columbia Human Rights Act, or other applicable law, including without limitation, race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, or gender identity or expression. This policy covers all programs, services, policies, and procedures of the University, including admission to education programs and employment.

Inquiries concerning this policy and federal and local laws and regulations concerning discrimination in education and employment programs and activities may be directed to the University's Office of Equal Employment Opportunity and Affirmative Action (http://hr.gwu.edu/equal-employment-opportunity) at (202) 994-9656. Inquiries may also be directed to the U.S. Department of Education Office for Civil Rights, the U.S. Equal Employment Opportunity Commission, or the applicable state or local agency (for example, the District of Columbia Office of Human Rights).

Questions regarding protections against discrimination on the basis of sex may be directed to the University's Title IX Coordinator, the Vice Provost for Diversity, Equity, and Community Engagement at (http://diversity.gwu.edu) (202) 994-7440.

Questions regarding the protections against discrimination on the basis of disability may be directed to the University's Disability Services Coordinators (http://gwired.gwu.edu/dss). Students may contact the Associate Dean of Students, Administrative Services, Office of the Dean of Students at (202) 994-6710; and other members of the University community may contact the Office of Equal Employment Opportunity and Affirmative Action at (202) 994-9633.

To request disability accommodations, students should contact the Office of Disability Support Services at (202) 994-8250 or dss@gwu.edu. Employees and other members of the University community should contact the Office of Equal Employment Opportunity and Affirmative Action at (202) 994-9656 or eeo@gwu.edu.

Academic Integrity—The University community, in order to fulfill its purposes, must establish and maintain guidelines of academic behavior. All members of the community are expected to exhibit honesty and competence in their academic work. Incoming students have a special responsibility to acquaint themselves with, and make use of, all proper procedures for doing research, writing papers, and taking examinations. Members of the community will be presumed to be familiar with the proper academic procedures and held responsible for applying them. Deliberate failure to act in accordance with such procedures will be considered academic dishonesty. Acts of academic dishonesty are a legal, moral, and intellectual offense against the community and will be prosecuted through the proper University channels. The University Code of Academic Integrity online (https://studentconduct.gwu.edu/sites/studentconduct.gwu.edu/files/downloads/130722%20Code%20of%20Academic%20Integrity%20-%20Final.pdf); questions about academic integrity should be addressed to the Office of Student Rights and Responsibilities.

Patent and Copyright Policies—Students who produce creative works or make scientific discoveries while employed or supported by the University or through substantial use of University resources are subject to the University's patent and copyright policies. See The Office of the Vice President for Research (http://bulletin.gwu.edu/university-regulations/file:///C:/Users/FINAL/research.gwu.edu).

Human Research Requirements—Students who are planning to conduct research involving the use of human subjects (for a thesis, dissertation, journal article, poster session, etc.) must obtain Institutional Review Board (IRB) (http://humanresearch.gwu.edu/institutional-review-board-process) approval before collecting any data. For more information see The Office of the Vice President for Research (http://research.gwu.edu).

English for Academic Purposes—Graduate international students whose TOEFL, IELTS, or PTE scores fall below established cut-off points are required to take one or more courses in the English for Academic Purposes (EAP) program. Graduate students receive credit for EAP courses; however, in most cases graduate EAP credits cannot be applied to a degree. Graduate students placed in EAP courses should anticipate additional tuition expenses as well as possible extension of time needed to complete their degree programs. For detailed information concerning this requirement consult the English for Academic Purposes Program website (http://eap.columbian.gwu.edu/placement-eap-courses).

Name of Record—A student's name of record includes the first name, middle initial or full middle name, and the family name. Nicknames may not be used. The University will change the name of a currently enrolled student on its official records but will require satisfactory evidence of a legal basis for the change. The diploma is awarded under the official name of record at the time of graduation.

Student Status—During the fall and spring semesters graduate students taking 9 or more credits are considered to be full time, those taking 4.5 to 8.5 credits are considered to be half time, and all others are considered to be part time. In the summer

full-time status requires 6 credits, half-time status, 3 credits. Unless otherwise indicated under the program, all programs of study are offered on both a full-time and part-time basis. International students in F-1 or J-1 immigration status may pursue only full-time programs of study, and such students must register for and complete a full course load each semester as defined by federal regulations.

Graduate students who have completed all course and credit requirements for the degree except dissertation or thesis research may be certified as full-time students provided they are registered for at least 3 credits of dissertation or thesis research, are actively engaged in dissertation or thesis research and writing, and are not employed more than 20 hours per week. Graduate students who have completed all credit requirements for the degree, including dissertation or thesis research, but have not completed all degree requirements, may be certified as full-time students provided they have not exceeded the established time limits for degree completion, are registered for Continuous Research, and are not employed more than 20 hours per week. Those who meet all conditions stated above but are employed more than 20 hours per week may be certified as half-time students.

Attendance—Students may attend only those classes for which they are officially registered. Regular attendance is expected. Students may be dropped from any course for undue absence. A student suspended for any cause may not attend classes during the period of suspension. Students are held responsible for all of the work of the courses in which they are registered, and all absences must be excused by the instructor before provision is made to make up the work missed.

Credit—A credit hour may be defined as one 50-minute class period, one laboratory period, or 1.5 hours of studio class a week for one semester. Credit is given only after completion of registration in a course and satisfactory completion of the required work, or upon the assignment of advanced standing in accordance with the regulations of the school concerned. Credit that has been applied to the completion of a degree may not subsequently be applied to another degree.

Auditing—A person who has been admitted to the University may be registered, with the permission of the instructor, as an auditor in a class (no academic credit). An auditor is not required to take active part or to pass examinations. A student who takes a course as an auditor may not repeat it later for credit. Tuition is charged at the prevailing rate. A student may not change from audit to credit status or vice versa after the end of the eighth week of classes.

Transcripts of Record—Official transcripts of student records are issued upon written request of the student or former student who has paid all charges, including any student loan installments, due the University at the time of the request. A nominal fee is charged for each official transcript. Unofficial copies of transcripts are available to students, by written request, at a nominal fee. Partial transcripts are not issued. Students have access to their unofficial student record through the GWeb Information System (https://banweb.gwu.edu/PRODCartridge/twbkwbis.P_WWWLogin).

Student Conduct—All students, upon enrolling and while attending this University, are subject to the provisions of the *Guide to Student Rights and Responsibilities,* which outlines student freedoms and responsibilities of conduct, including the Code of Student Conduct (http://studentconduct.gwu.edu/code-student-conduct), and other policies and regulations as adopted and promulgated by appropriate University authorities. Copies of these documents may be obtained from the Office of the Dean of Student Affairs (http://students.gwu.edu) or from advising offices. Sanctions for violation of these regulations may include permanent expulsion from the University. Regulations or requirements applicable only to a particular program, facility, or class of students may not be published generally, but such regulations or requirements shall be published in a manner reasonably calculated to inform affected students.

Right to Dismiss Students—The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable.

University Policy on the Release of Student Information—The Family Educational Rights and Privacy Act (FERPA) (http://registrar.gwu.edu/university-policies/#ferpa) applies to institutional policies governing access to and release of student education records.

The University may release the following directory information upon request: name, local address including e-mail, and telephone number; name and address of emergency contact; dates of attendance; school of enrollment; field of study; enrollment status; credits earned; degrees earned; honors received; participation in University-recognized organizations and activities (including intercollegiate athletics); and height, weight, and age of members of athletic teams, as well as likenesses used in University publications. Date of birth will be considered directory information only for the purpose of complying with applicable laws**.** A student who does not wish such directory information released must file written notice to this effect in the Office of the Registrar (http://registrar.gwu.edu).

The University's full policy statement on the release of student information is published in the *Guide to Student Rights and Responsibilities*, available in the Office of the Dean of Student Affairs or the offices of the academic deans. The full statement also appears on the Office of the Registrar's website.

Student Identification Number/Social Security Number—The University has converted from use of the Social Security Number (SSN) to identify records pertaining to individual students, although the SSN is still needed to identify the student for purposes of financial aid eligibility and

disbursement and repayment of financial aid and other debts payable to the University. The SSN is required when applying for financial aid. The Internal Revenue Service requires the University to file information that includes a student's SSN and other information such as the amount paid for qualified tuition, related expenses, and interest on educational loans. This information is used to help determine whether a student, or a person claiming a student as a dependent, may take credit or deduction to reduce federal and/or state income taxes. Many efforts are made to protect the privacy of this number, and a student may request an alternate personal identifier. Further information may be obtained by contacting the Office of the Registrar (http://registrar.gwu.edu).

Property Responsibility—The University is not responsible for the loss of personal property. A Lost and Found Office is maintained on campus in the University Police Department (http://police.gwu.edu).

ADVANCED PLACEMENT EQUIVALENTS

Assuming there is no duplication of coursework, a maximum of 24 credits may be awarded on the basis of work completed while enrolled in high school through examinations such as AP/IB/A-Levels.

Credit through Examination

In order to receive credit for College Board Advanced Placement (AP) examinations, students must have official score results forwarded directly to GW Office of Undergraduate Admission from the College Board. GW's College Board code is 5246.

Official International Baccalaureate (IB) results should be sent as soon as they are available.

Be aware that credit earned by examination at other colleges or universities or examinations taken after having taken the appropriate college-level course will not transfer credit to GW.

Please refer to the following charts for GW's course equivalents:

Advanced Placement Equivalents

Advanced Placement (AP) Examination	Score	Credits Awarded	GW Course Equivalent
Arts			
AP Art History	4 or 5	6	AH 1031, AH 1032
AP Music Theory	4 or 5	2	MUS 1101
AP Studio Art: 2-D Design	4 or 5	3	FA 1099
AP Studio Art: 3-D Design	4 or 5	3	FA 1099
AP Studio Art: Drawing	4 or 5	3	FA 1021
English			
AP English Language and Composition	4 or 5	3	UW 1099
AP English Literature and Composition	4 or 5	3	ENGL 1050
History & Social Science			
AP Comparative Government and Politics	4 or 5	3	PSC 1001
AP European History	4 or 5	3	HIST 1120
AP Human Geography	4 or 5	3	GEOG 1001
AP Microeconomic	4 or 5	3	ECON 1011
AP Macroeconomics	4 or 5	3	ECON 1012
AP Psychology	4 or 5	3	PSYC 1001
AP United Stated Government and Politics	4 or 5	3	PSC 1002
AP United States History	4 or 5	6	HIST 1310, HIST 1311
AP World History	4 or 5	3	HIST 1011
Math & Computer Science			
AP Calculus AB (or AB subscore of the BC exam)	4 or 5	3	MATH 1231
AP Calculus BC	4 or 5	6	MATH 1231, MATH 1232
AP Computer Science A	4 or 5	3	CSCI 1111
AP Statistics	4 or 5	3	STAT 1051
Sciences			
AP Biology	4 or 5	8	BISC 1111, BISC 1112
AP Chemistry	4 or 5	8	CHEM 1111, CHEM 1112

AP Environmental Science	4 or 5	3	GEOL 1099
AP Physics 1: Algebra-Based	4 or 5	4	PHYS 1011
AP Physics 2: Algebra-Based	4 or 5	4	PHYS 1012
AP Physics C: Mechanics	4 or 5	4	PHYS 1021
AP Physics C: Electricity and Magnetism	4 or 5	4	PHYS 1022
World Languages & Cultures			
AP Chinese Language and Culture	4	4	CHIN 2003
	5	8	CHIN 2003, CHIN 2004
AP French Language and Culture	5	6	FREN 1004, FREN 2005
AP German Language and Culture	4	3	GER 1099
	5	6	GER 2009, GER 2010
AP Italian Language and Culture	5	6	ITAL 1004, ITAL 2005
AP Japanese Language and Culture	4	4	JAPN 2003
	5	8	JAPN 2003, JAPN 2004
AP Latin	4 or 5	3	LATN 2002
AP Spanish Language and Culture	5	6	SPAN 1004, SPAN 1099
AP Spanish Literature and Culture	4 or 5	3	SPAN 2005

The University reserves the right to change policy regarding advanced placement credit without advance notice.

INTERNATIONAL BACCALAUREATE EQUIVALENTS

Assuming there is no duplication of coursework, a maximum of 24 credits may be awarded on the basis of work completed while enrolled in high school through examinations such as AP/IB/A-Levels.

Credit through Examination

In order to receive credit for College Board Advanced Placement (AP) examinations, students must have official score results forwarded directly to GW Office of Undergraduate Admission from the College Board. GW's College Board code is 5246.

Official International Baccalaureate (IB) results should be sent as soon as they are available.

Be aware that credit earned by examination at other colleges or universities or examinations taken after having taken the appropriate college-level course will not transfer credit to GW.

Please refer to the following charts for GW's course equivalents:

International Baccalaureate Equivalents

Studies in Language and Literature			
Arabic A1 (Literature; Language and Literature) - Higher Level	6 or 7	3	ARAB 1099
English A1- Higher Level	6 or 7	3	ENGL 1340
French A1 (Literature; Literature and Language) - Higher Level	6 or 7	6	FREN 2005, FREN 2006
	5	6	FREN 1004, FREN 2005
French A1 (Literature; Language and Literature) - Standard Level	7	6	FREN 1004, FREN 2005
German A1 (Literature; Language and Literature) - Higher Level	6 or 7	3	GER 1099
Indonesian A1 (Literature; Language and Literature) - Higher Level	6 or 7	3	Interdisciplinary Studies 1099

Italian A1 (Literature; Language and Literature) - Higher Level	6 or 7	6	ITAL 2005, ITAL 2006
	5	6	ITAL 1004, ITAL 2005
Italian A1 (Literature; Language and Literature) - Standard Level	7	6	ITAL 1004, ITAL 2005
Spanish A1 (Literature; Language and Literature) - Higher Level	6 or 7	6	SPAN 2005, ITAL 2005
	5	6	SPAN 1004, SPAN 2005
Spanish A1 (Literature; Language and Literature) - Standard Level	7	6	SPAN 1004, SPAN 2005
Russian A1 (Literature; Language and Literature) - Higher Level	6 or 7	3	SLAV 1099
Turkish A1 (Literature; Language and Literature) - Higher Level	6 or 7	3	Interdisciplinary Studies 1099
Persian A1 (Literature; Language and Literature) - Higher Level	6 or 7	3	Interdisciplinary Studies 1099
Latin (Literature; Language and Literature) - Higher Level	6 or 7	3	LATN 1099
Greek (Literature; Language and Literature) - Higher Level	6 or 7	3	GREK 1099
Korean A1 (Literature; Language and Literature) - Higher Level	6 or 7	3	KOR 1099

Language Acquisition			
Arabic B - Higher Level	6 or 7	6	ARAB 1099
English B		None	None
French B - Higher Level	7	6	FREN 2005, FREN 2006
	6	6	FREN 1004, FREN 2005
German B - Higher Level	6 or 7	6	GER 1099
Italian B - Higher Level	7	6	ITAL 2005, ITAL 2006
	6	6	ITAL 1004, ITAL 2005
Japanese B - Higher Level	6 or 7	8	JAPN 2003, JAPN 2004
Mandarin B - Higher Level	6 or 7	8	CHIN 2003, CHIN 2004
Spanish B - Higher Level	7	6	SPAN 2005, SPAN 2006
	6	6	SPAN 1004, SPAN 2005
Portuguese B - Higher Level	6 or 7	6	PORT 1099
Individuals and Societies			
Business and Organization - Higher Level	6 or 7	6	BADM 1099
Economics - Higher Level	6 or 7	6	ECON 1011, ECON 1012
Geography - Higher Level	6 or 7	6	GEOG 1099
History - Higher Level	6 or 7	6	HIST 1099
History of Africa - Higher Level	6 or 7	6	HIST 1099
History of the Americas - Higher Level	6 or 7	6	HIST 1099
History of East & SE Asia - Higher Level	6 or 7	6	HIST 1099
History of Europe - Higher Level	6 or 7	6	HIST 1099
History of the Islamic World - Higher Level	6 or 7	6	HIST 1099

History of West & South Asia - Higher Level	6 or 7	6	HIST 1099
Information Technology in a Global Society - Higher Level	6 or 7	6	Interdisciplinary Studies 1099
Philosophy - Higher Level	6 or 7	6	PHIL 1099
Psychology - Higher Level	6 or 7	6	PSYC 1099
Social Anthropology - Higher Level	6 or 7	6	ANTH 1099
Experimental Sciences			
Biology - Higher Level	6 or 7	8	BISC 1099
Chemistry - Higher Level	6 or 7	8	CHEM 1099
Computer Science - Higher Level	6 or 7	6	CSCI 1099
Design Technology - Higher Level	6 or 7	6	Interdisciplinary Studies 1099
Physics - Higher Level	6 or 7	8	PHYS 1099
Mathematics			
Mathematics - Higher Level	6 or 7	6	MATH 1099
The Arts			
Art/Design - Higher Level	6 or 7	6	FA 1099
Film - Higher Level	6 or 7	6	FILM 1099
Music - Higher Level	6 or 7	6	MUS 1099
Theatre Arts - Higher Level	6 or 7	6	TRDA 1099

The university reserves the right to change policy regarding IB credit without advance notice.

UNIVERSITY GENERAL EDUCATION REQUIREMENT

The general education curriculum engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that meaningfully enhance their analytical skills, develop communication competencies, and familiarize them with modes of inquiry. Course work for the university general education curriculum includes 19 credits of approved courses in writing, natural or physical science, mathematics or statistics, social science, and the humanities, plus two writing-in-the-discipline courses.

The distribution for the university general education requirement is below along with the list of approved courses for each area. Students should check the approved list before registering for classes. Questions about requirements should be addressed to a professional academic advisor.

- **Written Communication (p. 38)**
  - One course in university writing
  - Two writing-in-the-disciplines (WID) courses. WID course offerings can be found on the University Writing website. (http://writingprogram.gwu.edu)
- **Critical Analysis in the Humanities (p. 38)**
  - One course in the humanities
- **Mathematical Reasoning (p. 41)**
  - One course in either math or statistics
- **Scientific Reasoning (p. 42)**
  - One natural or physical science course with laboratory experience
- **Critical Analysis in the Social Sciences (p. 42)**
  - Two courses in the social sciences

Written communication

UW 1020	University Writing
or HONR 1015	Honors Proseminar: UW 1020: Origins and Evolution of Modern Thought

Critical analysis in the humanities

AMST 1050	Explorations in American Culture
AMST 1160	Race, Gender and Law
AMST 1200	The Sixties in America
AMST 2010	Early American Cultural History
AMST 2011	Modern American Cultural History
AMST 2020	Washington, D.C.: History, Culture, and Politics
or AMST 2020W	Washington, D.C.: History, Culture, and Politics
AMST 2120W	Freedom in American Thought and Popular Culture
AMST 2210	The African American Experience

AMST 2320	U.S. Media and Cultural History
AMST 2350	U.S. Religion and Politics
AMST 2380	Sexuality in US History
AMST 2410	20th-Century U.S. Immigration
AMST 2440	The American City
AMST 2710	The United States in Global Context, 1898–Present
AMST 2730	World War II in History and Memory
or AMST 2730W	World War II in History and Memory
AMST 2750W	Latinos in the United States
AMST 3352	Women in the United States to 1865
or AMST 3352W	Women in the United States to 1865
ANTH 2750	Latinos in the United States
or ANTH 2750W	Latinos in the United States
CHIN 3111	Chinese Literature in Translation
CHIN 3112	Chinese Literature in Translation
CHIN 3123	Introduction to Chinese Linguistics
CHIN 3124	Introduction to Chinese Linguistics
CHIN 3163	Taiwanese Literature and Film
CLAS 2107	Greek and Roman Drama
CLAS 2113	The Roman World to 337 A.D.
EALL 3811	Confucian Literature in East Asia
EALL 3814	Religion and Philosophy in East Asia
or EALL 3814W	Religion and Philosophy in East Asia
ENGL 1050	Introduction to Literary Studies
ENGL 1315	Literature and the Financial Imagination
ENGL 1320	Literature of the Americas
or ENGL 1320W	Literature of the Americas
ENGL 1330	Myths of Britain
or ENGL 1330W	Myths of Britain
ENGL 1340	Essential Shakespeare
or ENGL 1340W	Essential Shakespeare
ENGL 1351	Shakespeare Seminar
ENGL 1410	Introduction to English Literature I
or ENGL 1410W	Introduction to English Literature I
ENGL 1411	Introduction to English Literature II
or ENGL 1411W	Introduction to English Literature II
ENGL 1510	Introduction to American Literature I
or ENGL 1510W	Introduction to American Literature I
ENGL 1511	Introduction to American Literature II
or ENGL 1511W	Introduction to American Literature II
ENGL 1610	Introduction to Black American Literature I
or ENGL 1610W	Introduction to Black American Literature I
ENGL 1611	Introduction to Black American Literature II
or ENGL 1611W	Introduction to Black American Literature II
ENGL 1710	Introduction to Postcolonial Literature and Film I
or ENGL 1710W	Introduction to Postcolonial Literature and Film I
ENGL 1711	Introduction to Postcolonial Literature and Film II
or ENGL 1711W	Introduction to Postcolonial Literature and Film II
ENGL 3446	Shakespearean London
ENGL 3910	Disability Studies
FREN 2006	Language, Culture & Society II
FREN 3020	Contemporary France
FREN 3100	Introduction to French Literature
or FREN 3100W	Introduction to French Literature
FREN 4540	19th-Century French Literature and Culture
GER 2091	Introduction to German Literature–in English I
GER 2092	Introduction to German Literature–in English II
GER 2161	German Culture–in English I
GER 2162	German Culture–in English II

GREK 1001	Beginning Classical Greek I
HIST 1011	World History, 1500-Present
HIST 1110	European Civilization in Its World Context
HIST 1120	European Civilization in Its World Context
or HIST 1120W	European Civilization in its World Context
HIST 1121	The War of Ideas in European and International History, 1750–Present
HIST 1310	Introduction to American History
HIST 1311	Introduction to American History
HIST 2010	Early American Cultural History
HIST 2011	Modern American Cultural History
HIST 2020	Washington, D.C.: History, Culture, and Politics
or HIST 2020W	Washington, D.C.: History, Culture, and Politics
HIST 2050	History of Jewish Civilization: From the Bible to Modernity
HIST 2124	19th-Century Europe
HIST 2125	20th-Century Europe
HIST 2131	History of England Since 1689
HIST 2141	History of France Since 1814
HIST 2160	History of Germany
HIST 2312	The American Civil War and Reconstruction, 1850-1877
HIST 2320	U.S. Media and Cultural History
HIST 2321	U.S. History, 1890-1945
HIST 2322	U.S. History since 1945
HIST 2350	U.S. Religion and Politics
HIST 2380	Sexuality in US Cultural Hist
HIST 2410	20th-Century U.S. Immigration
HIST 2440	The American City
HIST 2710	The United States in Global Context, 1898–Present
HIST 2730	World War II in History and Memory
or HIST 2730W	World War II History & Memory
HIST 3044W	The Price of Freedom: Normandy 1944
HIST 3352	Women in the United States to 1865
or HIST 3352W	Women in the United States I
HIST 3360	African American History to 1865
HIST 3361	African American History Since 1865
HIST 3611	History of Modern China
HIST 3630	History of Korea
HIST 3811	The Middle East in the 20th Century
or HIST 3811W	Middle East in 20th Century
HONR 1016	Honors Proseminar: Origins and Evolution of Modern Thought
HONR 2053	Honors Proseminar: Arts and Humanities
or HONR 2053W	Honors Proseminar: Arts and World Cultures
ITAL 4380	Italian Journeys Medieval to Postmodern
JAPN 3111	Japanese Literature in Translation
JAPN 3112	Japanese Literature in Translation
KOR 3111	Korean Literature in Translation
KOR 3112	Korean Literature in Translation
KOR 3123	Introduction to Korean Linguistics
KOR 3124	Introduction to Korean Linguistics
LATN 2001	Intermediate Latin
LATN 3001	Major Latin Authors I
or LATN 3001W	Major Latin Authors I
LATN 3002	Major Latin Authors II
or LATN 3002W	Major Latin Authors II
PHIL 1051	Introduction to Philosophy
PHIL 1153	The Meaning of Mind
PHIL 2124	Philosophies of Disability
or PHIL 2124W	Philosophies of Disability
PHIL 2125	Philosophy of Race and Gender
or PHIL 2125W	Philosophy of Race and Gender

PHIL 2131	Ethics: Theory and Applications
PHIL 2132	Social and Political Philosophy
or PHIL 2132W	Social and Political Philosophy
PHIL 2133	Philosophy and Nonviolence
PHIL 2134	Philosophy of Human Rights
PHIL 2136	Contemporary Issues in Ethics
PHIL 2281	Philosophy of the Environment
PHIL 3142	Philosophy of Law
or PHIL 3142W	Philosophy of Law
PHIL 3151	Philosophy and Science
PHIL 3153	Mind, Brain, and Artificial Intelligence
PSC 2120W	Freedom in American Thought and Popular Culture
PSTD 1010	Introduction to Peace Studies and Conflict Resolution
REL 1010	The New Testament
or REL 1010W	The New Testament
REL 2165	The Gospels
REL 2169	Lost Gospels
REL 2201	Judaism
REL 2301	Christianity
REL 2314	Contemporary Philosophy of Religion
REL 2401	Islam
REL 2501	Hinduism
REL 2562	Mythologies of India
REL 2811	Confucian Literature in East Asia
REL 2814	Religion and Philosophy in East Asia
REL 2981	Women in Western Religion
REL 3149	Biblical Issues
or REL 3149W	Biblical Issues
REL 3151	The Historical Jesus
or REL 3151W	The Historical Jesus
REL 3161	The Life and Thought of Paul
or REL 3161W	The Life and Thought of Paul
REL 3405	Shi'ite Islam
REL 3614	Buddhist Philosophy
REL 3923	Violence and Peace in Judaism, Christianity, and Islam
SPAN 2005	Advanced Spanish I
SPAN 2006	Advanced Spanish II
SPAN 2056	Intensive Advanced Spanish
SPAN 3100	Readings in Spanish and Latin American Literature
WLP 1020	WLP Humanities Seminar
WSTU 2380	Sexuality in US Cultural Hist
WSTU 3352	Women in the United States I
or WSTU 3352W	Women in the United States I
WSTU 3981	Women in Western Religion

Language courses require placement tests.

Quantitative reasoning

MATH 1007	Mathematics and Politics
MATH 1009	Mathematical Ideas I
MATH 1010	Mathematical Ideas II
MATH 1051	Finite Mathematics for the Social and Management Sciences
MATH 1221	Calculus with Precalculus II *
MATH 1231	Single-Variable Calculus I *
MATH 1232	Single-Variable Calculus II
MATH 1252	Calculus for the Social and Management Sciences *
MATH 2233	Multivariable Calculus
STAT 1051	Introduction to Business and Economic Statistics *
STAT 1053	Introduction to Statistics in Social Science *
STAT 1111	Business and Economic Statistics I *
STAT 1127	Statistics for the Biological Sciences *
STAT 2112	Business and Economic Statistics II

STAT 2118	Regression Analysis

*MATH 1221, 1231, and 1252 are equivalent courses. STAT 1051, 1053, 1111, and 1127 are equivalent courses. Credit cannot be earned for more than one in either group.

Scientific reasoning

ANTH 1001	Biological Anthropology
ANTH 3412	Hominin Evolution
ASTR 1001	Stars, Planets, and Life in the Universe
ASTR 1002	Origins of the Cosmos
BISC 1005	The Biology of Nutrition and Health *
BISC 1006	The Ecology and Evolution of Organisms *
BISC 1007	Food, Nutrition, and Service *
BISC 1008	Understanding Organisms through Service Learning *
BISC 1111	Introductory Biology: Cells and Molecules
BISC 1112	Introductory Biology: The Biology of Organisms
CHEM 1003	Contemporary Science for Nonscience Majors
CHEM 1004	Contemporary Science for Nonscience Majors
CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I **
CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II **
GEOG 1002	Introduction to Physical Geography
GEOL 1001	Physical Geology ***
GEOL 1002	Historical Geology
GEOL 1005	Environmental Geology ***
GEOL 1006	Science & the Environment
HONR 1033	Honors Proseminar: Scientific Reasoning and Discovery
HONR 1034	Honors Proseminar: Scientific Reasoning and Discovery
PHYS 1003	Physics for Future Presidents
PHYS 1007	Music and Physics
PHYS 1011	General Physics I
PHYS 1012	General Physics II
PHYS 1021	University Physics I
PHYS 1022	University Physics II
PHYS 1025	University Physics I with Biological Applications
PHYS 1026	University Physics II with Biological Applications

*BISC 1005 and 1007 are equivalent courses; BISC 1006 and BISC 1008 are equivalent courses. Credit cannot be earned for both.
**To fulfill the G-PAC requirement, CHEM 2151 and CHEM 2153 must both be taken; same applies to CHEM 2152 and CHEM 2154.
***GEOL 1001 and GEOL 1005 are equivalent courses; credit cannot be earned for both.

Critical analysis in the social sciences

ANTH 1002	Sociocultural Anthropology
or ANTH 1002W	Sociocultural Anthropology
ANTH 1003	Archaeology
ANTH 1004	Language in Culture and Society
ANTH 2008	Foundations of Anthropological Thought
or ANTH 2008W	Foundations of Anthropology
ANTH 2502	Anthropology of Science and Technology: 21st-Century Brave New Worlds
ANTH 3838	Theory and Practice in Archaeology
or ANTH 3838W	Theory and Practice in Archaeology
COMM 1025	Introduction to Communication Studies
COMM 1040	Public Communication
COMM 1041	Interpersonal Communication
ECON 1011	Principles of Economics I
ECON 1012	Principles of Economics II
GEOG 1001	Introduction to Human Geography

GEOG 1003	Society and Environment
HONR 2043	Honors Microeconomics
HONR 2044	Honors Macroeconomics
HONR 2047	Honors Proseminar: Social and Behavioral Sciences
or HONR 2047W	Honors Proseminar: Social and Behavioral Science
PSC 1001	Introduction to Comparative Politics
or PSC 1001W	Intro to Comparative Politics
PSC 1002	Introduction to American Politics and Government
or PSC 1002W	Intro-American Politics & Govt
PSC 1011	Introduction to Politics I
PSC 1012W	Introduction to Politics II
PSYC 2011	Abnormal Psychology *
or PSYC 2011W	Abnormal Psychology
PSYC 2012	Social Psychology *
PSYC 2013	Developmental Psychology *
PSYC 2014	Cognitive Psychology *
PSYC 2015	Biological Psychology *
SMPA 1050	Media in a Free Society
SMPA 2101	Journalism: Theory & Practice
SMPA 2102	Introduction to Political Communication
SOC 1002	The Sociological Imagination
SOC 1003	Introduction to Criminal Justice
SOC 2101	Social Research Methods
SOC 2102	Techniques of Data Analysis
SOC 2103	Classical Sociological Theory
or SOC 2103W	Classical Sociological Theory
SOC 2104	Contemporary Sociological Theory
or SOC 2104W	Contemporary Sociological Theory
SOC 2169	Urban Sociology
SPHR 1071	Foundations of Human Communication
or SPHR 1071W	Foundations of Human Communication
SPHR 1084	Perspectives in Deaf Culture
SUST 1001	Introduction to Sustainability

*PSYC 1001 is a prerequisite for all Psychology courses.

UNDERGRADUATE ADMISSIONS

The goal of GW's Office of Undergraduate Admissions (http://undergraduate.admissions.gwu.edu) is to create a community of students who will pursue academic excellence, thrive in our dynamic environment, and make lasting contributions to GW and the world. In order to identify these students, the admissions review process is holistic and thoughtful, taking many factors into consideration. GW receives applications from every state and nearly 100 countries, allowing us to enroll a bright, talented, and diverse student body.

Freshmen—Early Decision

The University offers two Early Decision options for students who have chosen GW as their first choice school. The deadline for submission of all required documents is November 1 for Early Decision I and January 1 for Early Decision II. Both Early Decision options are binding; if admitted, students agree to attend GW, submit a nonrefundable enrollment deposit by the deadline detailed in their acceptance packet, and withdraw all applications submitted to other colleges.

Freshmen—Regular Decision

The Regular Decision application deadline is January 1. A complete application file, including the Common Application with required essays, official secondary school transcript/academic record, counselor recommendation, teacher recommendation, and application fee must be submitted by that date. The secondary school transcript must be submitted to GW directly from the school in order to be considered official. Incoming freshmen must have their secondary school submit a final transcript that shows all final grades and certification of graduation before enrolling at GW in the fall semester.

Portfolio Requirement

Applicants for admission to a program in the Corcoran School of the Arts and Design (http://corcoran.gwu.edu) are required to submit a portfolio of 10 to 15 completed works of art as part of the application process.

Entrance Examinations

As a test-optional institution, GW allows most applicants to decide whether they will submit scores on either the College Board Scholastic Assessment Test (https://sat.collegeboard.org/SAT/next-steps-toward-college?s_kwcid=AL!4330!3!70927704644!b!!g!!collegeboard&ef_id=VYB-rgAABKpqtRg9:20150831144404:s) (SAT) or on the American College Testing (http://www.act.org) (ACT) to be included in their application.

This test-optional policy does NOT apply to the following groups of applicants:

- Applicants to the accelerated seven-year B.A./M.D. program; such students also are required to submit SAT Subject Tests in mathematics and science.
- Applicants who are homeschooled.
- Applicants from secondary schools that provide only narrative evaluations rather than grades based on some form of grading scale.
- Recruited NCAA Division I athletes.

Students who choose to submit scores must have them sent by the testing agency directly to the Office of Undergraduate Admissions. All entering students who have scores will be asked to submit them to GW prior to enrolling for their freshman year.

International Students

In addition to the Common Application and the supporting credentials listed above, international students must submit the following documents in order to be considered for admission:

Required Records

International students must have all previously attended educational attended send copies of official certificates and records listing subjects studied, examinations taken, grades received, and degrees received directly to the Office of Undergraduate Admissions. Certified copies of diplomas and certificates from all secondary schools, colleges, and universities attended as well as records of state examinations and certificates are also required. These records become the property of the University and cannot be returned. In addition, documents must be in the language in which the institution keeps its official records. If they are in a language other than English, the copies sent must be accompanied by a certified English translation.

Language Tests

Applicants who indicate on their Common Application that their first language is not English are required to submit scores from the Test of English as a Foreign Language (TOEFL), the International English Language Testing System (IELTS), or the PTE Academic, regardless of citizenship or country of residence. The minimum required score is 90 on the Internet-based TOEFL or a 6.5 on the IELTS; strong applicants to GW typically score much higher than the minimum required scores. The TOEFL/IELTS/PTE Academic requirement may be waived for applicants who score 600 or above on the Critical Reading section of the SAT or who have spent their last four years of secondary school in a setting where English is the sole language of instruction in all academic subjects with the exception of foreign language and ESL/ELL courses.

Students should plan to take the test in question well in advance of the application deadline, in order for scores to be available on time, and should request to have the scores sent to the GW Office of Undergraduate Admissions directly from the

testing agency. TOEFL scores more than two years old will not be considered valid.

Some admitted students whose first language is not English may also be required to take an English for Academic Purposes (http://eap.columbian.gwu.edu) (EAP) course once they enroll at GW.

Financial Certification

A financial certificate and bank letter must be completed and submitted as part of the application process for all international students planning to study on either a student (F) visa or exchange visitor (J) visa. The completed and signed financial certificate and bank letter are required for the issuance of Form I-20 or DS-2019, one of which is needed to apply for the F or J visas.

Transfer Students

GW considers for transfer admission any student who has completed at least one college course since secondary school graduation. Transfer applicants must submit the Common Application and supporting credentials (including official college transcripts, the Transfer College Report for each institution attended, and a faculty recommendation) by March 1 for fall admission and October 1 for spring admission.

Transfer applicants must be in good standing in terms of academic record and conduct at all postsecondary institutions previously attended. Applicants who have attended one or more institutions of higher education must submit official transcripts from each institution even if credit was not sought or earned or if advanced standing is not desired. In addition, applicants must submit an official secondary school transcript if they have earned fewer than 30 transferrable credits at the time of application. Prior to enrolling at GW, incoming transfer students must submit final official transcripts with grades for all courses pursued from any college or university previously attended.

Assignment of Credit for Transfer Students

Provided there is no duplication involved through course work or examination, credit may be granted for course work successfully completed at other regionally accredited institutions of higher learning. Assignment of transfer credit will depend on the grade earned, the appropriateness of the courses completed, the standing of the institution at which the previous work was completed, and the regulations of the GW school to which the student is transferring.

GW's residence requirement limits the number of transfer credits that can be applied toward a degree. Students must complete at least 60 credits of the total credits required for their degree at or through the University. Credits earned through GW study abroad, GW satellite campuses, GW distance education courses, and Consortium courses are treated as "in residence."

Transfer credit must satisfy the requirements for the degree sought as stated in this Bulletin. Credit may be accepted provisionally or may require validation by examination or completion of higher-level courses in the same sequence. Transfer credit will not be assigned for course work completed in vocational/technical programs (e.g., secretarial studies) or sub-freshman level remedial work. Each GW school reserves the right to refuse credit for transfer in whole or in part. Although a grade of D in a course is not acceptable for transfer of credit, the course may satisfy a curriculum requirement. School-specific regulations on transfer credit appear in this Bulletin. .

Transfer credit that is accepted and applied to a student's GW academic record counts toward the number of credits completed only. The grades from these courses are not used in calculating a student's GW grade point average.

Application for Second Bachelor's Degree

Students who previously earned a bachelor's degree are not eligible for admission.

Advanced Standing and Advanced Placement

Assuming there is no duplication of course work, a maximum of 24 credits may be awarded upon admission to the University for any combination of Advanced Placement (AP) and International Baccalaureate (IB) examinations. An incoming student also may be granted advanced placement in a sequence of courses or waiver of a course requirement based on additional college-level course work taken in secondary school or before matriculation; however, this will not affect the number of credits needed for the degree.

College Board Advanced Placement (https://apstudent.collegeboard.org/home) (AP) Tests
Credit may be awarded for Advanced Placement tests with certain score results, typically 4s and 5s. (Refer to the GW Undergraduate Admissions website for the AP credit assignment chart (https://undergraduate.admissions.gwu.edu/bring-credits-gw).) Students must have AP score reports sent directly from the College Board to the Office of Undergraduate Admissions.

International Baccalaureate (http://www.ibo.org) (IB)
GW typically awards 6 to 8 credits for scores of 6 or 7 on the higher-level examinations. (Refer to the GW Undergraduate Admissions website for the IB credit assignment chart (https://undergraduate.admissions.gwu.edu/bring-credits-gw).) Students must have IB score reports sent directly from International Baccalaureate to the Office of Undergraduate Admissions.

Enrollment Deposit

After notification of admission, all new undergraduate students are required to submit a nonrefundable enrollment deposit.

This deposit is due May 1 for freshmen. For transfer students and full-time readmitted students, the deposit usually is due two to three weeks after notification of admission.

Readmission

Students who were previously registered at GW who wish to resume studies at the University after discontinuing enrollment for one or more semesters (summer sessions and leaves of absence excluded) must apply for readmission. Deadlines for applications for readmission from students in good academic standing are March 15 for the fall semester and October 31 for the spring semester. Students seeking readmission must have official transcripts sent to the Office of Undergraduate Admissions from all other institutions of higher education they attended in the interim. Students seeking readmission as degree candidates after previous enrollment in non-degree status at GW must submit the Common Application and all required credentials that were not submitted previously or required for non-degree admission.

Applicants for readmission are subject to the University regulations in effect at the time of readmission. The application fee is waived for students applying for readmission after previous enrollment as a degree candidate.

FEES AND FINANCIAL REGULATIONS

The following fees and financial regulations were adopted for the academic year 2016–17. Information on tuition and fees for the summer is available on the Summer and Special Programs website (http://summer.gwu.edu).

Tuition

For undergraduates entering GW in academic year 2016–17, the University continues its fixed-rate tuition plan, with the following academic-year tuition guaranteed not to increase for up to five years of full-time* undergraduate study: $51,875 for students entering Columbian College of Arts and Sciences, the School of Business, the Milken Institute School of Public Health, the School of Engineering and Applied Science, and the Elliott School of International Affairs.

The fixed-rate tuition remains in effect as previously stated for undergraduates in the schools listed above: for those who entered GW in 2015–16 ($50,367); 2014–15 ($48,700); 2013–14 ($47,290); and 2012–13 ($45,735).

Half-time and part-time undergraduate and non-degree students are charged $1,475 per credit.

For continuing undergraduate students in the Corcoran School of the Arts and Design, tuition and fees in academic year 2016–17 are $33,860 for full-time students and $1,130 per credit for part-time students. These rates are subject to change for the 2017–18 academic year. Undergraduate Corcoran students who matriculated in fall 2015 or later are charged the undergraduate matriculation and Student Association fees; those who first enrolled prior to fall 2015 are not charged these fees, but will be billed an annual general fee of $200 per academic year.

Tuition stated here excludes undergraduate programs in professional studies, nursing, and health sciences; consult the College of Professional Studies, School of Nursing or the Office of Health Sciences Programs in the School of Medicine and Health Sciences for applicable rates.

Tuition for students admitted to the B.A./M.D. program are indicated in the letter of admission.

The schedule of tuition and fees adopted for graduate programs for the academic year 2016–17 appears on the Students Accounts Office website (http://studentaccounts.gwu.edu).

* A full-time program is defined as 12–17 credits per semester. Undergraduates taking more than 17 credits per semester will be charged at the rate of 1 credit for each credit exceeding that limit. Undergraduates are not charged for an eighteenth credit if their program includes UW 1020, nor are those in the School of Engineering and Applied Science charged for the eighteenth and nineteenth credits if required by their program. Undergraduate students in the Corcoran School of the Arts and Design who entered before the 2015–16 academic year are not charged for an eighteenth credit. Corcoran undergraduate students who entered in or after the 2015–16 academic year are charged for an eighteenth credit.

Student Association Fee

The student association fee is fixed, in keeping with the fixed-rate tuition plan. Undergraduate students entering in the fall 2015 semester and all graduate students are assessed a nonrefundable student association fee of $2.50 per credit to a maximum of $37.50 per semester. Returning undergraduate students are assessed the fee as follows: for those who entered GW in 2015–16—$2.25 per credit to a maximum of $33.75 per semester; 2014–15—$2.00 per credit to a maximum of $30.00 per semester; 2013–14—$1.75 per credit to a maximum of $26.25 per semester; prior to fall 2013—$1.50 per credit to a maximum of $22.50 per semester.

Voluntary Library Gift

Each semester the student's account is assessed a voluntary gift to support the University libraries. The contribution is voluntary and the student is provided an opportunity to decline the library gift for the current semester when making payments using the online eBill solution.

Housing and Dining

The fee structures for campus housing and dining plans can be found at GW Housing (http://living.gwu.edu) and GW Campus Dining (http://gwcampusdining.com), respectively.

Continuing Research

All master's and doctoral students who have completed their required number of credits (including course work and thesis or dissertation research) must register each subsequent fall and spring semester for 1 credit of Continuing Research as specified by the regulations of the school concerned.

Payment of tuition for thesis or dissertation research entitles the candidate, during the period of registration, to the advice and direction of the member of the faculty under whom the thesis or dissertation is to be written. Accepted dissertations and theses are submitted electronically; the student pays a processing fee directly to Proquest/UMI.

Additional Course Fees

Some courses carry additional fees, such as a laboratory or material fee, charged by semester as indicated in course

descriptions; the amount appears in the Schedule of Classes (http://my.gwu.edu/mod/pws).

Special Fees and Deposits (nonrefundable)

Application fee	$75
Advance deposit, charged each entering or readmitted full-time undergraduate	$800
Matriculation fee, charged each entering full-time undergraduate (matriculation and enrollment fees for graduate students are provided on the Student Accounts Office website)	$350
Late registration beginning the first day of the semester	$80
Registration for continuous enrollment or leave of absence	$35
Registration for off-campus and online programs	$35
Late application for graduation; graduation application deadlines are provided on the Office of the Registrar website	$35
Late payment fees (see Past Due Accounts, below)	$150
Late authorization fee for third-party payment (see Third-Party Payment, below)	$100
Returned payment fee, charged a student whose payment is improperly drafted, incomplete, or returned by the bank for any reason	$35
Transcript fee	$5
Replacement of lost or stolen picture identification card	$35
Replacement of diploma	$50
International student fee, charged each fall and spring semester to students on F-1 or J-1 visas entering in 2016–17	$45

Study Abroad Fees for Academic Year 2016–17*

Tier 1 Programs	GW Fixed Rate Tuition + $825 program fee
Tier 2 Programs	GW Fixed Rate Tuition + $3,575 program fee
Tier 3 Programs	GW Fixed Rate Tuition + $5,475 program fee
Tier 4 Programs	GW Fixed Rate Tuition + $5,975 program fee
Tier 5 Programs	GW Fixed Rate Tuition + $6,475 program fee
Tier 6 Programs	GW Fixed Rate Tuition + $6,975 program fee
Tier 7 Programs	GW Fixed Rate Tuition + $7,775 program fee
Withdrawal Fee	$575**

* The fees listed above are for the 2016–17 academic year. Fees for the 2017–18 academic year are subject to change.
** See Office of Study Abroad withdrawal policy (http://studyabroad.gwu.edu/withdrawal-policy) for more details

Postdoctoral Study

Those who have graduated from George Washington University with a Ph.D., Ed.D., D.Sc., or D.Eng. may continue studies in the University without payment of tuition (contingent upon the availability of space) and may enjoy all University library privileges. Such graduates pay the prevailing charge for 1 credit in order to establish their active membership in the University. The graduate pays the use of laboratory or special library material. Special arrangements for such privileges must be made with the dean two months in advance of the semester in which the graduate wishes to register. Post-doctoral work taken under this privilege may not be taken for credit.

Payment of Tuition and Fees

Students who register for classes in any semester or session incur a financial obligation to the University. Tuition and fees are due and must be paid in full by the first day of the University's fall and spring semesters and summer sessions as indicated on the Academic Calendar (http://bulletin.gwu.edu/academic-calendar); students on the monthly payment plan are exempt from this regulation. The University reserves the right to revoke the registration, effective to the beginning of the semester, of any student who fails to make full payment. Students whose registrations have been revoked or canceled for failure to make timely payments are not permitted to attend class and may not occupy University housing.

Monthly Payment Plan

This payment plan is open to all students and is available for the full academic year (10-month plan for fall and spring semesters combined) or on an individual semester basis (5-month plan for fall and spring semesters individually), and 3-month plan for the summer session. To participate in the plan, students must complete and submit an application by August 20 for the academic year or fall semester plan, by January 1 for the spring semester, and May 1 for the summer session. Upon approval of the application, students will be billed monthly for each payment. The monthly payment plan for the academic year begins in June and ends in March, with the first five payments applied to the fall semester and the second five payments applied to the spring semester. If the plan is selected for the fall semester only, the payment begins in June and ends in October. If the plan is selected for the spring semester only, payment begins in November and ends in March. Summer session plan payments begin in April and end in June. Under the plan, all payments are due on the 20th of each month; provided payments are received by that date, no interest or late fees will be incurred. Students who enroll in the plan

after the first month of scheduled payments must make up all payments retroactive to the month of enrollment. Students enrolled in a monthly payment plan whose planned payments are not sufficient to pay the balance on the student's account are subject to interest and late fees in the second month of the fall and spring semesters. An outside vendor administers the plan and charges a one-time participation fee in addition to interest and late fees for any payments received late. For more information, see the monthly payment plan (http://studentaccounts.gwu.edu/monthly-payment-plan).

Third-Party Payment

The University accepts employer vouchers or purchase orders that are not contingent upon receipt of grades. Under all circumstances, the charges for tuition and fees remain the responsibility of the student. Authorization from a sponsor to be billed for a student's charges must be received in the Student Accounts Office by the end of the third week of the fall or spring semester. A late authorization fee may be incurred for responses received after these times. Bills are mailed to sponsors in October for the fall semester and in February for the spring semester. Should a sponsor fail to remit payment to the University, the University will contact the student for payment. Students whose employers or sponsors reimburse them for tuition and fees after receipt of grades must pay in full before the first day of the semester or at the time of registration to avoid interest, late fees, and/or cancellation of registration. Students whose tuition and fees are paid in full or in part by employee benefits or teacher tuition remission must pay any remaining balance by the stated due date to avoid interest, late fees, and/or cancellation of registration.

Past Due Accounts

Accounts that are past due are encumbered by the University. A student whose account is encumbered may not register for future semesters and may not receive diplomas or transcripts. Late payment fees and interest may also be assessed each month that the account has an overdue outstanding balance. Please see the University's Tuition Payment Disclosure Statement (http://studentaccounts.gwu.edu/disclosures)for more information on those fees and billing practices. Accounts that are more than 90 days past due are referred to an agency and/or attorney for collection. The student is then responsible for all charges, costs, and fees due to, or incurred by, the University as well as all costs, fees, and charges incurred by the agency and/or attorney, including attorney's fees. Students whose registrations have been revoked or canceled for failure to make timely payments are not permitted to attend class and may not occupy University housing.

Dishonored/Returned Payments

A student whose payment is returned unpaid by the bank for any reason will be charged a returned payment fee and will be responsible for any associated costs and/or attorney's fees incurred by the University should a civil lawsuit or other collection effort be instituted to collect on such dishonored payment. In any case where the University has reason to believe that a student presented a dishonored payment in bad faith, the University may, in addition to any collection efforts, refer the matter to the proper authorities for criminal prosecution.

Withdrawals and Refunds

Applications for withdrawal from the University or from a course after the registration period must be made in accordance with procedures outlined under University Regulations in the sections Complete Withdrawal from the University and Adding and Dropping Courses (https://registrar.gwu.edu/withdrawals-refunds), respectively. Financial aid recipients must notify the Office of Student Financial Assistance in writing. The tuition deposit required of entering students will not be refunded.

In the case of authorized withdrawals and changes in registration schedule, cancellations of semester tuition charges and fees will be made in accordance with the following schedule for the fall and spring semesters:

1. *Complete withdrawal from all courses (on-campus students):*

Withdrawal dated on or before the end of the first week of the semester	90%
Withdrawal dated on or before the end of the second week of the semester	60%
Withdrawal dated on or before the end of the third week of the semester	40%
Withdrawal dated on or before the end of the fourth week of the semester	25%
Withdrawal dated after the fourth week of the semester	None

2. *Partial withdrawal:* If the change in course load results in a lower tuition charge, the refund schedule above applies to the difference.

3. Regulations governing student withdrawals as they relate to residence hall and food service charges are contained in the specific lease arrangements.

4. *Summer sessions:* In cases of authorized withdrawals from courses, refunds of 85% of tuition and fees will be made for courses dropped within the first seven calendar days of the start of a session. No refund will be made for courses dropped thereafter.

Certain programs or classes or those with non-traditional semesters may have special refund schedules. Students are encouraged to consult with their program office to determine if a special schedule applies.

The above information regarding cancellation of tuition charges and fees after complete withdrawal from the University may not apply to entering students who are recipients of federal aid; those students should check with the Student Accounts Office for the applicable cancellation schedule. Federal regulations require that financial aid recipients use

refunds to repay financial aid received for that semester's attendance. This policy applies to institutional aid as well.

If a recipient of federal financial aid withdraws from the University or reduces his or her course load, federal regulations require that the University reevaluate the student's eligibility to determine the amount of aid the student is allowed to retain. If there is a credit balance on the student's account after the federal funds have been adjusted, institutional funds will be recovered from that amount.

See the University's complete Return of Title IV funds policy (https://studentaccounts.gwu.edu/sites/studentaccounts.gwu.edu/files/downloads/Return%20of%20Title%20IV%20Policy%20NEWLOGO.pdf).

In no case will tuition be reduced or refunded because of the student's absence from classes. Authorization to withdraw and certification for work done will not be provided to a student whose account is not in good standing.

FINANCIAL AID

The George Washington University offers student financial assistance to all eligible students from a variety of resources. In addition to GW assistance, the University participates in federal student aid programs from the U.S. Department of Education and student financial assistance programs from other U.S. government agencies such as the U.S. Department of Veterans Affairs and the U.S. Department of Defense. Some states offer student financial assistance for undergraduate enrollment at GW.

In general, consideration for student financial assistance is restricted to students in good academic standing at the University who meet minimum grade-point average and satisfactory academic progress requirements for specific awards and not financially encumbered by any other University office. Failure to meet and maintain satisfactory academic progress requirements may result in rescinding of awards.

GW reserves the right to request documentation to determine aid eligibility. Documents submitted as part of the aid application become the property of the University and cannot be returned. Such documents are protected under the Family Educational Rights and Privacy Act (FERPA), as amended. Federal regulation requires the University to report cases of suspected fraud or misrepresentation to appropriate federal, state, and local authorities.

Gift aid, such as grants, scholarships, fellowships, is student financial assistance not required to be repaid. Gift aid is taxable under federal regulation to the extent that it exceeds the allowable costs of tuition, fees, and required books and supplies, or is dedicated to other costs such as room and board. Federal grants may be taxable if, together with other gift aid, they exceed allowable costs. For complete information on IRS rules regarding educational costs, see IRS Publication 970, *Tax Benefits for Education*.

Self-help aid is aid that students undertake on their own behalf, either in the form of earnings via the Federal Work-Study program or through borrowing. Loans must be repaid.

Eligibility for student aid is processed under cost of attendance budgets for various categories of students, per requirements of federal statute. Refer to the policy on cost of attendance budgets (http://financialaid.gwu.edu/cost-of-attendance) for details. A complete student aid package cannot exceed a student's cost of attendance budget. The University will review and potentially adjust awards for students receiving student financial assistance from more than one source. Receipt of student financial assistance from multiple sources cannot exceed tuition charges. If institutional aid is involved, adjustments will be made.

Non-degree and certificate programs that are approved for federal student aid programs must provide "gainful employment" disclosures under federal regulation. Such disclosure are found on the respective academic programs' website. Continued Title IV eligibility for these programs are reviewed annually.

For complete information on student financial assistance at GW, visit the Office of Student Financial Assistance website (http://financialaid.gwu.edu).

Information in this section of the Bulletin is accurate as of the date of its publication and is subject to change based on changes in federal and/or state statute, regulation, policies and procedures (which may, in turn, necessitate changes to application procedures and policies). The University reserves the right to change student financial assistance policies.

UNDERGRADUATE

Undergraduate Financial Aid

All freshmen are automatically considered for the merit-based *Presidential Academic Scholarship*, which is awarded to the most competitive applicants in the applicant pool. Complete information on merit-based awards (awards based on academic criteria) are available on the website of the Office of Undergraduate Admissions (http://undergraduate.admissions.gwu.edu/scholarships).

The Office of Student Financial Assistance awards various need-based GW institutional financial aid funds: The largest fund awarded is the University and Alumni Award (http://financialaid.gwu.edu/university-and-alumni-award). In addition, the Office awards University Scholarships (see the section below) and the One-Year Award (http://financialaid.gwu.edu/one-year-award).

The following scholarships programs are also available:

The J.B. and Maurice C. Shapiro Scholarship to the University of Oxford is awarded each spring to a graduating senior or recent graduate through a competitive process upon the nominee's acceptance to Oxford. To be eligible, applicants must have applied for the Rhodes or British Marshall Scholarships. All of these competitions require high academic standing, evidence of leadership, and dedication to the larger society through community service. The Shapiro Scholarship provides for up to two years of study at Oxford, equivalent to the Rhodes Scholarship. The J.B. and Maurice C. Shapiro Endowment funds two scholarships per year—one new and one renewal.

The Bender Scholarship to the University of Cambridge is funded by an endowment, the Bender Scholarship Fund. The Bender Scholarship is open for competition every other year. Graduating seniors, recent graduates, and third-year law students who participated in the Rhodes and/or British Marshall competitions are eligible for the Bender Scholarship. The endowed scholarship provides for up to two years of study at the University of Cambridge, equivalent to the British Marshall Scholarship. The Bender Scholarship criteria are high academic

achievement, evidence of leadership skills or potential, and community service.

The Pembroke/CW Program. GW has a special relationship with Pembroke College in Oxford, whereby up to six GW juniors are placed at the College for one year and enrolled as fully matriculated students of the University of Oxford. These placements are determined in an annual competition that takes place at GW in the fall. The committee evaluating candidates forwards the finalists' applications to Pembroke College, and Pembroke makes the final decision on placements. Many GW students have spent a year at Oxford in this program.

Need-Based Financial Aid

All freshman and transfer students are required to file both the College Scholarship Service PROFILE (https://student.collegeboard.org/css-financial-aid-profile) -- which is not an application for funds but provides a need analysis that many schools use to awards its own funds – and the Free Application for Federal Student Aid (https://fafsa.ed.gov) (FAFSA), which is the application for federal student aid programs (and which many states use as application for their own funds). Applicants must designate GW as recipient of their need analysis data. All applicants must also provide to GW directly copies of their signed federal income tax returns and W-2 Forms for the current tax year for the student and the student's parents (if a dependent student). Non-custodial parents are also required to provide disclosures.

Please refer to our policies on Parental Contribution for Dependent Students (http://financialaid.gwu.edu/policy-parental-contribution-dependent-students).

Complete application information is available on the Office of Student Financial Assistance (http://financialaid.gwu.edu) website under the section titled "Getting Assistance."

Deadlines are as follows: Incoming freshmen—February 1; Transfer students—April 1; Continuing students—April 30. For summer sessions, the deadline is March 1, though summer aid is limited to federal or private education loans.

Students must reapply for any need-based aid, including need-based scholarships, and must meet/maintain satisfactory academic progress requirements per specific student aid program requirements.

University Scholarships

Full and partial tuition scholarships begin in the fall semester and may be renewed through the senior year, provided that the recipient reapplies by the published deadlines, maintains a B- average or better, completes 12 credits per semester, and continues to demonstrate financial need. All applicants for need-based aid are considered for these awards.

- Sherman Page Allen Memorial Scholarship
- Anderson Family Endowed Scholarship Fund
- Mary J. Anderson Memorial Scholarship Fund
- Byron Andrews Memorial Scholarship Fund
- Dominic F. Antonelli, Jr., and Judith D. Antonelli Family Scholarship
- Ibrahim Aborsey Ashia Engineering Scholarship Fund
- Stanley M. Baer Scholarship in Electrical Engineering
- Barker Scholarship Fund
- Callie Barker Endowed Scholarship Fund for Art Education
- Bedi Family Foundation Scholarship Fund
- Gilbert A. Bell Memorial Scholarship Fund
- Sigrid Weeks Benson Scholarship Fund
- David W. Berg Scholarship Fund
- Michael Billiel Student Scholarship Fund
- Gail E. Boggs Engineering Scholarship
- John and Anne Booth Undergraduate Scholarship
- Anne Borde University Scholarship
- Lura Bradfield Endowed Scholarship for Women
- Dirk S. Brady Endowed Scholarship Fund
- Henry Newlon Brawner, Jr., Memorial Scholarship Fund
- Victoria Briggs Scholarship Fund
- Frederick Albert and Alma Hand Britten Scholarship Fund
- Abigail Ann Brown and Henry Kirk White Scholarship Fund
- George R. Brown Scholarship
- Joel T. Broyhill Scholarship Fund for Public Policy Studies
- Frate Bull, Jr., Scholarship Fund
- Eleanor and Michael Burda Scholarship Fund
- Barbara Willmarth Callahan Scholarship Fund
- Cannon Design Scholarship in Engineering and Applied Sciences
- Mary Ellen Caplin Scholarship Fund
- Nelson and Michele Carbonella Engineering Scholarship
- Elsie M. Carper Scholarship Fund
- Emmn K. Carr Scholarship Fund
- Henry Harding Carter Scholarship Fund
- Maria M. Corter Scholarship Fund
- Paul E. Casassa Memorial Scholarship Fund
- Cauffman Scholarship Fund
- Cisneros Scholarship Fund
- A. James Clark Engineering Scholars
- Class of 1958 Scholarship for Physics
- Class of 2005 September 11th Memorial Scholarship Fund
- David S. Cohen Scholarship in Business
- Gene R. Cohen Entrepreneurial Scholarship
- Columbian College Endowed Scholarship Fund
- Columbian Women Scholarships
- Cook Family Endowed Scholarship Fund
- Marion, John, and Richard Cunningham Endowed Scholarship Fund
- Davis Scholarship Fund
- Cora and John H. Davis Scholarship Fund
- Shelby Cullom Davis Foundation Fund

- Bertha B. Day Scholarship Fund
- Marvin Dekelboum Scholarship
- Kim and Derek Dewan Endowed Scholarship
- Constance Drane Scholarship Fund
- Eberli Family Endowed Scholarship
- Professor Burton I. Edelson Memorial Scholarship
- James B. Edmunds, Jr., Memorial Scholarship
- Epsilon of Sigma Chi Scholarship Fund at GW
- Henry Parsons Erwin Scholarship Fund
- Gerhard Fairgrieve Endowed Scholarship Fund
- Farnham Scholarship
- Feinsod Scholarship Fund
- Edward M. Felegy Scholarship Endowment in Honor of Stephen Joel Trachtenberg
- Lindsey M. Ferris Memorial PAF Scholarship Fund
- Esther Brigham Fisher Scholarship
- Julius Fleischman Scholarship Fund for Blind or Visually Impaired Students
- R. John and Carolyn Dwmagan Fletcher Fund
- Andrew K. Friedman Endowed Memorial Scholarship Fund
- Sergius Gambal Scholarship Fund
- The George Washington University Faculty and Staff D.C. Scholarship Fund
- The George Washington University Undergraduate Endowed Scholarship Fund
- Gersten Family Scholarship Fund
- Louis B. Giles Memorial Scholarship Fund
- Philip L. Graham Fund Scholarship for Diversity in Journalism
- Gary C. Granoff and Leslie Granoff Scholarship Fund
- Gridiron Foundation Scholarship Fund
- Grosso Family Scholarship
- Violet Davis Grubbs Scholarship Fund
- Isadore and Bertha Gudelsky Family Scholarship Endowment Fund
- Michele Hagans Fund
- Helene and Mark Hankin Scholarship
- Theo Campbell Hartman Memorial Scholarship Fund
- Hatchet Scholarship Fund
- Hazelton Scholarship Fund
- William Randolph Hearst Endowed Scholarship Fund
- Hess-Kaplan Scholarship Fund
- John H. Holmes Native American Scholarship I and II
- Mei Yuen Hoover Scholarship Fund
- Gladys B. Hornbrook Endowed Scholarship
- Frederic R. Houser Scholarship Fund
- June J. Hoyle Scholarship Fund
- Taylor Hubbard Memorial Scholarship
- Madeleine Reines Jacobs Undergraduate Fund in Chemistry
- Robert Jacques Scholarship Fund
- Allen M. Jones Scholarship Fund
- Raymond V. Jones and Katherine P. Jones Scholarship
- Howard Kahn Undergraduate Scholarship Fund
- Karlgaard Scholarship in Computer Science
- Karlgaard Scholarship in Computer Engineering
- Karp Scholarship Fund
- David B. and James L. Karrick, Jr., Scholarship Fund
- Joseph and Helen Kaufmann Scholarship Fund
- Elizabeth Kay Scholarship Fund
- John Kaye Scholarship Fund
- William Charles Keller Scholarship and Loan Fund
- Amos Kendall Scholarship Fund
- Robert Martin Kilgore Scholarship
- Kim Family Endowed Scholarship
- Esther C. and David F. Lawton Memorial Fund
- L. Poe Leggette Scholarship Fund
- Levine-Klein Endowed Scholarship Fund
- Dr. Harold Liebowitz Scholarship Fund
- Thaddeus A. and Mary Jean Lindner Scholarship Fund
- Mr. and Mrs. Clarence A. Lindquist Scholarship Fund
- Calvin D. Linton Endowed Scholarship Fund
- Mary and Daniel Loughran Foundation Scholarship Fund
- Mack Family Endowed Scholarship Fund
- Garnett L. Mack Endowed Scholarship Fund
- Joseph W. March, Jr., Scholarship Fund
- Richard Marks Scholarship
- Richard Marmaro Family Scholarship
- Ruth Marshall Scholarship
- Curtis E. McCalip Scholarship Fund
- Maud E. McPherson Scholarship in English and English Literature
- Malden Family Endowed Scholarship Fund
- Memishian Student Scholarship Fund
- Memorial Scholarship Fund
- Mensh Family Memorial Scholarship Fund
- Connie J. Miller Strategic Opportunity Fund for Civil and Environmental Engineering
- Mintz Scholarship Fund
- Casper F. "Casey" Mohl Mechanical Engineering Memorial Scholarship
- Ruth Monter Endowed Scholarship
- A. Morehouse Scholarship
- E. K. Morris Education Fund
- Marion 0. Norby Endowed Scholarship Fund
- William B. Oakley Scholarship Fund
- K. Frederick and Madeline G. Okano Scholarship Fund

- Thomas E. Orr Scholarship Fund
- Henry and Caroline Orth Scholarship Fund
- Thornton Washington Owen International Business Scholarship Fund
- Nicholas G. Paleologos Scholarship Fund
- John Earl Parsons Scholarship
- Tomas A. Pastoriza Scholarship Fund
- Shantilal P. Patel Scholarship Fund
- Lawrence Joy Pearson Scholarship Fund
- Maureen Schafer Peckmon Endowed Scholarship for Women's Soccer and Athletics
- Fred B. and Almo D. Pletcher Scholarship Fund
- The Polden Family Scholarship
- Sterling W. Pope Scholarship Fund
- S. Remey Poltingl:lr Memorial Scholarship Fund
- Levine L. Powell Scholarship Fund
- The Ronald E. Pump Endowed Scholarship Fund
- Henry Whitefield Samson Scholarship Fund
- Schley Family Scholarship for Baseball
- Schneider-Taylor Family Endowed Scholarship Fund
- Scottish Rite of Freemasonry Scholarship Fund
- Cecelia M. Sehrt Scholarship Fund
- Edward Henry and Helen Ludwig Sehrt Scholarship
- Sejong Scholarship Fund
- Niranjan G. Shah Scholarship Fund
- Eugene Corey and Elizabeth PoweJl Nuckols Shaw Scholarship Fund
- Lula M. Shepard Scholarship Fund
- Ira and Adela Shesser Endowment in the Columbian School of Arts and Sciences
- Mildred Shott Scholarship Fund
- Simon Family Scholarship Endowment
- Siochain Foundation Endowed Scholarship
- Margaret Lucille Snoddy Scholarship Fund
- South Asian Society Scholarship Fund
- Louisa J. Spencer Scholarship Fund
- George Steiner Music Scholarship Fund
- Mary Lowell Stone Scholarship Fund
- Marc M. Sussman and Richard A. Morris Endowed Scholarship Fund
- Charles Clinton Swisher Scholarship Fund
- Mary Helen Taliaferro Endowed Scholarship Fund
- Tanner Endowed Scholarship Fund
- Tauber Holocaust Memorial Scholarship for Public Health
- Lydia W. Thomas Scholarship Endowment
- Trachtenberg Endowed Scholarship Fund
- Tucker Scholarship Fund
- University Players Scholarship Fund
- University Scholarship Fund
- Unrestricted Undergraduate Scholarship Fund
- Mary and Warren Vincent Scholarship Fund
- Darrel Waldroupe Memorial Scholarship Fund
- Christine L. Waldvogel Memorial Scholarship Endowment
- William Walker Scholarship Fund
- Wanda Webb Scholarship Fund
- Elissa Wernick and James S. Richman Scholarship Fund
- Lucy Kim Whitcombe Memorial Endowed Scholarship Fund
- White Scholarship Fund
- Daniela Wiggins Scholarship
- John Withington Scholarship Fund
- William G. Woodford Scholarship Fund
- Granville Writt Woodson Scholarship Fund
- Anna Wunderman Fund
- Virginia H. Yates Endowed Fund
- Christopher and Constance Young Scholarship in Accountancy
- Barbara Jackman Zuckert Scholarship Fund
- Joel D. Zychick Endowed Scholarship Fund in Business

Federal Student Aid Programs

The following federal student aid programs are available to eligible students at GW: Federal Pell Grants (http://financialaid.gwu.edu/federal-pell-grant), Federal Supplemental Educational Opportunity Grants (http://financialaid.gwu.edu/federal-supplemental-educational-opportunity-grant) (FSEOG), Federal Work-Study (http://financialaid.gwu.edu/work-study) (FWS), Federal Perkins Loans (http://financialaid.gwu.edu/federal-perkins-loan), Federal Direct Stafford Loans (http://financialaid.gwu.edu/federal-direct-loans), Federal Direct PLUS Loans (http://financialaid.gwu.edu/federal-direct-parent-plus-loan), and TEACH Grants (http://gsehd.gwu.edu/content/teach-grant-interest-form). The U.S. Department of Education's Federal Student Aid (https://studentaid.ed.gov/sa) website includes complete program details. We especially recommend that you download, review and retain the various student loan publications from the U.S. Department of Education, which are available on the Federal Student Aid Resources (https://studentaid.ed.gov/sa/resources) web-site.

Federal Direct Stafford Loans
Federal Direct Stafford Loans are student loans from the U.S. Department of Education in which the student is the borrower. Annual loan limits are as follows:

Dependent undergraduates (most students under the age of 24):

- $5,500 as freshmen (No more than $3,500 of this amount may be in subsidized loans)
- $6,500 as sophomores (No more than $4,500 of this amount may be in subsidized loans)
- $7,500 as junior and seniors (No more than $5,500 of this amount may be in subsidized loans)

Independent undergraduates (students 24 years or age and older) and dependent students whose parents are unable to borrow under the Federal Direct PLUS Loan program:

- $9,500 as freshmen (No more than $3,500 of this amount may be in subsidized loans)
- $10,500 as sophomores No more than $4,500 of this amount may be in subsidized loans)
- $12,500 as juniors and seniors (No more than $5,500 of this amount may be in subsidized loans)

Federal student loan programs also have aggregate (lifetime) loan limits (https://studentaid.ed.gov/sa/types/loans/subsidized-unsubsidized).

- For dependent students (except student whose parents are unable to borrow under the Federal Direct PLUS Loan program), the subsidized and unsubsidized aggregate loan limit is $31,000, with no more than $23,000 of this amount being subsidized loans.
- Independent Students (and dependent undergraduate students whose parents are unable to obtain PLUS Loans) – the undergraduate aggregate loan limit is $57,500, and no more than $23,000 of this amount may be in subsidized loans.

For students who receive subsidized Stafford loans as part of their need-based financial aid award, the government pays the interest while they are enrolled in school at least half time and for six months after they leave school. Students ineligible, or only partly eligible, for subsidized funds may apply for an unsubsidized Stafford Loan up to the same limits to cover their family contribution. Terms and conditions are the same, except that the student borrower is responsible for all interest that accrues on the unsubsidized loan from the date it is disbursed; deferments are available. Independent students (and students whose parents are denied a PLUS loan) are eligible to borrow additional unsubsidized Stafford funds of $4,000 as freshmen and sophomores and $5,000 as juniors and seniors.

There are fees associated with both subsidized and unsubsidized Stafford loans. Interest rates and fees are set on an annual basis by federal statute, usually by June 1 and taking effect on July 1 through the following June 30. See the OSFA's "Summary of Loan Details (http://financialaid.gwu.edu/loans)" chart or the U.S. Department of Education's Federal Student Aid (https://studentaid.ed.gov/sa/types/loans/interest-rates) website for up-to-date information on interest rates and associated loan fees.

Federal Direct PLUS Loans
The Federal Direct PLUS Loan is a government-sponsored, credit-based, fixed-rate loan that can be used to supplement the student's Federal Direct Stafford Loan or to help with their family contribution. The U.S. Department of Education is the lender. Each academic year, parents without an adverse credit history may apply for a Federal Direct PLUS loan up to the cost of education, minus financial aid, for each dependent child attending college at least half-time. Loan repayment begins within 60 days of the last disbursement and the maximum repayment term is ten years.

Origination fees are deducted from loan proceeds prior to disbursement. Families who intend to use loan funds for payment of University charges at time of registration should submit a loan application and all supporting documents to OSFA no later than May 1 for the fall semester, October 1 for the spring semester, and March 1 for summer sessions. See the OSFA website (http://financialaid.gwu.edu/federal-direct-parent-plus-loan) for details and application procedures. See also The U.S. Department of Education's information on Federal Direct PLUS Loans (https://studentaid.ed.gov/sa/types/loans/plus).

Federal Perkins Loans
Federal Perkins Loans (http://financialaid.gwu.edu/federal-perkins-loan) are loans made to students with "exceptional financial need," as required by federal statute, based on availability of funds to lend from collections of past loans made. The interest rate is 5% fixed and there is a ten-year repayment period. The annual loan limit for Federal Perkins Loan is $5,500 per year and the lifetime limits for Perkins are $27,500 for undergraduates and $60,000 for combined undergraduate and graduate studies. Loan funds awarded are limited based on availability of funds to lend.

See also the U.S. Department of Education's Federal Student Aid information on Federal Perkins Loans (https://studentaid.ed.gov/sa/types/loans/perkins).

Private Education Loans

Private lenders provide additional loan options to qualified students. These loans offer varying interest rates and repayment options. Such loans allow the student to borrow up to 100% of GW's annual undergraduate cost of attendance less any current financial assistance. They typically have variable rates, rates within rate tiers according to credit worthiness, and application fees.

Private education loans must be reported to OSFA to be considered as a resource against federal student aid eligibility, per federal regulation.

Students are strongly advised to consider federal student loans before alternative loans due to the former's generally more favorable interest rates, fees, and repayment options. Consider reviewing the OSFA Private Student Loan Counseling Checklist (http://financialaid.gwu.edu/private-student-loan-counseling-checklist).

Other Loan Funds

GW has several emergency loan funds for degree students with short-term needs. These funds include:

- Jessie B. Martin Loan Fund
- Barney Plotnick, M.D., Student Loan Fund
- University Student Emergency Loan Fund
- Peter and Doris Firsht Loan Fund

Students apply for emergency loans at Colonial Central (http://colonialcentral.gwu.edu).

Student Employment

The University participates in the Federal Work-Study Program (http://financialaid.gwu.edu/work-study). Students should address questions concerning eligibility to OSFA. GW's Center for Career Services (http://careerservices.gwu.edu) handles Federal Work-Study placement and also maintains a registry of both full- and part-time positions available in the D.C. Metropolitan Area.

International Students

International students are eligible to receive merit scholarship consideration from the Office of Admissions and are automatically considered during the admissions process.

Non-U.S. students should check with their home country for potential national and/or local student aid options for enrollment in the United States.

Visit the U.S. Department of State's Education USA web-site (https://educationusa.state.gov) for a database of potential resources.

Private education loans for international students are usually only available with a credit-worthy U.S. co-signer. The Office of Student Financial Assistance uses cost of attendance budgets for the processing of international student financial assistance. Details are available on the OSFA website (http://financialaid.gwu.edu).

Military Education Financing

Veterans Education Benefits

GW's Office of Military and Veteran Student Services processes applications for entitlement payments under the various classes of veterans' educational benefits from the U.S. Department of Veterans Affairs. For more information consult the Office of Military and Veteran Student Services website (https://services.military.gwu.edu).

Tuition Assistance Program

Funds from the various branches of the armed services under the Tuition Assistance Program are processed by the GW Student Accounts Office (https://studentaccounts.gwu.edu).

ROTC Scholarships

Navy ROTC (http://nrotc.gwu.edu/scholarships) is available at GW. Army and Air Force ROTC is available at Georgetown University and Howard University, respectively. All ROTC programs are handled by the GW Student Accounts Office (https://studentaccounts.gwu.edu). Further details are available on the Office of Student Financial Aid website (http://financialaid.gwu.edu/military-educational-benefits) and from the Office of the Registrar (http://registrar.gwu.edu/rotc).

Please note that ROTC scholarships must be considered as a resource against any federal student aid eligibility, per federal regulation.

Required Disclosures and Notices

University Policy on Equal Opportunity

The George Washington University does not unlawfully discriminate against any person on the basis of race, color, religion, sex, national origin, age, disability, veteran status, or sexual orientation. This policy covers all programs, services, policies, and procedures of the University, including admission to educational programs and employment.

The University is subject to the District of Columbia Human Rights Act. Inquiries concerning the application of this policy and federal laws and regulations concerning discrimination in education or employment programs and activities may be addressed to the Chief Human Resources Officer, Office of Chief Human Resources Officer, 2033 K Street NW, Suite 220, Washington, DC 20052, (202) 994-9600, or to the Assistant Secretary for Civil Rights of the U.S. Department of Education; or to the Director of the U.S. Equal Employment Opportunity Commission/Washington Field Office.

To request disability accommodations, students should contact the Office of Disability Support Services, (202) 994-8250 (TDD/voice), and employees should contact the Office of Equal Employment Opportunity, (202) 994-9656 (voice) or 9650 (TDD).

Availability of State Grant Assistance for Undergraduate Education

Before pursuing loan options, undergraduate students are advised to review the potential for state grant assistance from their home state to help finance their GW education. See information from the national Association of Student Financial Aid Administrators (https://www.nasfaa.org/State_Financial_Aid_Programs) on state grant programs.

Satisfactory Academic Progress for Student Financial Assistance

Federal student aid programs require satisfactory academic progress. Please refer to our complete Title IV satisfactory academic progress policy (http://financialaid.gwu.edu/policy-satisfactory-academic-progress).

Availability of U.S. Department of Education Loan Publications

Students pursuing federal student loans are advised to review, download, and retain the loan publications from the U.S. Department of Education which are available on the Federal Student Aid resources page (https://studentaid.ed.gov/sa/resources).

GW Policy on Student Loans and Code of Conduct

GW does not maintain a preferred lender list and will certify loan presented that requires certification. Refer to GW's

HEA-compliant code of conduct for student loans (http://financialaid.gwu.edu/policy-student-loan-code-conduct).

Role of the National Student Loan Data System (NSLDS)
Data on federal student loans and Federal Pell Grants are reported to the National Student Loan Data System (NSLDS), which is accessible by GW and U.S. Department of Education personnel and servicers of federal student loans. Students can access their data on the NSLDS website.

Title IV Eligibility and Drug Convictions
Under federal law a recipient of Title IV student financial assistance who is convicted for possession and/or sale of illegal drugs while enrolled as a student at GW will be ineligible for further Title IV funds for a fixed period of time. Refer to the University's complete policy on the Impact of Drug Conviction on Title IV eligibility (http://financialaid.gwu.edu/policy-impact-drug-conviction-title-iv-eligibility).

Return of Title IV Funds Policy
The University is required by the HEA to recalculate the eligibility for federal Title IV student financial assistance for students who withdraw, drop out, are dismissed, or take a leave of absence, prior to completing 60% of a semester. Title IV funds include Federal Pell Grants, Federal Supplemental Educational Opportunity Grants, Federal Work-Study, Federal Perkins Loans, Federal Direct Subsidized Stafford Loans, Federal Direct Unsubsidized Stafford Loans, and Federal Direct PLUS Loans. The priority sequence for return of Title IV funds is as follows:

1. Unsubsidized Federal Stafford Loans
2. Subsidized Federal Stafford Loans
3. Unsubsidized Direct Stafford Loans (other than PLUS Loans)
4. Subsidized Direct Stafford Loans
5. Federal Perkins Loans
6. Federal PLUS Loans
7. Direct PLUS Loans
8. Federal Pell Grants for which a return of funds is required
9. Federal Supplemental Educational Opportunity Grants for which a return of funds is required
10. TEACH Grants for which a return of funds is required
11. Iraq-Afghanistan Service Grant for which a return is required

For the complete policy statement on Return of Title IV funds, see the Colonial Central website. This applies only to federal student aid and does not pertain to the University's refund policy, as noted in the Fees and Financial Regulations section of this Bulletin.

Title IV Credit Balances
Students have the right to exercise authorizations to hold or release a hold pertaining to Title IV credit balances. Similarly, parents have the right to do so pertaining to Federal Direct PLUS Loans. See the pertinent Title IV credit balance authorization form.

Student Title IV credit balance authorization form (https://studentaccounts.gwu.edu/sites/studentaccounts.gwu.edu/files/downloads/Title_IV_Credit_Auth_StudentNEWLOGO.pdf)

Parent Title IV credit balance authorization form (https://studentaccounts.gwu.edu/sites/studentaccounts.gwu.edu/files/downloads/Title_IV_Credit_Auth_ParentNEWLOGO.pdf)

HEA Disclosures Portal
Visit the HEA Disclosures portal (http://financialaid.gwu.edu/higher-education-act-disclosure) for complete disclosures information.

GRADUATE

Graduate Financial Aid

The George Washington University offers a variety of financial support for graduate students that includes assistantships, fellowships, traineeships, graduate school scholarships, research appointments, and part-time employment, in addition to eligibility for Federal student aid programs.

Several forms of aid not based on financial need are available. Graduate assistantships are fully taxable, and gift aid (scholarships, grants, fellowships, assistantships, tuition awards, etc.) is taxable to the extent that it exceeds the allowable costs of tuition, fees, and required books and supplies or is dedicated to other costs, such as room and board. Federal grants may be taxable if, together with other gift assistance, they exceed the allowable costs. For complete information on IRS rules regarding educational costs, see IRS Publication 970, *Tax Benefits for Education*.

Eligibility for student aid is processed under cost of attendance budgets for various categories of students, per requirements of federal statute. Refer to our policy on cost of attendance budgets (http://financialaid.gwu.edu/cost-of-attendance) for details. A complete student aid package cannot exceed a student's cost of attendance budget. GW will review and potentially adjust awards for students receiving student financial assistance from more than one source. Receipt of student financial assistance from multiple source cannot exceed tuition charges. If institutional aid is involved, adjustments will be made.

Application and correspondence concerning assistantships, fellowships, traineeships, or graduate scholarships should be sent directly to the GW school or college. Unless otherwise specified, applications and supporting credentials should be submitted no later than the February 1 prior to the academic year for which the award is made. Application for admission to graduate study is a prerequisite for consideration.

Office of Graduate Student Assistantships and Fellowships

The Office of Graduate Student Assistantships and Fellowships (http://www.gwu.edu/~fellows) provides services to entering and enrolled graduate students; detailed information on

awards that may be used in support of graduate study is available on the office's website. Such awards are generally sponsored by foundations, professional and learned societies, industries, and other organizations. Services are provided to entering and enrolled graduate students.

Assistantships
Available to students in masters and doctoral programs in most academic departments, graduate assistantships provide financial compensation for a designated unit of service to the assistant's major department of instruction. All new graduate assistants must attend an orientation program and will be enrolled in an online course.

International students applying for graduate teaching assistantships must have minimum TOEFL scores of 600 (paper-based) or 100 (Internet-based) or an overall band score of 7.0 on the Academic International English Language Testing System (IELTS) with no individual band score below 6.0. International students may be appointed to graduate assistantships. Those found to have difficulties with English will be referred to the Speech and Hearing Center's speech enhancement program; such students will be assigned nonteaching duties in place of classroom instruction and will be re-evaluated each semester. If a student is not designated as qualified to give classroom instruction by the end of one academic year, the assistantship will not be renewed.

Graduate Research Assistantships

Available to students in masters and doctoral programs in some GW academic departments. A graduate research assistant receives compensation for research assistance provided to a professor.

Resident Assistantships

Resident assistantships are available to graduate students in any field of study who are interested in working in University residence halls. Specific duties vary with the position, but basically consist of counseling, advising student groups, and administrative duties. Remuneration includes salary and a furnished room for the academic year. All positions are part time, and staff members are required to enroll as full-time students in degree programs. For further information, see the Center for Student Engagement website (http://studentengagement.gwu.edu/resident-advisors).

Fellowships, Scholarships, and Related Programs

University Fellowships

Available to graduate students in masters and doctoral programs in most GW academic departments. Fellowships are based on scholarship and each fellow may receive a stipend and/or tuition allowance.

Other Fellowships, Scholarships, and Related Programs

- Achievement Rewards for College Scientists Scholarships
- Angeline Anderson Scholarship Fund
- Bank of America Fellowship
- Robert R. Banville Scholarship Fund
- Sylven Said Beck Endowment Fund for Elementary Education
- Bell Atlantic Endowment Fellowships in Physics and Chemistry
- Mary Darnell Blaney Fellowship in International Relations
- Winfield Scott Blaney Fellowship in International Relations
- John and Claudia Boswell Scholarship Fund
- Hortence Mae Boutell Scholarship in Fine Arts
- Marcella Brenner Museum Education Scholarship Fund
- David and Anne Elizon Brown Scholarship
- Joel T. Broyhill Scholarship
- Doris and Sam Buchhalter Scholarship
- Robert D. Campbell Endowment Fellowships in Geography
- Career Development Fellowships
- Oliver T. Carr, Jr., Fellowships
- Carruthers Family M.B.A. Scholarship
- Center for Washington Area Studies Fellowship
- Chemistry Alumni Fellowship
- Children's National Medical Center Fellowships in Biomedical Sciences
- James Cornfield Endowment
- Daewoo Corporation Scholarships
- Daewoo Vietnamese Scholarship
- Daughters of the American Revolution (DAR) Endowment Fellowships
- Maria Davis European Studies Fellowships
- Vincent J. DeAngelis Scholarship Fund
- Deixler/Swain Graduate Scholarship in History
- Dockery Endowment Scholarship
- Eaton Scholarship
- Eaves-Carden Graduate Scholarship
- Economics Alumni Scholarship
- Engineering Alumni Association Fellowship
- Evans Scholarship Fund in Art
- Evans Scholarship Fund in Theatre and Dance
- Winifred and Todd Farah Scholarship
- Rosetta and Sadie Feldman Endowment Fellowship
- Fischer Family Fund
- Joseph Fleischman Fellowship in Real Estate Studies
- Julius Fleischman Scholarship in Tourism and Hospitality Management
- Rockwood H. Foster Memorial Scholarship Fund
- James Harold Fox Scholarship Fund
- Philip Friedlander, Jr., Scholarship in Entrepreneurship and Small Business Studies
- Mary Hatwood Futrell Scholarship Fund

- Jack Gerard Endowment Fellowship
- Global Leaders Fellowships
- Leo and Lillian Goodwin Endowment Scholarship
- Graduate Engineering Honors Fellowship Program
- Mildred Green Memorial Endowment Fund
- Walter Green Award Fund
- Harriet Green-Kopp Fellowship
- Griffith Family Scholarship Fund
- GSPM Alumni Scholarship Fund
- GSPM Faculty Scholarship Fund
- Anna Spicker Hampel Scholarship
- Corey Hansen Scholarship Fund
- Harpster-Barbee Scholarship
- Evelyn Barstow Harrison Scholarship in Public Administration
- Elizabeth Earle Heckmann Graduate Scholarship
- Norris and Betty Hekimian Engineering Endowment
- Herbst Family Graduate Fund
- Thelma Hunt Graduate Fellowships in Psychology
- Hyundai Scholarship Fund
- Iran Research Fellowships
- Douglas L. Jones Endowed Graduate Fellowship in Mechanical Engineering
- Kylan and Heidi Jones-Huffman Fund
- Marvin L. Kay Fellowship in Finance
- Kayser Fund Endowment in History
- Rita H. Keller Scholarship Fund
- Kellogg Graduate Scholarship
- John Whitefield Kendrick Graduate Fellowship in Economics
- Isabella Osborn King Research Fellowships in Biological Sciences
- Larry King Graduate Scholarship in Media and Public Affairs
- Andrew John Knox Scholarship
- Wolfgang and Astrid Kraus Graduate Scholarships
- Lambert Graduate Stipend in Arts and Sciences
- Laurence F. Lane Graduate Scholarship in Political Management
- Levitan Endowment Fellowships
- Myron L. Loe Graduate Student Scholarship
- Loughran Foundation Fellowships
- Loughran Oxford Fellowships
- Morris Louis Fellowship in Painting
- W. Stanley Machen Graduate Fellowship in Civil Engineering
- Michele Manatt Endowed Scholarship
- Willard Marriott Foundation Graduate Scholarships
- George McCandlish Fellowship in American Literature
- McConnell Endowment in Chemistry
- Joetta Miller Fellowship
- Dorothy A. Moore Graduate Scholarship Endowment for International Education
- Dorothy and Charles Moore Fellowship in International Development Studies
- James N. Mosel Scholarship Fund
- Museum Studies Fellowship
- National Council for Education and Human Development Endowed
- Scholarship Fund
- National Institutes of Health Fellowships in the Biomedical Sciences
- Wendy Anne Ochsman Endowment Scholarships
- Phi Delta Gamma Scholarships
- Raymond L. Pickholtz Graduate Scholarship
- Policy Studies Graduate Fellowships
- Poncelet Scholarships
- Presidential Merit Fellowships
- Public Administration Faculty-Alumni Scholarship
- Kelly J. Purcell Memorial Credit Union Scholarship in Political Management
- Joan Roddy Regnell Fellowships in Speech and Hearing Science
- Shirley H. and Robert L. Richards Scholarship Fund
- Thomas Bradford Sanders Fellowships
- Schwoerer Graduate Scholarship
- Scottish Rite Graduate Endowment Fellowships
- Bourdon F. Scribner Graduate Student Scholarship in Chemistry
- SEAS 175th Anniversary Scholarship
- Selective Excellence Endowment Fellowships
- J.B. and Maurice C. Shapiro Fellowships in International Affairs
- Sickler Family Endowment Scholarship
- Speech-Language Pathology Endowment Fellowships
- Phillip-Temofel Sprawcew Scholarship
- Ronald B. Thompson Scholarship
- Toccin Endowment Fellowship
- Timothy W. Tong Fellowship
- Trachtenberg-Wang Teaching Fellowship
- Turner Non-Profit Leadership Development Scholarship
- General John W. Vessey Endowment Fellowships
- Vest Graduate Scholarship
- Videtto Family Endowment Scholarship
- Viola Political Science Fellowship
- Henrik W. Vietor Graduate International Fellowships
- Jack C. Voelpel Memorial Fund
- Louis P. Wagman Endowment Scholarship in Engineering
- Richard David Walk Endowment Scholarships in Psychology

- William Warren Endowment fund for Fellowships in the Columbian College of Arts and Sciences
- Washington Gas and Light Scholarship
- Helen Waters Endowed Scholarship
- William Warren Endowment Fund for Fellowships
- Ann Gordon Webster Endowment for Anthropology
- Ronald Barbour Weintraub Research Fellowships in Biological Sciences
- Ruth Ann Parker Wells Scholarship
- Ruth Ann Parker Wells and David Leonard Wells Endowment Scholarship Fund
- David Glover White Scholarship
- Katherine J. Williams Endowment Scholarships in Art Therapy
- Wolcott Foundation Scholarships
- Helen and Sergius Yakobson Graduate Scholarship
- Shao Wen Yuan Fellowship in Mechanical Engineering

Federal Loans

Federal Direct Stafford Loans

Graduate students enrolled at least half time may apply for Federal Direct Stafford Loan funds each academic year. Unsubsidized loans require the student borrower to pay all interest that accrues on loan during the in-school period. Deferments are available. Students must file the Free Application for Federal Student Aid (https://fafsa.ed.gov) (FAFSA) to determine their eligibility.

Federal Direct PLUS Loans

Graduate and professional students may apply for funds under the Federal Direct PLUS Loan Program. Eligible students may borrow up to the full cost of attendance, including tuition, fees, books, and living and transportation expenses, less any financial assistance received (which includes all student loans). Students must first apply for the Federal Direct Stafford Loan and the amount of the Stafford Loan eligibility must be included in the calculation to determine the amount of the Graduate PLUS loan.

Annual and Aggregate Loan Limits

Graduate and professional students can borrow up to $20,500 in unsubsidized Federal Direct Stafford Loan funds on an annual basis. Some academic programs may have additional loan eligibility; see the list on the OSFA website of Graduate Programs eligible for Higher Loan Limits (https://financialaid.gwu.edu/graduate-federal-direct-loan-limits).

Graduate and professional students have maximum aggregate (lifetime) loan limits of $138,500, with $65,500 maximum subsidized limit within the total aggregate limit. Health professions students have a maximum aggregate (lifetime) limit of $224,000, with $65,500 maximum subsidized limit within the total aggregate limit.

Loan Fees

Both Federal Direct Stafford Loans and Federal Direct PLUS Loans carry loan fees. Current rates are available on the U.S. Department of Education's Federal Student Aid website for Federal Direct Stafford Loans (https://studentaid.ed.gov/sa/types/loans/subsidized-unsubsidized) and for Federal Direct PLUS Loan (https://studentaid.ed.gov/sa/types/loans/plus).

Federal Perkins Loans

Federal Perkins Loans (http://financialaid.gwu.edu/federal-perkins-loan) are loans made to students with "exceptional financial need," as required by federal statute, based on availability of funds to lend from collections of past loans made. The interest rate is 5% fixed and there is a ten-year repayment period.

Annual and Aggregate Loan Limits for Federal Perkins Loans

The annual loan limit for Federal Perkins Loan is $5,500 per year and the lifetime limits for Perkins are $27,500 for undergraduates and $60,000 for combined undergraduate and graduate studies. Loan funds awarded are limited based on availability of funds to lend.

See also the U.S. Department of Education's Federal Student Aid information on Federal Perkins Loans (https://studentaid.ed.gov/sa/types/loans/perkins).

Private Education Loans

Private lenders provide additional loan options to qualified students. These loans offer varying interest rates and repayment options. Such loans allow the student to borrow up to 100% of GW's annual cost of attendance less any current financial assistance. They typically have variable rates, rates within rate tiers according to credit worthiness, and application fees.

Private education loans must be reported to OSFA to be considered as a resource against federal student aid eligibility, per federal regulation.

Students are strongly advised to consider federal student loans before alternative loans due to generally more favorable interest rates, fees, and repayment options. Consider reviewing the OSFA Private Student Loan Counseling Checklist (http://financialaid.gwu.edu/private-student-loan-counseling-checklist).

Other Loan Funds

GW has several emergency loan funds for degree students with short-term needs. These funds include the Jessie B. Martin Loan Fund; the Barney Plotnick, M.D., Student Loan Fund; the University Student Emergency Loan Fund; and the Peter and Doris Firsht Loan Fund. Students apply for emergency loans at Colonial Central.

Student Employment

The University participates in the Federal Work-Study Program (https://careerservices.gwu.edu/federal-work-study-

program). Students should address questions concerning eligibility to OSFA. GW's Center for Career Services (https://careerservices.gwu.edu) handles Federal Work-Study placement and also maintains a registry of both full- and part-time positions available in the D.C. Metropolitan Area.

TEACH Grants

The Teacher Education Assistance for College and Higher Education (TEACH) program provides grants to students who become teachers in high-need fields and low-income areas in an elementary school, secondary school or an educational service agency. For more details, see the TEACH Grant webpage (http://gsehd.gwu.edu/TEACHGrant) on the Graduate School of Education and Human Development (GSEHD) website.

International Students

International students are advised to download and reference The Office of Graduate Scholarships and Fellowships brochure, Funding for International Students (http://graduate.admissions.gwu.edu/sites/graduate.admissions.gwu.edu/files/downloads/International%20Funding%20Brochure.pdf), a guide for international students on potential education funding.

Non-US students should check with their home country for potential national and/or local student aid options for enrollment in the United States.

Private education loans for international students are usually only available with a credit-worthy U.S. co-signer.

Please note that the Office of Student Financial Assistance uses cost of attendance budgets (http://financialaid.gwu.edu/cost-of-attendance) for the processing of international student financial assistance.

Military Education Financing

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Funds from the various branches of the armed services under the Tuition Assistance Program are processed by the GW Office of Student Accounts.

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Please note that per federal regulation ROTC scholarships must be considered as a resource against any federal student aid eligibility.

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To request disability accommodations, students should contact the Office of Disability Support Services, (202) 994-8250 (TDD/voice), and employees should contact the Office of Equal Employment Opportunity, (202) 994-9656 (voice) or 9650 (TDD).

Availability of State Grant Assistance for Undergraduate Education
Before they pursue loan options undergraduate students are advised to pursue the potential for state grant assistance in their home state to help finance their GW education. The U.S. Department of Education (ED) maintains a website listing state agencies (http://www2.ed.gov/about/contacts/state)and respective contact information. The Brookings Institution has an Inventory of State Grants (http://www.brookings.edu/~/media/research/files/reports/2012/5/08-grants-chingos-whitehurst/inventory-of-state-grants.xlsx) (done in 2012) as well.

Satisfactory Academic Progress for Student Financial Assistance
Federal student aid programs require satisfactory academic progress. Please refer to our complete Title IV satisfactory academic progress policy (http://financialaid.gwu.edu/policy-satisfactory-academic-progress).

Availability of U.S. Department of Education Loan Publications
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GW does not maintain a preferred lender list and will certify loan presented that requires certification. Refer to GW's HEA-compliant code of conduct for student loans (http://financialaid.gwu.edu/policy-student-loan-code-conduct).

Role of the National Student Loan Data System (NSLDS)
Data on federal student loans and Federal Pell Grants are reported to the National Student Loan Data System (NSLDS), which is accessible by GW and U.S. ED personnel and servicers of federal student loans. Students can access their data on the NSLDS website (http://www.nslds.ed.gov/nslds_SA).

Title IV Eligibility and Drug Convictions
Under federal law a recipient of Title IV student financial assistance who is convicted for possession and/or sale of illegal drugs while enrolled as a student at GW will be ineligible for further Title IV funds for a fixed period of time. Refer to the University's complete policy on the Impact of Drug Conviction on Title IV eligibility (http://financialaid.gwu.edu/policy-impact-drug-conviction-title-iv-eligibility).

Return of Title IV Funds Policy
The University is required by the HEA to recalculate the eligibility for federal Title IV student financial assistance for students who withdraw, drop out, are dismissed, or take a leave of absence, prior to completing 60% of a semester. Title IV funds include Federal Pell Grants, Federal Supplemental Educational Opportunity Grants (SEOG), Federal Work-Study, Federal Perkins Loans, Federal Direct Subsidized Stafford Loans, Federal Direct Unsubsidized Stafford Loans, and Federal Direct PLUS Loans. The priority sequence for return of Title IV funds is as follows:

1. Unsubsidized Federal Stafford Loans
2. Subsidized Federal Stafford Loans
3. Unsubsidized Direct Stafford Loans (other than PLUS Loans)
4. Subsidized Direct Stafford Loans
5. Federal Perkins Loans
6. Federal PLUS Loans
7. Direct PLUS Loans
8. Federal Pell Grants for which a return of funds is required
9. Federal Supplemental Educational Opportunity Grants (FSEOG) for which a return of funds is required
10. TEACH Grants for which a return of funds is required
11. Iraq-Afghanistan Service Grant for which a return is required

For the complete policy statement on Return of Title IV funds, see the Colonial Central website (http://colonialcentral.gwu.edu). This applies only to federal student aid and does not pertain to the University's refund policy, as noted in the Fees and Financial Regulations section of this Bulletin.

Title IV Credit Balances
Students have the right to exercise authorizations to hold or release a hold pertaining to Title IV credit balances, using the Student Title IV credit balance authorization form (https://studentaccounts.gwu.edu/sites/studentaccounts.gwu.edu/files/downloads/Title_IV_Credit_Auth_StudentNEWLOGO.pdf).

Similarly, parents have the right to do so pertaining to Federal Direct PLUS Loans, using the Parent Title IV credit balance authorization form (https://studentaccounts.gwu.edu/sites/studentaccounts.gwu.edu/files/downloads/Title_IV_Credit_Auth_ParentNEWLOGO.pdf).

HEA Disclosures Portal
See our HEA disclosure portal (http://financialaid.gwu.edu/higher-education-act-disclosure) for complete disclosures information.

INTERDISCIPLINARY AND SPECIAL PROGRAMS

While GW offers many interdisciplinary programs within and across its schools and departments, those listed here are independent of any other academic unit at GW.

- GWTeach and the STEM Teaching Minor (p. 63)
- Naval Science (p. 65)
- Sustainability (p. 66)
- University Honors Program (p. 69)
- Women's Leadership Program (p. 71)

GWTEACH PROGRAM AND THE STEM TEACHING MINOR

GWTeach

The GWTeach program is designed for undergraduate science, technology, engineering, and mathematics (STEM) majors interested in exploring careers in teaching. The GW initiative, which is based on the nationally recognized UTeach (http://www.uteach-institute.org) program, integrates secondary school teacher preparation into the student's major studies.

GW undergraduate students participate in GWTeach by completing all requirements for their STEM major as well as 27 credits in prescribed GWTeach course work. Upon graduation, students who have completed GWTeach requirements are eligible for licensure by the District of Columbia as middle or high school teachers.

The first two courses in the program, GTCH 1001 GWTeach Step 1: Inquiry Approaches to Teaching and GTCH 1002 GWTeach Step 2: Inquiry-based Lesson Design, are open to all mathematics, science, and engineering majors, including pre-med students. In these 1-credit courses, students are exposed to the teaching experience with no obligation to continue in the program. Students who wish to complete the program work with their departmental advisor and the GWTeach advisor to integrate the remaining GWTeach courses with their STEM major program of study.

Students are encouraged to begin the GWTeach program as freshmen, but no later than their sophomore year. Visit the GWTeach Program (http://gwteach.gwu.edu) website for additional information.

The STEM Teaching Minor

The minor in STEM teaching is designed for students majoring in a STEM field who have not yet committed to a career in secondary school teaching. The 18-credit program comprises core courses from GWTeach disciplines and a choice of elective courses.

The STEM teaching minor program is open to students in the GWTeach program and to other students who wish to document the successful learning of ideas and methods in the program's core courses. Students must have permission of the GWTeach Director in order to pursue the minor program.

STEM TEACHING MINOR

The following requirements must be fulfilled for the STEM teaching minor: 18 credits, including 11 credits in required courses and 7 credits in elective courses.

An 8-credit, two-course sequence or 8 credits in equivalent courses approved by the GWTeach advisor must be completed before beginning the minor program.

Code	Title	Credits
Prerequisite		
One of the following 8-credit sequences or approved equivalent courses:		
BISC 1111 & BISC 1112	Introductory Biology: Cells and Molecules and Introductory Biology: The Biology of Organisms	
or		
CHEM 1111 & CHEM 1112	General Chemistry I and General Chemistry II	
or		
PHYS 1011 & PHYS 1012	General Physics I and General Physics II	
or		
PHYS 1021 & PHYS 1022	University Physics I and University Physics II	
or		
PHYS 1025 & PHYS 1026	University Physics I with Biological Applications and University Physics II with Biological Applications	
Required		
GTCH 1001	GWTeach Step 1: Inquiry Approaches to Teaching	
GTCH 1002	GWTeach Step 2: Inquiry-based Lesson Design	
GTCH 3101	Knowing and Learning in Mathematics and Science	
GTCH 3102	Classroom Interactions	
GTCH 3103	Project-Based Instruction	

Electives	
A minimum of 7 credits from the following courses:	
GTCH 3201	Perspectives on Math and Science
GTCH 3202	Research Methods in Math and Science
GTCH 3203	Functions and Modeling
GTCH 3500	Topics in STEM Teaching
GTCH 3600	Pedagogy for Learning Assistants

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GTCH 1001. GWTeach Step 1: Inquiry Approaches to Teaching. 1 Credit.
First recruitment course in the GWTeach professional development sequence. Overview of latest methods in teaching. Elementary school teaching experience using lessons written based on district curricula. Restricted to Freshman and sophomore standing.

GTCH 1002. GWTeach Step 2: Inquiry-based Lesson Design. 1 Credit.
Second recruitment course in the GWTeach professional development sequence. Overview of latest methods in teaching. Middle school teaching experience using lessons written based on district curricula. Restricted to Freshman and sophomore standing.

GTCH 3101. Knowing and Learning in Mathematics and Science. 3 Credits.
Introduction to models of knowing and learning for classroom practice. Focus on secondary mathematics and science. Restricted to Sophomore or higher standing. Restricted to GWTeach students and to others with permission of the instructor. Prerequisites: GWTeach courses GTCH 1001 – Step 1 and GTCH 1002 – Step 2 or permission of the instructor. Recommended background: Most students will be in the GWTeach program. Other students may enroll with permission of the instructor.

GTCH 3102. Classroom Interactions. 3 Credits.
Introduction to use of curriculum and technology in the classroom for effective teaching of mathematics, science, and engineering. Interplay between teachers, students, content, and the world beyond schools. Design and implementation of instructional activities. Evaluation of outcomes of instructional activities. Restricted to Junior or Senior standing. Restricted to GWTeach students and to others with permission of the instructor. Prerequisites: GWTeach courses GTCH 1001 – Step 1, GTCH 1002 – Step 2, GTCH 3101 or permission of the instructor. Recommended background: Most students will be in the GWTeach program. Other students may enroll with permission of the instructor.

GTCH 3103. Project-Based Instruction. 3 Credits.
Design of full units of connected lessons. Integration of mathematics and science content. Intensive field-based experiences. Restricted to Junior or Senior standing. Restricted to GWTeach students and to others with permission of the instructor. Prerequisites: GTCH 1001 (Step 1), GTCH 1002 (Step 2), GTCH 3101, and GTCH 3102,. Recommended background: Students will normally be in the GWTeach program.

GTCH 3201. Perspectives on Math and Science. 3 Credits.
Topics and episodes in the history of science and mathematics. Focus on processes by which math and science evolves. Perspectives include biology, physics, geology, astronomy, and chemistry. Historical perspectives on the content and direction of the sciences. Restricted to GWTeach students and to others with permission of the instructor. Restricted to Sophomore or higher standing. Prerequisites: GWTeach courses GTCH 1001 – Step 1 and GTCH 1002 – Step 2 or permission of the instructor. Recommended background: Most students will be in the GWTeach program. Other students may enroll with permission of the instructor.

GTCH 3202. Research Methods in Math and Science. 3 Credits.
Design experiments to answer scientific questions and reduce systematic and random errors. Statistics to interpret experimental results. Restricted to Sophomore or higher standing. Restricted to GWTeach students and to others with permission of the instructor. Prerequisites: GWTeach courses GTCH 1001 – Step 1 and GTCH 1002 – Step 2 or permission of the instructor. Recommended background: Most students will be in the GWTeach program. Other students may enroll with permission of the instructor.

GTCH 3203. Functions and Modeling. 3 Credits.
Mathematics addressing unique needs of future teachers of mathematics. Explore models using linear, exponential, polynomial, and trigonometric functions. Restricted to Sophomore or higher standing. Restricted to GWTeach mathematics students and to others with permission of the instructor. Prerequisites: GWTeach courses GTCH 1001 – Step 1 and GTCH 1002 – Step 2 or permission of the instructor. Recommended background: Most students will be in the GWTeach program. Other students may enroll with permission of the instructor.

GTCH 3500. Topics in STEM Teaching. 1 Credit.
Issues in STEM research and education. Topics vary by semester. May be repeated for credit if topic differs. Consult the Schedule of Classes for more details. Restricted to GWTeach and minor in STEM teaching students with permission of the GWTeach Associate Director.

GTCH 3600. Pedagogy for Learning Assistants. 2 Credits.
Integration of educational theory, pedagogy, and practice; classroom discourse, group discussions, disciplinary thinking, questioning, models of cognition, metacognition, formative assessment, classroom presence. For students serving as learning assistants in large-enrollment undergraduate science courses. Restricted to GWTeach and minor in STEM teaching students with permission of the GWTeach Associate Director.

GTCH 4000. Apprentice Teaching. 0-7 Credits.
Culminating experience and tools for first teaching positions. Expectations, processes, and rewards of teaching. Field experiences in local schools. Apprentice teachers and university master teachers share experiences and solutions to problems in the field. Feedback from public school mentor teachers and university facilitators. Restricted to Intended for juniors and seniors in the GWTeach program. Restricted to GWTeach apprentice teachers. Prerequisites: GTCH 3101, 3102, 3103, 3201, 3202 Also, GTCH 3203 for students intending to be Mathematics teachers. Recommended background: Intended for students in the GWTeach program as their final preparation for certification.

NAVAL SCIENCE

Naval Reserve Officers Training Corps Program

The Naval Reserve Officers Training Corps (NROTC) offers young men and women the opportunity to qualify for a full scholarship and a commission in the Navy or Marine Corps. NROTC midshipmen are required to complete the naval science courses and attend weekly professional seminars. During the summer, NROTC midshipmen participate in active duty at sea or shore-based training cruises for approximately four weeks. Upon receiving the baccalaureate and completing the NROTC program, qualified midshipmen are commissioned as ensigns in the U.S. Navy or second lieutenants in the Marine Corps. Commissioned naval officers go on to training in various warfare specialties and serve as surface or submarine officers, naval aviators, or SEALs. Marine Corps officers attend basic school in Quantico, Virginia, and serve in fields such as infantry, artillery, and aviation. Staff positions (intelligence, law, medicine) are not normally offered through NROTC. Students may join the NROTC through any one of the following programs.

Four-Year Scholarship Program—Students enter the NROTC Four-Year Scholarship Program through national competition and are appointed midshipmen in the Naval Reserve. While enrolled, a four-year-scholarship student receives government-provided tuition, fees, $350 per semester for books, uniforms, and an allowance of up to $400 per month. Upon graduation, students are commissioned with a minimum four-year active duty service obligation. Scholarship Program students must include in their degree program courses in English, calculus, cultural awareness, physics, national security policy, and naval science and participate in three summer training periods of approximately four weeks each.

Two-Year Scholarship Program—Selection for this program is made through national competition, based on the student's academic record, physical qualifications, and an interview. Application should be made by the middle of the fall semester of the student's sophomore year. Selected applicants attend six weeks of instruction at the Naval Science Institute (NSI) at Newport, Rhode Island, during the summer before their third academic year. At NSI, students take courses in naval science, physical fitness, and drill, similar to those required of four-year NROTC students during their freshman and sophomore years. Successful completion of the NSI program qualifies the two-year applicants for appointment as midshipmen in the Naval Reserve and enrollment in the NROTC Scholarship Program. Upon acceptance of this appointment, students receive all the benefits and assume all the obligations of midshipmen in the Four-Year Scholarship Program.

Entering freshmen and transfer students who are awarded NROTC scholarships and plan to live on campus may also be eligible for GW Residence Hall Awards from the University. NROTC scholars with prior experience in the Navy are eligible for awards covering the nominal charges for on-campus housing and meals. NROTC scholars who are new to the Navy and are majoring in mathematics, chemistry, physics, or a program in the School of Engineering and Applied Science may receive up to $4,000 to be applied toward the costs of on-campus housing and meals. Further information on these awards is available from the University Office of Admissions.

Four-Year College Program—Students are enrolled in a non-scholarship Four-Year College Program upon acceptance by the Department of Naval Science. Uniforms are provided, and during their junior and senior years, students receive up to $400 per month. Students must include in their degree program courses in college algebra, science, and naval science and must attend the four-week at-sea training period between junior and senior year. Upon commissioning, College Program students serve a minimum of four years' active duty. Midshipmen who complete one term as College Program students, have a satisfactory academic record, and are physically qualified may compete for a scholarship awarded by the Chief of Naval Education and Training. If awarded, the scholarship will be for the remainder of the student's undergraduate enrollment, up to a maximum of three and a half years; service requirements and benefits are the same as for the scholarship programs.

Two-Year College Program—Application should be made by the middle of the fall semester of the student's second year. Selections are made through the Chief of Naval Education and

Training, based on the student's academic record, physical qualifications, and an interview. Those students selected will attend the NSI and upon successful completion may enroll in the program. The benefits and obligations are the same as for the Four-Year College Program.

Requirements for all candidates—Qualifications for acceptable candidates for the Scholarship Program or the College Program include U.S. citizenship, fulfillment of physical requirements, and willingness to participate in required summer training periods and to accept a commission in the U.S. Navy or Marine Corps when offered.

Enrollment in NROTC is not a requirement for taking naval science courses. Any student enrolled at George Washington University may take naval science courses with the approval of the Professor of Naval Science.

SUSTAINABILITY

Sustainability is one of the nine core values of The George Washington University. GW holds a gold ranking from the Association for the Advancement of Sustainability in Higher Education (AASHE), in part, due to the hundreds of sustainability-related courses offered at the undergraduate and graduate levels.

Unlike other universities where sustainability may be housed in a single school, the GW vision seeks to be genuinely trans-disciplinary, encompassing related courses from all of GW's colleges and schools and most departments and programs. This organization of the curriculum encourages students to experiment with interdisciplinary methods and approaches.

UNDERGRADUATE

Minor

- Minor in sustainability (p. 67)

FACULTY

Lead sustainability faculty: L. Benton-Short, K. Merrigan, R.Orttung, L. Paddock, D. Rain, M. Svoboda

In addition there are over 300 faculty involved in teaching sustainability related courses. Courses with sustainability content can be found by using the course attribute SUST in course search.

COURSES

The GW Sustainability Collaborative offers interdisciplinary team-taught courses on subjects related to sustainability. In addition there are over 350 courses at GW with sustainability related content. The "SUST" attribute has been applied to related courses from all of GW's colleges and schools and most departments and programs. These courses can be found by searching for the course attribute "SUST."

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SUST 1001. Introduction to Sustainability. 3 Credits.
The concept of sustainability is both broad and specific as it is applied to areas ranging from social systems to law, engineering, public health, and natural systems. The course considers goals, principles, and practical applications, with a multidisciplinary perspective on major environmental and social issues growing out of these concerns.

SUST 2002. The Sustainable City. 3 Credits.
This course will explore the connection between cities and sustainability. We consider sustainability from a variety of theoretical and practical perspectives and examine some of the most pressing and critical issues that must be addressed in order to create a sustainable city.

SUST 2003. The Sustainable Plate. 3 Credits.
The course will focus on how our dietary choices affect not only our health but the environment and those involved in the production of food. In this class we will explore the sustainable plate– how does dinner affect the future of the environment, economy, and society– from an interdisciplinary perspective.

SUST 3002. Climate Change and Policy. 3 Credits.
Climate change from an interdisciplinary perspective. Mitigation, adaptation, and intervention from the perspectives of public policy, economics, psychology, and public health. Climate modeling, green infrastructure, carbon capture and storage, climate justice, and international and multilateral environmental agreements. Recommended background: SUST 1001.

SUST 3095. Sustainability Fieldwork. 0-3 Credits.
Research in the field that might include such efforts as wildlife management, pollution evaluation, or surveys. Students complete a series of reflection essays throughout the semester.

SUST 3096. Research in Sustainability. 1-3 Credits.
Directed research with a GW faculty member or in a study abroad experience that might include laboratory research, archival work, or literature reviews. The faculty member directing the research will assign additional work, such as papers and assigned reading, as appropriate.

SUST 3097. Culminating Experience in Sustainability. 1-3 Credits.
A paid or unpaid internship, directed research, or community service with an organization engaged in one or more of the three major goals of sustainability: economic development, social equality, or environmental protection. Students complete a series of reflection essays and other assignments throughout the semester. Prerequisite: SUST 1001.

SUST 3098. Community Service in SUST. 0-3 Credits.
Volunteer service with a nonprofit organization or federal agency working to implement sustainability or sustainability policy. Students complete a series of reflection essays and other assignments throughout the semester. Prerequisites: SUST 1001 and by permission of instructor.

MINOR IN SUSTAINABILITY

GW offers an 18-credit undergraduate minor in sustainability that grounds students in the key concepts, principles, and issues of this transdisciplinary field. Unlike other universities, where sustainability is housed in a single college or school, at GW sustainability is a university-wide collaborative, overseen by the Provost, that involves faculty from all colleges and schools and that thereby immerses students in interdisciplinary methods and approaches. The minor integrates classroom instruction and community-based learning and research in a way that prepares students to incorporate sustainability's triple-bottom line—environment, economy, and equity—into their personal and professional plans for the future.

3 credits of the minor are completed by taking the required overview course SUST 1001 Introduction to Sustainability. Taught by a faculty team representing five different colleges and schools at GW, the course is offered each fall and spring semester.

12 credits of the minor are completed by selecting courses offered in the three different tracks representing the very different disciplinary perspectives and skills that come together in sustainability. Each track includes a selection of courses from GW's nine schools and colleges.

- **Track A – Environment/Earth Systems**

Courses in the physical, natural, and applied sciences that consider the interdependence of physical and natural systems, including the human body.

- **Track B – Society and Sustainability**

Courses in social sciences and humanities that consider how human relationships and forms of organization have shaped—and are shaped by—the ecosystems on which they depend.

- **Track C – Policy, Organization, and Leadership**

Courses on methods and practices—from a spectrum of disciplines—that provide students with the practical knowledge and skills needed to effect change.

Students are required to take at least one course in each track. The remaining 3 credits are taken as an elective course; students are encouraged to select a course—from any track —that reflects their particular interest in sustainability (e.g., climate change, development, energy, food, urban studies, water).

Each semester, many GW departments and programs offer special topics courses that may qualify for one of the minor's three tracks. These courses, which are not included in the lists provided here, can be found on the website for the minor. Students should verify the status of special topics courses before incorporating them into their plans for completing the minor.

In addition, courses taken in study abroad programs, if pre-approved by the director of the minor, can be used to fulfill these track requirements.

3 credits in experiential learning are required as a culminating experience for the minor**.** Students might fulfill this requirement, in their junior or senior years, through directed research, an internship, or community service. Successful completion of SUST 1001 Introduction to Sustainability and formal approval by the director are prerequisites for registering for SUST 3096 Research in Sustainability, SUST 3097 Culminating Experience in Sustainability, or SUST 3098 Community Service in SUST. In addition to attending monthly class meetings and submitting reflective writing assignments, students are expected to perform at least 60 hours of service or work over the course of the semester at a minimum of 5 hours per week for at least 12 weeks.

TRACK A

Track A – Environment and Earth Systems

Note: This list does not include special topics courses, which also may count toward the minor with approval by the Program Director. This course list may change throughout the year as new courses are offered. Please check the sustainability minor website (http://sustainability.gwu.edu/sustainability-minor) for current course offerings.

Columbian College of Arts and Sciences

- BISC 1005 The Biology of Nutrition and Health
- BISC 1006 The Ecology and Evolution of Organisms
- BISC 1112 Introductory Biology: The Biology of Organisms
- BISC 2305 Plant Biology
- BISC 2450 Organic Evolution
- BISC 2454 General Ecology
- BISC 3460 Conservation Biology

- BISC 3461 Plant-Animal Interactions
- CHEM 1003 Contemporary Science for Nonscience Majors
- CHEM 2085 Environmental Chemistry
- CHEM 3140 Geochemistry
- GEOG 2108 Weather and Climate
- GEOG 2110 Climate and Human Ecology
- GEOG 2134 Energy Resources
- GEOG 2136 Water Resources
- GEOG 2137 Environmental Hazards
- GEOG 3198 Special Topics
- GEOL 1001 Physical Geology
- GEOL 1005 Environmental Geology
- GEOL 2106 Oceanography
- GEOL 2159 Geobotanical Ecology of the Central Appalachians
- GEOL 3131 Global Climate Change
- GEOL 3138 Hydrogeology
- GEOL 3191 Geology of Energy Resources
- PHYS 1003 Physics for Future Presidents

School of Engineering and Applied Sciences

- CE 1010 Introduction to Civil and Environmental Engineering
- CE 1020 Introduction to a Sustainable World
- CE 2510 Environmental Sustainability
- CE 3520 Environmental Engineering I: Water Resources and Water Quality
- CE 3521 Environmental Engineering Laboratory
- CE 3730 Sustainable Urban Planning Dynamics
- CE 4410 Introduction to Geotechnical Engineering
- CE 4411 Geotechnical Engineering Laboratory
- CE 4530 Environmental Engineering II: Water Supply and Pollution Control
- MAE 4149 Thermal Systems Design

School of Public Health And Health Services

- PUBH 3132 Health and Environment

TRACK B

Track B – Society and Sustainability

Note: This list does not include special topics courses, which also may count toward the minor with approval by the Program Director. This course list may change throughout the year as new courses are offered. Please check the sustainability minor website (http://sustainability.gwu.edu/sustainability-minor) for current course offerings.

Columbian College of Arts and Sciences

- ANTH 3501 Anthropology of Development
- ANTH 3803W Old World Prehistory: First Farmers to First Cities
- ECON 2136 Environmental and Natural Resource Economics
- ECON 2199 Special Topics in Economics
- GEOG 1003 Society and Environment
- GEOG 2127 Population Geography
- GEOG 2133 People, Land, and Food
- GEOG 2140 Cities and Societies
- GEOG 2141 Cities in the Developing World
- GEOG 3143 Urban Sustainability
- GEOG 3810 Planning Cities
- HIST 3324 US Urban History
- PHIL 2124 Philosophies of Disability
- PHIL 2125 Philosophy of Race and Gender
- PHIL 2132 Social and Political Philosophy
- PHIL 2133 Philosophy and Nonviolence
- PHIL 2281 Philosophy of the Environment
- PSC 2367 Human Rights
- PSC 3192W Proseminar: Political Science
- SOC 2105 Social Problems in American Society
- SOC 2169 Urban Sociology
- SOC 2181 Special Topics in Sociology

School of Public Health And Health Services

- HLWL 1108 Weight and Society
- HLWL 1110 Issues in Alternative Medicine
- HLWL 1112 Issues in Women's Health
- HLWL 1114 Personal Health and Wellness
- HLWL 1116 Lifestyle Nutrition
- HLWL 1117 Functional Fitness
- PUBH 3133 Global Health and Development
- PUBH 2114 Environment, Health, and Development

TRACK C

Track C – Policy, Organization, and Leadership

Note: This list does not include special topics courses, which also may count toward the minor with approval by the Program Director. This course list may change throughout the year as new courses are offered. Please check the sustainability minor website (http://sustainability.gwu.edu/sustainability-minor) for current course offerings.

Columbian College of Arts and Sciences

- GEOG 3132 Environmental Quality and Management
- GEOG 3193 Environmental Law and Policy
- ORSC 2116 Leading Change
- ORSC 2123 Negotiation and Conflict Resolution
- PHIL 2135 Ethics in Business and the Professions
- PHIL 2136 Contemporary Issues in Ethics
- PPPA 2701 Sustainability and Environmental Policy
- PSC 2229 Media and Politics
- SMPA 3193 Selected Topics in Journalism and Mass Communication Skills
- SMPA 3194 Selected Topics in Political Communication

- MGT 4002

School of Engineering and Applied Sciences

- CSCI 4532 Information Policy
- EMSE 4410 Engineering Economic Analysis
- EMSE 6290 Climate Change: Policy, Impact

School of Public Health And Health Services

- PUBH 3135W Health Policy
- PUBH 3136 Health Law
- PUBH 3151 Current Issues in Bioethics

Sustainability Collaborative

- SUST 2002 The Sustainable City
- SUST 2003 The Sustainable Plate
- SUST 3002 Climate Change and Policy

UNIVERSITY HONORS PROGRAM

The University Honors Program (http://www.gwu.edu/~uhpwww/programinfo.cfm) offers exceptional entering students the opportunity to engage in a distinctive, participatory program of study designed to prepare them –whatever their gifts and interests might be–to meet the complex challenges of the 21st century. The program invites students to develop a humane perspective on the world while honing their analytical and expressive powers and deepening their understanding of complex issues and questions. Built upon an interdisciplinary curriculum, the program is fully integrated into and reinforcing of the highest academic aspirations of University schools and departments. Components of the program include:

- Small seminar-style classes, capped at 15 to 20 students, provide an opportunity to probe a variety of evolving issues and eternal questions.
- Students enroll in a series of unique courses in the humanities, natural sciences, and social sciences that address both cross-cultural and cross-disciplinary questions and issues. In their senior year, students participate in an Honors capstone experience that provides an opportunity to apply and reflect on what they have learned as undergraduates.
- The Honors experience is enriched by distinctive co-curricular programming, including off-campus activities with faculty members and discussions in the program's Club Room. Events may include student–faculty dinners, hikes, visits to local museums, day trips throughout the region, theater performances, film screenings, guest speakers and debates, and career information sessions. Students may also have an opportunity for summer study abroad.
- The program offers all Honors students the option of living in an Honors residential community.
- Designated Honors academic advisors assist students with academic, career, and personal planning.
- Honors program members have early course registration privileges during their second, third, and fourth semesters.
- Membership in the Honors program is indicated on the student's transcript.

REQUIREMENTS

The University Honors Program (http://www.gwu.edu/~uhpwww) serves approximately 500 selected students, or five percent of the undergraduate student body. Incoming students may apply to the Honors Program at the time they apply to the University; a small group of rising sophomores may also apply.

The program is characterized by small, seminar-style classes with enrollments capped at 15 to 20 students; faculty who serve as mentors, models, and guides in the learning process; classroom approaches that call upon students to initiate inquiry, work collaboratively, and drive the exploration and learning process; interdisciplinary tools and modes of inquiry; and global or cross-cultural perspectives and course content.

In their first year, along with other courses, Honors Program students take:

HONR 1015	Honors Proseminar: UW 1020: Origins and Evolution of Modern Thought
HONR 1016	Honors Proseminar: Origins and Evolution of Modern Thought
HONR 1033	Honors Proseminar: Scientific Reasoning and Discovery
HONR 1034	Honors Proseminar: Scientific Reasoning and Discovery

** In place of HONR 1033 and HONR 1034, students may take an approved alternative science course.

In their second, third, and fourth years they take:

Two Self and Society courses taken as follows: two offerings of HONR 2047 or two offerings of HONR 2048 or one offering each of HONR 2047 and HONR 2048. Topics may not be repeated.

and

Two Arts and Humanities courses taken as follows: two offerings of HONR 2053 or two offerings of HONR 2054 or one offering each of HONR 2053 and HONR 2054. Topics may not be repeated.

In addition, they pursue coursework in their majors, including special or departmental honors and/or independent or mentored research. All Honors Program students participate in HONR 4199 Honors Capstone Experience, and complete a departmental or Honors senior thesis or project. The Honors proseminars meet certain general curriculum and elective requirements of the respective undergraduate schools. HONR 1015 Honors Proseminar: UW 1020: Origins

and Evolution of Modern Thought is the required University Writing course for Honors students.

In order to remain in good standing, Honors Program students must enroll in at least academic 12 credits each semester and, except for the first year, maintain a cumulative GPA that ensures it is mathematically possible to graduate with 3.4 or higher. First-year students must achieve a cumulative GPA of at least 3.0. Successful participation in the program is recognized and recorded on a student's official transcript.

FACULTY

Executive Director M. Frawley

Deputy Director I. Creppell

Assistant Professors E. Aviv, T. Christov, L. Hammond, B. Kung, M. Ralkwoski, J. Trullinger, W. Winstead

University Honors Advisory Committee A. Zimmerman (Chair), L. Anker, A. Helm, D, Hoffman, C. Jordan, R. Katz, F. Moskowitz, B. Narahari, M. Sodaro

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HONR 1015. Honors Proseminar: UW 1020: Origins and Evolution of Modern Thought. 4 Credits.
Exploration of significant exemplars, milestones, and developments of human thought; foundational and representative thinkers and texts from Western and Eastern traditions provide an indication of the diversity and complexity of attempts to articulate responses to universal questions, problems, and aspirations.

HONR 1016. Honors Proseminar: Origins and Evolution of Modern Thought. 3 Credits.
Continuation of HONR 1015. Key developments and trajectories in human thought and inquiry into modern times.

HONR 1033. Honors Proseminar: Scientific Reasoning and Discovery. 4 Credits.
Using an inquiry-based approach, students learn to identify hidden regularities and patterns in nature that may indicate fundamental unifying principles and laws. The scientific method; evaluation of scientific information; limitations of the scientific process; development of a scientific hypothesis. Tools and methodologies of geology, chemistry, physics, biology, anthropology, and other disciplines.

HONR 1034. Honors Proseminar: Scientific Reasoning and Discovery. 4 Credits.
Continuation of HONR 1033. Using an inquiry-based approach, students learn to identify hidden regularities and patterns in nature that may indicate fundamental unifying principles and laws. The scientific method; evaluation of scientific information; limitations of the scientific process; development of a scientific hypothesis. Tools and methodologies of geology, chemistry, physics, biology, anthropology, and other disciplines.

HONR 2016. Enlightenment East & West. 4 Credits.
This course replaces HONR 1016 for students who enter the Honors Program as sophomores.

HONR 2043. Honors Microeconomics. 3 Credits.
An introductory microeconomics course that considers both the philosophical basis of economics as well as its methods and applications. Same as ECON 1011.

HONR 2044. Honors Macroeconomics. 3 Credits.
An accelerated introductory macroeconomics course that includes the study of special topics.

HONR 2047. Honors Proseminar: Social and Behavioral Sciences. 3 Credits.
Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

HONR 2047W. Honors Proseminar: Social and Behavioral Science. 3 Credits.
Understanding significant social and political phenomena by using the tools and modes of inquiry of the social and behavioral sciences; relationships among individuals, collectivities, families, and communities; interactions of psychological, social, political, economic, and historical forces at work in a given culture. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HONR 2048. Honors Proseminar: Social and Behavioral Sciences. 3 Credits.
Understanding significant social and political phenomena through the use of social and behavioral sciences tools and modes of inquiry; relationships between individuals and among collectivities, families, and communities; interactions of psychological, social, political, economic, and historical forces at work in a given culture.

HONR 2048W. Honors Proseminar: Social and Behavioral Science. 3 Credits.
Understanding significant social and political phenomena by using the tools and modes of inquiry of the social and behavioral sciences; relationships among individuals, collectivities, families, and communities; interactions of psychological, social, political, economic, and historical forces at work in a given culture. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HONR 2053. Honors Proseminar: Arts and Humanities. 3 Credits.
Exploration of the ways in which cultures are defined and understood through artistic expression; how particular cultures value and critique these forms of personal and social expression. Topics vary by semester. May be repeated for credits provided the topic differs. Consult the Schedule of Classes for more details.

HONR 2053W. Honors Proseminar: Arts and World Cultures. 3 Credits.
Using an array of artistic forms, including poetry, prose literature, drama, film, painting, sculpture, architecture, dance, and music, students explore the ways in which cultures are defined and understood through artistic expression and how particular cultures value and critique these forms of personal and social expression.

HONR 2054. Honors Proseminar: Arts and Humanities. 3 Credits.
How cultures are defined and understood through various forms of artistic expression, including poetry, prose literature, drama, film, painting, sculpture, architecture, dance, and music; how particular cultures value and critique these forms of personal and social expression.

HONR 2054W. Honors Proseminar: Arts and World Cultures. 3 Credits.
Using an array of artistic forms, including poetry, prose literature, drama, film, painting, sculpture, architecture, dance, and music, students explore the ways in which cultures are defined and understood through artistic expression and how particular cultures value and critique these forms of personal and social expression.

HONR 2182. Honors Internship. 0-4 Credits.
The Honors Program allows credit to Honors students for academic work that puts an internship in a broader scholastic context. Each student must have a GW faculty member oversee his or her project. The Honors internship faculty member determines the student's grade.

HONR 2184. Honors Undergraduate Research. 0-4 Credits.
Independent or faculty-mentored research resulting in a significant written or other product.

HONR 2185. Honors Research Assistantship. 0-4 Credits.
Students provide substantive assistance to a faculty member engaged in scholarly or scientific research.

HONR 4198. Honors Senior Thesis. 3-4 Credits.
One- or two-semester thesis under faculty guidance. May be repeated for credit.

HONR 4199. Honors Capstone Experience. 1 Credit.
Students re-engage with core questions and issues related to the Honors Program curriculum, reflecting on their learning in relation to enduring questions and challenges of our world.

WOMEN'S LEADERSHIP PROGRAM

The Women's Leadership Program (WLP) (http://wlp.gwu.edu) is a selective, year-long, living and learning program for freshmen women of any GW school. Offered at the Mount Vernon Campus, WLP commemorates and preserves the vision of the founder of Mount Vernon College and Seminary, Elizabeth J. Somers. WLP students have the benefit of small classes, close contact with faculty and women in leadership roles, and strong community ties within the program.

The dynamic curriculum emphasizes exploration and development of women's leadership through academic courses and weekly symposia. WLP symposia offer special lectures, workshops, and experiential learning that draw on the unique resources of Washington, D.C., to bring students together with women of achievement in leadership roles from many professional fields.

FACULTY

Director: Rachelle S. Heller, Associate Provost for Mount Vernon Campus

Associate Professors *M. Buckley, J. Donovan*

Assistant Professors M. Allendoerfer, E. Hovander, C. Jordan, S. Salchak

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

WLP 1020. WLP Humanities Seminar. 3 Credits.
A writing-intensive seminar that emphasizes critical reading skills, concepts of disciplinarity, and processes of producing and legitimating knowledge. Texts and emphasis vary according to cohort.

WLP 1110. Women and Leadership I Symposium (I). 1 Credit.
A series of special programs that complements WLP 1101– WLP 1102. Concurrent registration in WLP 1101– WLP 1102 is required.

WLP 1111. Women and Leadership I Symposium (II). 1 Credit.
Continuation of WLP 1110. A series of special programs that complements WLP 1101– WLP 1102. Concurrent registration in WLP 1101– WLP 1102 is required.

WLP 4198. WLP Independent Study. 3 Credits.

COLUMBIAN COLLEGE OF ARTS AND SCIENCES

Dean B. Vinson III
Vice Deans E. Arnesen, P. Wahlbeck
Associate Deans J. Brand, E. Chacko, E. Downie, Y. Rong,

Since its founding in 1821, Columbian College, the original college of liberal arts and sciences of The George Washington University, has been the cornerstone of the campus community. The University awarded its first Doctor of Philosophy degree in 1888, one of the first institutions in the United States to do so. Columbian College of Arts and Sciences today houses all undergraduate and graduate programs in the arts and sciences, offering associate's, bachelor's, master's, and doctoral degrees and graduate certificates.

The rich and diverse arts and sciences curriculum is designed to strengthen the student's ability to analyze the social, cultural, and physical environment and to communicate findings in an articulate fashion. These purposes are accomplished by means of the study of various disciplines within the humanities, social sciences, and mathematical and natural sciences.

Students may elect one of more than 50 departmental or interdisciplinary majors; they may also elect double majors or individualized degree programs. The College offers its undergraduates opportunities for pre-professional education in many fields and for internships in a stimulating urban environment. Graduate students are offered more than 40 master's programs, 20 doctoral programs, and 15 certificate programs.

REGULATIONS

- **Undergraduate Programs (p. 73)**
  - General Education Curriculum Requirement (p. 73)
  - Majors (p. 74)
  - Scholarship Performance in the Major (p. 74)
  - Minors (p. 74)
  - Scholarship Performance in the Minor (p. 74)
  - Advising (p. 74)
  - Preparation for Medical School (p. 74)
  - Preparation for Law School (p. 75)
  - Seven-Year Integrated Bachelor of Arts/Doctor of Medicine (p. 75)
  - General CCAS Policies (p. 75)
- **Graduate Programs (p. 76)**
  - CCAS Regulations (p. 76)
  - Admission Requirements (p. 76)
  - Readmission (p. 76)
  - Grades (p. 76)
  - Scholarship Requirements (p. 77)
  - Program of Studies (p. 77)
  - Academic Work Load (p. 77)
  - Continuous Registration (p. 77)
  - Leave of Absence (p. 77)
  - Special Program Requirements (p. 77)
  - Graduation Requirements (p. 78)
  - Fellowships and Financial Aid (p. 78)
  - Partnerships (p. 78)

Undergraduate Programs

Columbian College of Arts and Sciences offers undergraduate programs leading to the degrees of Associate of Arts, Bachelor of Arts, Bachelor of Science, and Bachelor of Fine Arts. In cooperation with the School of Medicine and Health Sciences, Columbian College offers a seven-year integrated Bachelor of Arts/Doctor of Medicine.

One hundred twenty hours of academic coursework must be passed with a cumulative grade-point average of at least 2.0. Note that some courses outside Columbian College (notably lifestyle, sport, and physical activity courses) do not count toward the 120-credit requirement. General education, major, and other requirements described below must be met.

Each student must declare a major during the sophomore year. A student must declare a major no later than the registration period during the fourth full-time semester or the semester following completion of 45 credits, whichever comes first. A student may change the major with the consent of the dean and of the department or committee concerned; the student must meet the requirements for the new major in effect at the time the change is approved.

General Education Curriculum Requirement

In addition to the University General Education Requirement, undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one course in university writing and two writing-in-the-disciplines (WID) courses;
- Humanities—one approved humanities course that involves critical thinking skills;
- Mathematics or Statistics—one course in either math or statistics;

- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry; and,
- Social Sciences—two courses in the social sciences

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved arts course that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context;
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries;
- Local or Civic Engagement—one course that develops the values, ethics, disciplines, and commitment to pursue responsible public action;
- Oral Communication—one course in oral communication.
- Natural or Physical Science—one additional approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement); and,
- Humanities—one additional approved humanities course that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement)

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of the Columbian College general education curriculum may also be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University general education requirement and Columbian College general education curriculum, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

Lists of approved courses in the above categories are included on each undergraduate major's Bulletin page.

Majors

Each student must declare a major during the sophomore year. A student must declare a major no later than the registration period during the fourth full-time semester or the semester following completion of 45 credits, whichever comes first. Students must complete the major requirements in effect at the time of declaration. Students may change their major with the consent of the dean and of the department or committee concerned; the student must meet the requirements for the new major in effect at the time the change is approved.

Scholarship Performance in the Major

Major fields are defined by a set of required courses. The required curricula for majors are outlined under each department's heading in this Bulletin. A minimum grade of *C*− must be attained in all courses numbered 2000 or above that are required for the major. If a student receives a grade of *D+, D,* or *D*− the student may either repeat the course until a satisfactory grade (*C*− or better) is attained, or with the permission of the department, substitute another course numbered 2000 or above.

Minors

Students who wish to familiarize themselves with a field outside their major may graduate with a minor in addition to the major. Not all Columbian College departments offer undergraduate minors; the requirements prescribed by those that do are listed under the applicable department. Columbian College students may pursue minors in other schools of the University, as well as those in naval science and in sustainability. Students interested in a minor should consult a faculty mentor in the applicable department and declare through the Office of Undergraduate Studies. Students may pursue at most two minors.

Scholarship Performance in the Minor

Courses numbered 2000 or above passed with a grade below *C*− may be used to fulfill a minor field curricular requirement but may not be counted toward the total number of credits required for the minor.

Advising

Students entering Columbian College are assigned an advising team, or "POD" that advises them from first arrival on campus through graduation. Students engage with advisors to successfully navigate their academic experience, through conversations about understanding university and college requirements, exploring major options, overcoming academic challenges, and setting goals. Students are empowered to take ownership of, and responsibility for, their educational experiences. Specialized advising is provided to students interested in health professions or law.

Students who have not declared a major should consult with their advising POD before registering for classes. Once students declare their major, they also are advised by a faculty mentor in their major department.

Students need to build a support system that ensures academic success. Professors, faculty mentors, professional advisors, tutors, and/or counselors should be part of that support system. Assistance is available through the Division of Student Affairs (http://students.gwu.edu), Mental Health Services (http://counselingcenter.gwu.edu), Multicultural Student Services Center (http://gwired.gwu.edu/mssc/?url=mssc), International Services Office (http://internationalservices.gwu.edu), and Writing Center (http://www.gwu.edu/%7Egwriter).

Preparation for Medical School

Students who plan to apply to medical school fulfill both the general education requirement of the University and the Columbian College general education curriculum. They may

select any major at GW. Advice about academic preparation for medical school is provided by the health professions advisors in the Office of Undergraduate Studies (http://columbian.gwu.edu/undergraduate/advising). For admission to most medical schools, students must earn a bachelor's degree that includes the following coursework:

- Biology—8 credits of introductory biology, including laboratory. Students who receive credit for AP biology must complete 8 credits of upper-level biology coursework, including laboratory.
- Chemistry—8 credits of general inorganic chemistry, including laboratory.
- Organic Chemistry—8 credits, including laboratory.
- Biochemistry—3 credits.
- Physics—8 credits, including laboratory.
- English—6 credits in introductory English composition courses (fulfilled by the University Writing Program (http://www.gwu.edu/%7Euwp)).
- Social Sciences - 6 credits (Psychology and Sociology highly recommended)

Many medical schools have additional entrance requirements, which might include courses in genetics, statistics, and mathematics; even when such courses are not required, they are strongly recommended. Beyond the specified requirements, applicants are urged to follow their personal interests in developing their course of study.

Preparation for Law School

A broad liberal education is the best undergraduate preparation for law school. Advice about academic preparation for law school is provided by the pre-law advisor in the Office of Undergraduate Studies (http://columbian.gwu.edu/undergraduate/advising).

Seven-Year Integrated Bachelor of Arts/Doctor of Medicine

In addition to the early selection program described under the School of Medicine and Health Sciences, there is a seven-year integrated B.A./M.D. program for students of high ability and maturity who have decided, before applying to college, that they wish to become physicians and want to accomplish that goal in a shorter period of time. Detailed information on this program is available through the Office of Admissions (http://undergraduate.admissions.gwu.edu/seven-year-bamd).

General CCAS Policies

Academic Work Load - Undergraduate students may register for up to 17 credit hours through the normal registration process. After a student's first semester, a full-time student may request to register for more than 17 credit hours. To encourage academic performance of high quality, the College asks undergraduate students to reflect on their prior academic performance and make intentional, informed decisions when requesting a course overload. All students who meet the requirements may request a course overload but note that no request is guaranteed approval. Students should also be aware that registering for more than 17 credit hours in a given semester will incur additional tuition charges at the per credit hour rate established by the University. For students interested in registering for the 18th credit hour, students must be in good academic standing, have no pending Incomplete grades, and have no grades of F, W, or Z from the previous semester. For students interested in registering for the 19th credit hour or more, students must be in good academic standing, have earned a 3.5 semester GPA with at least 12 credit hours earned in the previous semester OR have a cumulative GPA of 3.3, have no pending Incomplete grades, and have no grades of F, W, or Z grades from the previous semester. Students can apply for a course overload through the Office of Undergraduate Advising.

Pass/No Pass Option – A junior or senior student in Columbian College who is in good academic standing may, with the approval of the instructor and the Office of Undergraduate Studies, take one course per semester that is graded on a letter-grade basis for a grade of *P,* Pass, or *NP,* No Pass. Students may not elect to take more than four *P/NP* courses under this regulation. Students may, however, also receive grades of *P/NP* in courses that are graded on a *P/NP* basis only. No course taken under the *P/NP* option will be counted toward the College's general curriculum requirement or the requirements for any major or minor field. Transfer students may not elect this option until the second semester of enrollment in the University. Under no circumstances may a student change from *P/NP* status to graded status, or vice versa, after the end of the eighth week of class.

Preliminary Placement Examinations – All foreign language departments require students to take placement tests to determine their level of proficiency in languages studied prior to enrollment at the University. The student is placed in an appropriate course on the basis of these tests. Students may not register for a course other than that determined by the placement test without written permission of the language department. There is no charge to the student for placement tests, and no credit (advanced standing) is awarded for courses waived as a result of these tests. Students who wish to register for MATH 1051, MATH 1220, MATH 1231, or MATH 1252 are required to take the placement test administered by the Department of Mathematics to determine eligibility based on their achieved score. In some cases, AP test scores or SAT II scores may be substituted for the placement test. See Interpreting Your Placement Score (https://math.columbian.gwu.edu/interpreting-your-placement-test-score) for more information.

Courses Outside of Columbian College – No more than 3 credits of Health and Wellness (HLWL) courses may count toward the 120 credits required for the bachelor's degree in Columbian College. No credit toward the degree is allowed for lifestyle, sport, and physical activity (LSPA) courses.

Earning an Additional Credit – In exceptional circumstances and with the prior approval of the instructor and Office of Undergraduate Advising, a student may register for and earn an additional credit in upper-division courses within the College by doing a significant amount of extra work as assigned and supervised by the instructor.

Graduate Programs

CCAS Regulations

CCAS provides an on-line Graduate Student Handbook (http://columbian.gwu.edu/graduate-resources) that contains additional updated information on policies, regulations, and other matters of concern to enrolled and admitted students. It is the responsibility of the student to be aware of the information contained in both this Bulletin and the Handbook. Students should also consult departmental/program handbooks and guidelines.

Admission Requirements

A detailed description of the policies that follow is available at the Columbian College website (http://columbian.gwu.edu/graduate-studies). Applicants must hold an undergraduate degree from an accredited institution of higher learning. Applicants should have a strong academic background, usually with a major, or equivalent, in the field in which they intend to study for an advanced degree. Normally, a *B* average or equivalent from an accredited college is required. With evidence of special promise, such as high Graduate Record Examination scores, an applicant whose academic record falls short of a *B* average may be accepted on a conditional basis. Meeting the minimum requirements does not assure acceptance. The departments/programs may, and often do, set higher admission standards. Students who apply in their senior year must provide evidence of the completion of their baccalaureate work before registration is permitted.

Most programs require applicants to submit scores on the GRE general test. In addition, some programs require scores on a GRE subject test. The applicant must have the Educational Testing Service send the required score reports directly to George Washington University. GRE scores are valid for five years.

Some programs require students to take prerequisite or deficiency courses within the first year of starting the degree. These courses will not count towards the requirements of the degree program and will not count towards the degree GPA. Prerequisite and/or deficiency courses will be listed in the applicant's letter of admission.

English Language Requirements for International Students
Applicants who are not citizens of countries where English is the official language or who do not hold a degree from a regionally accredited U.S. institution of higher learning are required to submit scores from the Test of English as a Foreign Language (TOEFL), the academic International English Language Testing System (IELTS), or the Pearson Test of English–Academic (PTE). English language scores are valid for two years. The most recent test scores will be used for applicants who submit multiple scores. Specified possible exemptions from this policy can be found on the Graduate Admissions website (http://graduate.admissions.gwu.edu/english-language-requirements). The required minimum score for admission to a program is 80 on the Internet-based or 550 on the paper-based TOEFL, or , an overall band score of 6.0 on the IELTS with no individual band score below 5.0, or a score of 53 on the PTE. Some programs have higher minimum scores. Applicants who have a TOEFL score of at least 70, but less than 80, or an IELTS overall band score of 5.0, but less than 6.0, may be considered for admission on the condition that they successfully complete the Applied English Studies program prior to beginning their graduate studies.

Applicants for graduate assistantships must have a minimum score of 100 on the Internet-based TOEFL or 600 on the paper-based TOEFL, or an overall band score of 7.0 on the IELTS with no individual band score below 6.0, or a score of 68 on the PTE.

Students with the following English language test scores are exempt from taking English for Academic Purposes (EAP) courses: TOEFL, 600 paper-based or 100 Internet-based; IELTS, overall band score of 7.0 with no individual band score below 6.0; PTE, 68. Students with test scores below these minimums must register for an EAP course during their first semester. Students assigned EAP courses should anticipate additional tuition expenses as well as a possible extended period of time required to complete their degree program. EAP courses do not count toward degree requirements.

Readmission

A student who wishes to resume a graduate program that had been interrupted for a period of two years or more must file a new application for admission and provide supporting documentation to be considered for readmission. Readmission and transfer of credits is not guaranteed, and the application is subject to review by the department concerned and/or the dean. The student may be required to take additional coursework and qualifying examinations on the coursework completed. A student who wishes to resume a graduate program that has been interrupted for a period of less than two years must petition the Department and Associate Dean. Readmission and transfer of credits is not guaranteed, and back-registration may be required.

Grades

Information on grades and computing the grade-point average is found under University Regulations (p. 21).

The symbol *I* (Incomplete) indicates that only a small portion of the required coursework remains to be completed and that a satisfactory explanation has been given to the instructor for the student's failure to complete the required work for a course. The conditions of the Incomplete must be detailed in a formal contract signed by the student and instructor and submitted

to the department prior to recording the *I*. Failure to follow the conditions of the incomplete contract will result in a grade of *F*. All other policies governing Incompletes are indicated under University Regulations (p. 21).

The symbol *IPG* (In Progress) is given for all thesis and dissertation research courses until the thesis or dissertation is completed. Upon the satisfactory completion of the thesis or dissertation, the symbol *IPG* is change by the College to *CR* (Credit). *CR* may be indicated for Advanced Reading and Research courses and independent research courses.

Scholarship Requirements

Graduate students are required to maintain a minimum cumulative grade-point average of 3.0 (*B*) in all coursework taken following admission to a graduate program in the College. This includes credit taken for combined, dual, and joint degrees but excludes prerequisite and deficiency coursework. A cumulative GPA below 3.0 results in termination from the program unless the department successfully petitions the dean's office for academic probation rather than termination. If, after one semester of probation, a student's cumulative GPA remains below 3.0, they are subject to termination. Individual departments/programs may require a higher average. Once a student has matriculated at GW, graduate coursework that is taken at the University or through the Consortium and forms part of the student's departmentally approved program of studies may be included in the grade-point average. When a grade of *F* is received for a course, the grade is included in the student's grade-point average whether or not the course is repeated. Receiving a grade of *F* in a graduate course may be ground for probationary status or termination of degree candidacy.

A student may repeat a course in which a grade of *C-* or above was received only when permitted to do so by the dean and the department concerned, unless the course description states that the course may be repeated for credit. A written statement of permission must be submitted for approval to the CCAS Graduate Office by the director of graduate studies. If such a course is repeated, both grades received remain on the student's record and are included in the student's grade-point average. The second taking of the course does not count toward degree requirements.

A graduate student may take an advanced undergraduate course for graduate credit only upon the approval of the department at the time of registration. Such approval is granted only with the provision that the student complete additional work in order to receive graduate credit.

Program of Studies

The program of studies is a formal agreement between a student and a department/program of the requirements to be met in completing a specific degree program as well as the dates by which each requirement must be completed. Students should consult their department's director of graduate studies to outline their program of studies as soon as they begin graduate work.

Students must make sure that they are fully informed of the requirements of Columbian College of Arts and Sciences as well as the requirements of their department or program. Students who must complete additional requirements as specified in their letter of admission must consult the Director of Graduate Studies early in their first semester.

Academic Work Load

All degree candidates must be registered for a minimum of 3 credits in the Spring and Fall semesters unless they are eligible for Continuing Research. Students finishing in the Summer may contact the CCAS Graduate office to register for 0 credits of Continuous Enrollment. Continuous Enrollment is not an option during the Fall and Spring semesters. Full-time students register for 9 to 12 credits each fall and spring semester, half-time students for 5 to 8 credits, and part-time students for 3 or 4 credits. In the summer, full-time status requires 6 credits, half-time status, 3 credits. These credit amounts do not apply to students who have fewer than the stated number of credits remaining to complete their programs. No more than 15 credits may be taken during any one semester without permission of the department and the dean. Students who are employed more than 20 hours per week should not register for more than 6 credits in any semester.

Continuous Registration

All students must be continuously enrolled while working toward a degree, except during the summer sessions (unless required by the program or if the student intends to graduate in the summer). Students who have completed all coursework and thesis or dissertation research requirements and are within CCAS deadlines must register for 1 credit of CCAS 0920 (master's students), or CCAS 0940 (doctoral students), Continuing Research, each semester until completion of the program; the course reference numbers are found in the Schedule of Classes under Columbian College. If continuous registration is not maintained, the student is dropped from the degree program unless the student is registered for an approved leave of absence by the CCAS Graduate Office.

Leave of Absence

A student who is temporarily unable to continue the program of studies may request leave of absence for a specific period of time, not to exceed two semesters during the total period of degree candidacy. If the request is approved by the program and the Associate Dean for Graduate Studies, CCAS will register the student for a leave of absence for each semester. Leaves of absence are normally granted for medical or family reasons and may be granted for other reasons at the discretion of the department and Associate Dean.

Special Program Requirements

Certain programs require their degree candidates to demonstrate a reading knowledge of an appropriate foreign

language or languages, a competence in quantitative methods, or some other special subject requirement. Courses taken at the undergraduate level to fulfill these requirements may not be counted in the number of graduate credits required for these programs.

Graduation Requirements

All students must submit an online Application for Graduation (http://registrar.gwu.edu/online-graduation-application-instructions) early in the semester or summer session in which they intend to graduate. Students must be registered in active status in the College during the semester or summer session in which they plan to graduate. Degrees are conferred in January, May, and August. Students who have completed the requirements for a degree but have not yet been awarded the degree will be issued a letter to this effect upon request to the CCAS Graduate Office. A commencement ceremony is held annually in May.

Fellowships and Financial Aid

Many departments offer merit-based graduate assistantships and fellowships; students should check with their department/program concerning funding opportunities. Graduate assistants and University Fellows are appointed by the associate dean for graduate studies. Other kinds of sponsored and University awards are also available. Awards are based on academic excellence, and only full-time graduate degree candidates in Columbian College are eligible to be considered. Doctoral candidates may be funded for a maximum of five years, M.A. and M.S. candidates for a maximum of two years, and M.F.A. candidates for a maximum of three years.

Students applying for admission who also wish to apply for an assistantship/fellowship should submit a completed application for admission before the funding admission deadline (http://www.gwu.edu/list-graduate-programs?field_school_tid[]=523). Currently enrolled students who wish to apply for graduate student support should consult their departmental requirements.

International students applying for graduate assistantships/fellowships should refer to the International Student Financial Aid section (p. 57) of this Bulletin for regulations governing the appointment of international graduate assistants.

Students who wish to apply for loans should indicate their intent to do so on the Application for Admission. An overview of funding opportunities is available from the University's Office of Graduate Student Assistantships and Fellowships (http://www.gwu.edu/~fellows).

Partnerships

CCAS graduate programs have long-term partnerships with important Washington-area institutions that include the Smithsonian Institution; NIH, NIST, and other federal agencies; the Folger Shakespeare Library; the Shakespeare Theatre; and the Corcoran Gallery, Phillips Collection, and Textile Museum.

MAJORS

Undergraduate Majors

The Columbian College of Arts and Sciences offers the bachelors degrees listed below.

All fields listed below (except where indicated) may lead to the Bachelor of Arts degree.

- Africana Studies (p. 97)
- American Studies (p. 104)
- Anthropology (p. 117)
- Arabic Studies (p. 166)
- Archaeology (p. 117)
- Art History (p. 218)
- Art History and Fine Arts (p. 223)
- Astronomy and Astrophysics (p. 348)
- Biological Anthropology (p. 119)
- Biology, Bachelor of Arts (p. 137)
- Biology, Bachelor of Science (p. 139)
- Biophysics (p. 349)
- Chemistry, Bachelor of Arts (p. 154)
- Chemistry, Bachelor of Science (p. 156)
- Chinese Language and Literature (p. 179)
- Classical Studies (p. 167)
- Communication (p. 314)
- Creative Writing and English (p. 204)
- Criminal Justice (p. 409)
- Dance (p. 432)
- Digital Media Design, Bachelor of Fine Arts (p. 170)
- Economics, Bachelor of Arts (p. 190)
- Economics, Bachelor of Science (p. 191)
- English (p. 206)
- Environmental Studies (p. 215)
- Fine Arts, Bachelor of Arts (p. 220)
- Fine Art, Bachelor of Fine Arts (p. 171)
- Fine Art Photography, Bachelor of Fine Arts (p. 172)
- French Language, Literature, and Culture (p. 402)
- Geography (p. 243)
- Geological Sciences, Bachelor of Arts (p. 249)
- Geological Sciences, Bachelor of Science (p. 249)
- German Language and Literature (p. 403)
- Graphic Design, Bachelor of Fine Arts (p. 173)
- History (p. 262)
- Human Services and Social Justice (p. 410)
- Interior Architecture and Design, Bachelor of Fine Arts (p. 280)
- Japanese Language and Literature (p. 180)
- Journalism and Mass Communication (p. 298)

- Judaic Studies (p. 282)
- Mathematics, Bachelor of Arts (p. 289)
- Mathematics, Bachelor of Science (p. 290)
- Music (p. 312)
- Organizational Sciences (p. 315)
- Peace Studies (p. 323)
- Philosophy (p. 332)
- Philosophy: Public Affairs Focus (p. 332)
- Photojournalism, Bachelor of Fine Arts (p. 173)
- Physics, Bachelor of Arts (p. 347)
- Physics, Bachelor of Science (p. 349)
- Political Communication (p. 300)
- Political Science, Bachelor of Arts (p. 361)
- Political Science, Bachelor of Arts: Public Policy Focus (p. 363)
- Political Science, Bachelor of Science (p. 365)
- Psychology (p. 380)
- Religion (p. 398)
- Russian Language and Literature (p. 404)
- Sociology (p. 411)
- Spanish and Latin American Languages, Literatures, and Cultures (p. 405)
- Speech, Language, and Hearing Sciences (p. 418)
- Statistics (p. 425)
- Theatre (p. 433)
- Women's, Gender, and Sexuality Studies (p. 441)

Scholarship Performance in the Major

Major programs are defined by a set of required courses that can be internal to the home department or external to that department but still required in the major program. The prescribed curricula and minimum specific requirements for majors are outlined under each department's heading in this Bulletin. For all majors in all departments, a minimum grade of *C*− must be attained in all upper-level courses numbered in the 2000s through 4000s that are required for the major, regardless of whether those courses are internal or external to the home department.

If a student receives a grade of *D*+, *D,* or *D*− in such a course, the major department may permit that course to satisfy a curricular requirement (such as a prerequisite), but it will not count toward the minimum number of credits required for the major until the course is repeated and a satisfactory grade (*C*− or better) is attained. Once the student has completed the course with a satisfactory grade, credit hours earned the first time the course was taken will count toward the minimum number of credits required in the major program. Credit earned for the repetition will not count toward the degree.

This condition of *C*− or better does not apply to introductory-level courses (numbered in the 1000s) that may apply to the major, although a department may choose to implement such a restriction based on its own discretion.

Double Majors

Students who complete the requirements of two majors in Columbian College (such as mathematics and physics or history and economics) may graduate with a double major. Consult with advisors in the two departments concerned before officially declaring both majors with the Office of Undergraduate Studies (http://columbian.gwu.edu/undergraduate/advising).

A Columbian College student may pursue a second major in the School of Business, the School of Engineering and Applied Science, or the Elliott School of International Affairs provided that permission to do so has been obtained from the appropriate administrative office. Students in other schools may also take a second major in Columbian College. Students wishing to pursue one of these options must request approval through the appropriate department and Columbian College's Office of Undergraduate Studies. In all cases, students must complete the general education requirements and a major in their home school in order to graduate.

Double majors do not result in two degrees. See Double Majors and Double Degrees under University Regulations.

Special Interdisciplinary Majors

A student may propose a special interdisciplinary major, in consultation with appropriate academic advisors. The proposed major must have valid and clearly defined academic goals to be considered for approval. Only students with a 3.0 or better cumulative grade-point average are eligible to propose a special interdisciplinary major. The proposal must be submitted for approval by the end of the fourth semester or the semester following completion of 45 credit hours, whichever comes first.

Approval of the proposed major rests with the Committee on Undergraduate Studies, (http://columbian.gwu.edu/undergraduate/advising) which must also approve the proposed name of the major and the composition of the committee that will oversee it. At least 45 credit hours of the major must be completed in Columbian College. Because of the broad scope of an interdisciplinary program, it may not be part of a double major although students are allowed to declare a minor with approval of the Committee on Undergraduate Studies.

At the discretion of the committee overseeing the major, the student must either write an acceptable senior thesis or pass a comprehensive examination in the last semester of study toward the degree. Students may apply for Special Honors by registering for CCAS 4191 Special Interdisciplinary Major Capstone. To be eligible, students must meet the requirements for Special Honors stated under University Regulations, must have a cumulative grade-point average of at least 3.5, and must

receive a Pass With Distinction from all members of the major committee on the final project or thesis.

MINORS

Minors

Students who wish to familiarize themselves with a field outside their major may graduate with a minor in addition to the major. Not all Columbian College departments offer undergraduate minors; the requirements prescribed by those that do are listed under the department concerned. A student interested in a minor should consult a faculty advisor in the applicable department and declare both major and minor programs through the Office of Undergraduate Studies. Students may pursue at most two minors.

At least one-half of the course work required for a minor must be done in residence. Grades of *C*− or better must be earned in upper-division courses, including such courses transferred as advanced standing from another institution. Courses passed with a grade below *C*− may be used to fulfill a minor field curricular requirement but may not be counted toward the total number of credit hours required for the minor.

Columbian College students can pursue minors in other schools of the University, as well as those in naval science and in sustainability. Note that Columbian College students are limited in the number of hours they may take in courses outside the College ("professional credit" courses). Refer to Courses Outside Columbian College.

Columbian College offers minors in the following fields:

- Africana Studies (p. 98)
- American Studies (p. 105)
- Anthropology (p. 121)
- Applied Ethics (p. 343)
- Arabic Studies (p. 168)
- Arabic and Hebrew Languages and Cultures (p. 168)
- Archaeology (p. 121)
- Art History (p. 226)
- Art History and Fine Arts (p. 227)
- Astronomy and Astrophysics (p. 350)
- Biological Anthropology (p. 122)
- Biology (p. 141)
- Biophysics (p. 350)
- Chemistry (p. 160)
- Chinese Language and Literature (p. 181)
- Classical Studies (p. 168)
- Communication (p. 317)
- Creative Writing (p. 208)
- Criminal Justice (p. 411)
- Cross-Cultural Communication (p. 122)
- Dance (p. 434)
- Economics (p. 193)
- English (p. 209)
- Film Studies (p. 217)
- Fine Arts (p. 226)
- French Language, Literature, and Culture (p. 406)
- Geographic Information Systems (p. 244)
- Geography (p. 244)
- Geological Sciences (p. 250)
- German Language and Literature (p. 406)
- History (p. 274)
- Human Services and Social Justice (p. 412)
- Italian Language and Literature (p. 407)
- Japanese Language and Literature (p. 182)
- Jazz Studies (p. 312)
- Journalism and Mass Communication (p. 303)
- Judaic Studies (p. 283)
- Korean Language and Literature (p. 182)
- Law and Society (p. 412)
- LGBT and Sexuality Studies (p. 443)
- Logic (p. 344)
- Mathematics (p. 291)
- Mind–Brain Studies (p. 344)
- Music (p. 313)
- Organizational Communication (p. 317)
- Organizational Sciences (p. 318)
- Peace Studies (p. 325)
- Philosophy (p. 345)
- Physics (p. 351)
- Political Science (p. 368)
- Psychology (p. 381)
- Public Policy (p. 368)
- Religion (p. 399)
- Russian Language and Literature (p. 407)
- Sociocultural Anthropology (p. 123)
- Sociology (p. 413)
- Spanish and Latin American Languages, Literatures, and Cultures (p. 408)
- Speech, Language, and Hearing Science (p. 419)s
- Statistics (p. 426)
- Theatre (p. 435)
- Women's, Gender, and Sexuality Studies (p. 443)

MASTER'S

Columbian College of Arts and Sciences offers the following Master degrees.

- Master of Arts in the field of American studies (p. 105)
- Master of Arts in the field of anthropology (p. 124)
- Master of Arts in the field of applied economics (p. 193)

- Master of Arts in the field of art history (p. 227)
- Master of Arts in the field of art therapy (p. 128)
- Master of Arts in the field of art therapy practice (p. 128)
- Master of Arts in the field of Chinese language and culture (p. 183)
- Master of Arts in the field of communication management (p. 318)
- Master of Arts in the field of criminology (p. 413)
- Master of Arts in the field of economics (p. 193)
- Master of Arts in the field of English (p. 210)
- Master of Arts in the field of environmental resource policy (p. 213)
- Master of Arts in exhibition design (p. 174)
- Master of Arts in the field of forensic psychology (p. 371)
- Master of Arts in the field of history (p. 274)
- Master of Arts in the field of Islamic studies (p. 400)
- Master of Arts in the field of Jewish cultural arts (p. 284)
- Master of Arts in the field of leadership education and development (p. 320)
- Master of Arts in the field of legal institutions and theory (p. 369)
- Master of Arts in the field of mathematics (p. 292)
- Master of Arts in the field of media and strategic communication (p. 304)
- Master of Arts in the field of museum studies (p. 306)
- Master of Arts in new media photojournalism (p. 175)
- Master of Arts in the field of organizational sciences (p. 320)
- Master of Arts in the field of philosophy (p. 345)
- Master of Arts in the field of political science (p. 369)
- Master of Arts in the field of public policy with a concentration in philosophy and social policy (p. 346)
- Master of Arts in the field of public policy-women's, gender, and sexuality studies (p. 444)
- Master of Arts in the field of sociology (p. 413)
- Master of Arts in the field of speech–language pathology (p. 419)
- Master of Arts in the field of women's, gender, and sexuality studies (p. 445)
- Master of Fine Arts in the field of classical acting (p. 165)
- Master of Fine Arts in the field of dance (p. 435)
- Master of Fine Arts in the field of fine arts (p. 228)
- Master of Fine Arts in the field of interior architecture and design (p. 281)
- Master of Fine Arts in the field of production design (p. 436)
- Master of Forensic Sciences (p. 233)
- Master of Forensic Sciences in the field of forensic molecular biology (p. 234)
- Master of Forensic Sciences in the field of forensic chemistry (p. 234)
- Master of Forensic Sciences in the field of forensic toxicology (p. 235)
- Master of Forensic Sciences in the field of friction ridge analysis (p. 235)
- Master of Public Administration (p. 389)
- Master of Public Policy (p. 390)
- Master of Science in the field of anatomical and translational sciences (p. 108)
- Master of Science in the field of applied mathematics (p. 292)
- Master of Science in the field of biological sciences (p. 141)
- Master of Science in the field of biostatistics (p. 146)
- Master of Science in the field of chemistry (p. 161)
- Master of Science in the field of crime scene investigation (p. 236)
- Master of Science in the field of data science (p. 177)
- Master of Science in the field of digital forensics (p. 236)
- Master of Science in the field of economics (p. 194)
- Master of Science in the field of environmental and green chemistry (p. 161) (p. 161)
- Master of Science in the field of friction ridge analysis (p. 237)
- Master of Science in the field of geography (p. 246)
- Master of Science in the field of human paleobiology (p. 276)
- Master of Science in the field of molecular biochemistry and bioinformatics (p. 130)
- Master of Science in the field of physics (p. 351)
- Master of Science in the field of statistics (p. 426)

Unless otherwise specified, the requirements listed below are applicable to candidates for all master's degrees offered by Columbian College of Arts and Sciences.

General Requirements

Minimum credit requirements follow, but it should be noted that many departments set credit requirements well above the number of credits stated here. Specific requirements appear under the name of the department or program concerned in the bulletin. For a master's degree program that includes a thesis, satisfactory completion of a minimum of 30 credit hours of approved graduate work is required. For a master's degree program that does not include a thesis, the number of credit hours of approved graduate course work is determined by the department. Some departments offer a choice between a thesis option and a non-thesis option. Undergraduate courses taken without additional graduate-level work, deficiency coursework, and EAP courses are not counted toward program requirements or the degree GPA.

Upon approval, up to one-half of the required graduate work may be taken in courses offered by another degree-granting division of this University. With approval, up to one-quarter

of work toward a master's degree may be taken in courses offered by the other affiliated institutions of the Consortium of Universities of the Washington Metropolitan Area. In all cases, at least one-half of the hours counting toward the master's degree must be taken after entering the program, in graduate courses offered by Columbian College of Arts and Sciences.

Master's students have an overall four-year time limit for completion of all degree requirements. An approved leave of absence is not counted towards the time limit requirement. Students must apply, and be approved for an extension of time if they wish to study beyond the time limit.

Transfer of Credit

A maximum of one-quarter of the credit hours of graduate course work required for a degree may be approved for transfer to a graduate program in Columbian College from enrollment in non-degree status at GW or from another degree-granting school of this University or another accredited college or university. For a transfer of credit to be approved, *all* of the following conditions must be met:

1. the course work must be from an accredited institution and must have been taken within the five years prior to matriculation;
2. it must be approved by the department as part of the student's program of studies;
3. it must not have been applied to the completion of requirements for another degree;
4. it must be post-baccalaureate graduate-level course work;
5. the course must have received a grade of *B* or better.

Requests for transfer credit must be submitted in writing and approved by the department's director of graduate studies and the dean during the student's first year in the program. An official transcript of the course work must be on file before the request can be considered. Grades from transfer credit are not part of the graduate GPA, except in the case of approved non-degree GW credits.

Once enrolled in Columbian College of Arts and Sciences, students are not permitted to enroll another university, except under extraordinary circumstances; permission must be sought from the department and Associate Dean in advance.

Master's Comprehensive Examination

Many programs require degree candidates to pass a Master's Comprehensive Examination in the major subject. The nature and form of the examination are the responsibility of the department or program. A student who fails to pass the Master's Comprehensive Examination may, with the approval of the department, repeat the examination at the next scheduled examination date. If the student fails a second time, no further opportunity to take the examination is permitted, and the student's degree candidacy is terminated.

The Thesis

The main purposes of a master's thesis are to demonstrate the student's ability to make independent use of information and training and to furnish objective evidence of constructive powers in a chosen field. The student normally registers for 3 to 6 credit hours of thesis research supervised by a director and a reader. Registration for thesis research entitles the student to the advice and direction of the member of the faculty under whom the thesis is to be written. If a student has completed the credits required for the degree but has not yet completed their thesis, they may register for one credit of Continuing Research (CCAS 0920). The thesis subject must be approved by the faculty members who will direct the thesis. All theses must be submitted electronically by the stated deadlines and meet the formatting and other requirements set forth on the Electronic Theses and Dissertation (http://library.gwu.edu/etd) webpage.

DOCTORAL

Doctoral degrees

- Doctor of Philosophy (p. 82)
- Doctor of Psychology (p. 84)

Doctor of Philosophy program

Columbian College of Arts and Sciences offers the following Doctor of Philosophy degrees

- Doctor of Philosophy in the field of American studies (p. 105)
- Doctor of Philosophy in the field of American religious history (p. 275)
- Doctor of Philosophy in the field of anthropology (p. 125)
- Doctor of Philosophy in the field of biological sciences (p. 142)
- Doctor of Philosophy in the field of biochemistry and systems biology (p. 143)
- Doctor of Philosophy in the field of biostatistics (p. 935)
- Doctor of Philosophy in the field of chemistry (p. 162)
- Doctor of Philosophy in the field of economics (p. 194)
- Doctor of Philosophy in the field of English (p. 210)
- Doctor of Philosophy in the field of history (p. 275)
- Doctor of Philosophy in the field of human paleobiology (p. 276)
- Doctor of Philosophy in the field of mathematics (p. 292)
- Doctor of Philosophy in the field of microbiology and immunology (p. 143)
- Doctor of Philosophy in the field of molecular medicine (p. 144)
- Doctor of Philosophy in the field of physics (p. 352)
- Doctor of Philosophy in the field of political science (p. 370)
- Doctor of Philosophy in the field of psychology (p. 381)

- Doctor of Philosophy in the field of psychology with a concentration in industrial/ organizational psychology (p. 321)
- Doctor of Philosophy in the field of public policy and administration (p. 391)
- Doctor of Philosophy in the field of statistics (p. 426)

The Doctor of Philosophy program is divided into two parts: precandidacy and candidacy. During precandidacy, a student completes the general requirements and the General Examination. Once admitted to candidacy, the student prepares, submits, and defends the dissertation.

General Requirements

The programs leading to the degree of Doctor of Philosophy require the satisfactory completion of a minimum of 72 credit hours of approved graduate course work, including at least 12 and at most 24 hours of dissertation research. Students must receive the permission of the Associate Dean to complete less than 12 hours of dissertation research. A minimum of 48 of the 72 hours must be taken in the precandidacy stage, in preparation for the General Examination. A maximum of 12 of these hours may be taken in courses offered by the other affiliated members of the Consortium of Washington Area Universities. The exact number of credit hours required for any part of the total program is assigned by each department and may exceed the minimum required by the Columbian College. Ph.D. students have an overall eight-year time limit for completion of all degree requirements. An approved leave of absence is not counted towards the time limit requirement. Students must apply, and be approved for an extension of time if they wish to study beyond the time limit.

Transfer of Credit

Entering students who hold a master's degree from an accredited institution and in a field relevant to the proposed doctoral field of study may request transfer of up to 30 hours of credit toward a doctoral degree. For those who do not hold the master's degree, a maximum of 30 hours of credit may be transferred, provided the conditions below are met:

1. the course work must be from an accredited institution and must have been taken within the five years prior to matriculation;
2. it must be approved by the department as part of the student's program of studies;
3. it must not have been applied to the completion of requirements for another degree;
4. it must be post-baccalaureate graduate-level course work;
5. the course must have received a grade of *B* or better.

Requests for transfer credit must be submitted in writing and approved by the department and the Associate Dean for Graduate Studies during the student's first year at GW. An official transcript of the course work must be on file before the request can be considered. Grades from transfer credit will not be counted towards the graduate degree GPA, except in the case of approved non-degree GW credits.

The General Examination

The General Examination is composed of an examination in each of the areas of study comprising the student's program. A student who fails to pass any part of the General Examination may, with the approval of the department, repeat the examination at the next scheduled examination date. If the student fails a second time, no further opportunity to take the examination is permitted, and the student's degree candidacy is terminated.

Satisfactory performance on the General Examination is required for admission to candidacy but does not guarantee it. A department will recommend advancement to candidacy only if satisfied with the student's performance in every aspect of the program, only after a dissertation advisor has been selected and a dissertation area determined, and only if the department is confident of the student's ability to complete the dissertation within the allotted time.

The Degree of Master of Philosophy

Upon departmental recommendation and approval of the dean, the degree of Master of Philosophy may be awarded to students who have been advanced to candidacy and successfully completed all requirements for the Doctor of Philosophy degree up to and including the General Examination. Not all departments recommend students for this degree. Students requesting the M.Phil. must contact the CCAS Graduate office and submit an online application for graduation (http://registrar.gwu.edu/online-graduation-application-instructions). The degree is not automatically conferred upon advancing to candidacy.

The Dissertation and Final Examination

A dissertation directed or co-directed by a member of the GW faculty is required of each doctoral candidate as evidence of ability to perform scholarly research and interpret its results. The student's core research committee is composed of a director and two readers who advise the student during the dissertation research process. It is permissible for the dissertation director to be drawn from outside of the academic unit in which the student is enrolled. If the director is from outside the academic unit, then the committee must also have a co-director from inside the unit.

The student normally enrolls for 12 to 24 hours of dissertation research after admission to candidacy. Dissertation Research must be taken in units of no less than 3 credits per semester. When the dissertation has been approved by the director and the members of the Dissertation Research Committee, the candidate takes the Final Examination (the defense). A committee of examiners composed of Columbian College faculty and outside scholars conducts the examination. This examination committee consists of the director (and co-director, if applicable) and the two readers who made up the research committee, as well as two additional examiners

and a chair. The examiners cannot have had a direct role in the dissertation research process. Once examiner must be from within the academic unit, with the other examiner coming from outside the academic unit. The chair of the examination cannot be drawn from the research committee or examiners. If the candidate passes, he or she is recommended to Columbian College for the degree of Doctor of Philosophy. The dissertation must be submitted electronically by the stated deadline and meet the formatting and other requirements set forth on the Electronic Theses and Dissertations website (http://library.gwu.edu/etd).

The Doctor of Medicine/Doctor of Philosophy Dual Degree Program

A dual degree program is available to qualified students who seek both the Doctor of Medicine and Doctor of Philosophy degrees. The requirements that must be fulfilled for both degrees are identical to those currently and separately established in the School of Medicine and Health Sciences and Columbian College of Arts and Sciences. A student working toward these degrees may apply a maximum of 24 credit hours of approved course work in the School of Medicine and Health Sciences toward the Doctor of Philosophy degree. The estimated time for the completion of this dual program is six years. In order to enter the dual degree program, a prospective student must apply for and gain admission both to Columbian College and to the School of Medicine and Health Sciences separately through established procedures. Upon admission to both schools, the student may then apply for affiliation with the dual degree program.

The Doctor of Psychology program

Columbian College of Arts and Sciences offers the following Doctor of Psychology degree

- Doctor of Psychology in the field of professional psychology (p. 372)

General Requirements

The program leading to the degree of Doctor of Psychology requires the satisfactory completion of a minimum of 83 credit hours of approved graduate work. A maximum of 12 credit hours may be taken in courses offered by the other affiliated members of the Consortium of Universities. Doctor of Psychology students have an overall five-year time limit for completion of all degree requirements. An approved leave of absence is not counted towards the time limit requirement. Students must apply, and be approved for an extension of time if they wish to study beyond the time limit.

Transfer of Credit

Provisions are the same as those of the Doctor of Philosophy program, above.

The General Examination

Each student is required to complete the General Examination no later than the beginning of the final semester of the program. A student who fails to pass any part of the General Examination may, in exceptional circumstances, and with the approval of the program, repeat the examination at the next scheduled examination date. If the student fails a second time, no further opportunity to take the examination is permitted, and the student's degree candidacy is terminated.

The Degree of Master of Psychology

Students who have earned 53 credits toward the Psy.D. may receive the M.Psy. degree. Further information on the requirements of the Doctor of Psychology degree appears under Professional Psychology (p. 370). Students requesting the MPsy degree must contact the CCAS Graduate Office and submit an online application for graduation (http://registrar.gwu.edu/online-graduation-application-instructions). The degree is not automatically conferred after completion of 53 credits.

CERTIFICATES

Graduate certificate programs

Columbian College of Arts and Sciences offers a range of graduate certificate programs. Departments and programs offering graduate certificates are indicated in italics below.

- Graduate certificate in anatomical and (p. 109)translational sciences–*Institute of Biomedical Sciences (*18 credits*)*
- Graduate certificate in budget and public finance (p. 392)–*Public Policy and Public Administration* (12 credits)
- Graduate certificate in contexts of environmental policy (p. 213)–*Environmental Resource Policy (*12 credits)
- Graduate certificate in data science (p. 178)–*Data Science* (12 credits)
- Graduate certificate in digital investigations (p. 238)–*Forensic Sciences* (18 credits)
- Graduate certificate in documentary filmmaking (p. 293)–*Media and Public Affairs* (9 credits)
- Graduate certificate in environmental resource policy (p. 214)–*Environmental Resource Policy (*12 credits)
- Graduate certificate in exhibit design (p. 306)–*Museum Studies* (18 credits)
- Graduate certificate in financial mathematics (p. 292)–*Mathematics* (12 credits)
- Graduate certificate in forensic investigation (p. 238)–*Forensic Sciences* (15 credits)
- Graduate certificate in geographical information systems (p. 246)–*Geography* (12 credits)
- Graduate certificate in Islamic studies (p. 401)–*Religion* (18 credits)

- Graduate certificate in LGBT health policy and practice (p. 373)–*Professional Psychology* (12 credits)
- Graduate certificate in mathematics (p. 293)–*Mathematics* (12 credits)
- Graduate certificate in museum collections management and care (p. 307)–*Museum Studies*, online (12 credits)
- Graduate certificate in museum studies (p. 307)–*Museum Studies* (18 credits)
- Graduate certificate in nonprofit management (p. 392)–*Trachtenberg School of Public Policy and Public Administration* (12 credits)
- Graduate certificate in survey design and data analysis (p. 427)–*Statistics* (12 credits)
- Graduate certificate in women's, gender, and sexuality studies (p. 445)–*Women's, Gender, and Sexuality Studies* (12 credits)

Admission

Certificate students are not automatically admitted to a master's or doctoral program; they must submit an application for admission, meet the admission requirements, and be admitted to the degree program.

With departmental and Columbian College approval, students may concurrently register for a certificate and another Columbian College degree. If the certificate is conferred by another school, students must secure permission from both schools and apply and be admitted to both schools.

Certificate Completion

The Columbian College of Arts and Sciences requires all certificate candidates, both full-time and part-time, to complete all academic requirements within a maximum of three calendar years from admission. An approved leave of absence is not counted towards the time limit requirement. Students must apply, and be approved for an extension of time if they wish to study beyond the time limit.

To be eligible for a Graduate Certificate, students must complete all course requirements with a minimum GPA of 3.0, with no grades of *F*.

Transfer of Credit

Requests for transfer credit must be submitted in writing and approved by the department's director of graduate studies and the dean during the student's first year in the program. An official transcript of the course work must be on file before the request can be considered. Grades from transfer credit are not part of the graduate GPA.

Once enrolled in Columbian College of Arts and Sciences, students are not permitted to transfer course work taken outside the University, except under extraordinary circumstances; permission must be sought from the dean in advance.

Transfer of credit to the Certificate
All courses transferred in to a graduate certificate program must meet the following conditions:

- The course work must be from an accredited institution and must have been taken within the five years prior to matriculation.
- It must be approved by the department as part of the student's program of studies.
- It must be post-baccalaureate graduate-level course work.
- The course must have received a grade of *B* or better.

In addition, the following restrictions apply:

- At most one course from outside GW can be transferred in.
- At most two courses that have been used toward a previously completed CCAS program can be transferred in.
- No course may count toward more than one certificate.

Transfer of credit from the Certificate to degree programs
Students may transfer up to 100 percent of coursework (maximum of 18 credits) in a CCAS certificate program to another CCAS degree program if the curriculum for the certificate is wholly a subset of the degree, providing the conditions below are met:

- The course work must have been taken within the five years prior to matriculation.
- The course must have received a grade of *B* or above.

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

- Africana Studies (AFST) (p. 1021)
- American Studies (AMST) (p. 1022)
- Anthropology (ANTH) (p. 1029)
- Arabic (ARAB) (p. 1037)
- Art History (AH) (p. 1038)
- Art Therapy (ARTH) (p. 1043)
- Astronomy (ASTR) (p. 1045)
- Biochemistry and Molecular Medicine (BIOC) (p. 1046)
- Biological Sciences (BISC) (p. 1047)
- Biomedical Sciences (BMSC) (p. 1056)
- Biostatistics (BIOS) (p. 1057)

- Chemistry (CHEM) (p. 1059)
- Chinese (CHIN) (p. 1063)
- Classical Acting (ACA) (p. 1018)
- Classical Studies (CLAS) (p. 1072)
- Columbian College of Arts and Sciences (CCAS) (p. 1076)
- Communication (COMM) (p. 1076)
- Corcoran Art and the Book (CBK) (p. 1102)
- Corcoran Art Education (CED) (p. 1117)
- Corcoran Art History (CAH) (p. 1088)
- Corcoran Arts & Humanities (CAS) (p. 1096)
- Corcoran Ceramics (CCR) (p. 1111)
- Corcoran Design (CDE) (p. 1112)
- Corcoran Digital Media Design (CDM) (p. 1113)
- Corcoran Exhibition Design (CEX) (p. 1125)
- Corcoran Fine Art (CFA) (p. 1127)
- Corcoran First Year Foundation (CFN) (p. 1136)
- Corcoran Graphic Design (CGD) (p. 1137)
- Corcoran Interior Design (CID) (p. 1139)
- Corcoran Painting (CPT) (p. 1157)
- Corcoran Photography (CPH) (p. 1145)
- Corcoran Photojournalism (CPJ) (p. 1150)
- Corcoran Printmaking (CPR) (p. 1153)
- Corcoran Sculpture (CSL) (p. 1159)
- Data Science (DATS) (p. 1168)
- East Asian Languages and Literature (EALL) (p. 1172)
- Economics (ECON) (p. 1173)
- English (ENGL) (p. 1204)
- English for Academic Purposes (EAP) (p. 1213)
- Environmental Resource Policy (ENRP) (p. 1213)
- Film Studies (FILM) (p. 1218)
- Fine Arts (FA) (p. 1222)
- Forensic Psychology (FORP) (p. 1228)
- Forensic Sciences (FORS) (p. 1230)
- French (FREN) (p. 1234)
- Geography (GEOG) (p. 1236)
- Geological Sciences (GEOL) (p. 1240)
- Germanic Language and Literature (GER) (p. 1242)
- Greek (GREK) (p. 1245)
- Hebrew (HEBR) (p. 1254)
- History (HIST) (p. 1255)
- Hominid Paleobiology (HOMP) (p. 1266)
- Human Services and Social (HSSJ (p. 1272))
- Interior Architecture and Design (IAD) (p. 1276)
- Interior Design (INTD) (p. 1278)
- Italian (ITAL) (p. 1286)
- Japanese (JAPN) (p. 1287)
- Judiac Studies (JSTD) (p. 1288)
- Korean (KOR) (p. 1289)
- Latin (LATN) (p. 1289)
- Leadership Education and Development (LEAD) (p. 1326)
- Linguistics (LING) (p. 1329)
- Mathematics (MATH) (p. 1336)
- Microbiology, Immunology, and Tropical Medicine (MICR) (p. 1353)
- Molecular Medicine (MMED) (p. 1353)
- Museum Studies (MSTD) (p. 1354)
- Music (MUS) (p. 1355)
- Organizational Sciences (ORSC) (p. 1365)
- Peace Studies (PSTD) (p. 1368)
- Persian (PERS) (p. 1369)
- Philosphy (PHIL) (p. 1371)
- Physics (PHYS) (p. 1382)
- Political Science (PSC) (p. 1391)
- Portuguese (PORT) (p. 1399)
- Professional Psychology (PSYD) (p. 1412)
- Psychology (PSYC) (p. 1414)
- Public Policy and Public Administration (PPPA) (p. 1438)
- Religion (REL) (p. 1443)
- School of Media and Public Affairs (SMPA) (p. 1448)
- Slavic Language and Literature (SLAV) (p. 1453)
- Sociology (SOC) (p. 1455)
- Spanish (SPAN) (p. 1459)
- Speech and Hearing Science (SPHR) (p. 1467)
- Statistics (STAT) (p. 1470)
- Theatre and Dance (TRDA) (p. 1476)
- Turkish (TURK) (p. 1483)
- University Writing (UW) (p. 1485)
- Vietnamese (VIET) (p. 1485)
- Women's Studies (WSTU) (p. 1486)
- Yiddish (YDSH) (p. 1489)

GENERAL EDUCATION CURRICULUM - PERSPECTIVE, ANALYSIS, COMMUNICATION (G-PAC)

In addition to the University General Education Requirement, undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two writing-in-the-disciplines (WID) approved courses;
- Humanities—one approved course in the humanities that involves critical thinking skills;
- Mathematics or Statistics—one approved course in either mathematics or statistics;
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry; and,
- Social Sciences—two approved courses in the social sciences

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context;
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries;
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement);
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action;
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement; and,
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC may also be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

University General Education and G-PAC Courses

- Arts (p. 87)
- Global or Cross-Cultural (p. 88)
- Humanities (p. 90)
- Local/Civic Engagement (p. 93)
- Mathematics or Statistics (p. 94)
- Natural or physical laboratory sciences (p. 94)
- Oral Communication (p. 95)
- Social Sciences (p. 96)
- Writing (p. 97)

Arts

Code	Title	Credits
AH 1031	Survey of Art and Architecture I	
AH 1032	Survey of Art and Architecture II	
AH 2071	Introduction to the Arts in America	
AH 2154	American Architecture I	
AH 2155	American Architecture II	
AMST 1100	Politics and Film	
AMST 2071	Introduction to the Arts in America	
AMST 2520	American Architecture I	
AMST 2521	American Architecture II	
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts	
CHIN 3173	Chinese Drama and Theatre	
ENGL 1210	Introduction to Creative Writing	
ENGL 2210	Techniques in Creative Writing	
FA 1401	Painting: Visual Thinking	
FA 1501	Black & White Photography	
FA 1502	Color Photography	
FA 1601	New Media: Digital Art	
ITAL 4183	History of Italian Film	
MUS 1103	Music in the Western World	
MUS 1104	Topics in Music	
MUS 1105	Introduction to Musical Thought and Practice	
MUS 2101	Harmony	
MUS 2122	Music in the US	
or MUS 2122W	Music in the US	
SLAV 2785	Introduction to Russian Cinema I	
SLAV 2786	Introduction to Russian Cinema II	
TRDA 1020	Women and the Creative Process	

TRDA 1214	Beginning Acting
TRDA 2191	Dance History
or TRDA 2191W	Dance History
TRDA 2195	Global Dance History
TRDA 3245	History of the Theatre I
or TRDA 3245W	History of the Theatre I
TRDA 3246	History of the Theatre II
or TRDA 3246W	History of the Theatre II

Global or Cross-Cultural

Code	Title	Credits
AMST 1200	The Sixties in America	
AMST 2010	Early American Cultural History (same as HIST 2010)	
AMST 2011	Modern American Cultural History (same as HIST 2011)	
AMST 2120W	Freedom in American Thought and Popular Culture (same as PSC 2120W)	
AMST 2210	The African American Experience	
AMST 2320	U.S. Media and Cultural History (same as HIST 2320)	
AMST 2350	U.S. Religion and Politics (same as HIST 2350)	
AMST 2380	Sexuality in US History (same as HIST 2380/HIST 2380W)	
AMST 2410	20th-Century U.S. Immigration (same as HIST 2410)	
AMST 2440	The American City (same as HIST 2440)	
AMST 2710	The United States in Global Context, 1898–Present (same as HIST 2710)	
AMST 2730	World War II in History and Memory (same as HIST 2730/HIST 2730W)	
or AMST 2730W	World War II in History and Memory	
AMST 2750W	Latinos in the United States (same as HIST 2750/HIST 2750W)	
AMST 3352	Women in the United States to 1865 (same as HIST 3352/HIST 3352W and WSTU 3352/WSTU 3352W)	
or AMST 3352W	Women in the United States to 1865	
ANTH 1002	Sociocultural Anthropology	
or ANTH 1002W	Sociocultural Anthropology	
ANTH 1003	Archaeology	
ANTH 1004	Language in Culture and Society	
ANTH 2008	Foundations of Anthropological Thought	
or ANTH 2008W	Foundations of Anthropology	
ANTH 2750	Latinos in the United States (same as AMST 2750W)	
or ANTH 2750W	Latinos in the United States	
ANTH 3838	Theory and Practice in Archaeology	
or ANTH 3838W	Theory and Practice in Archaeology	
CHIN 3111	Chinese Literature in Translation	
CHIN 3112	Chinese Literature in Translation	
CHIN 3123	Introduction to Chinese Linguistics	
CHIN 3124	Introduction to Chinese Linguistics	
CHIN 3163	Taiwanese Literature and Film	
CHIN 3173	Chinese Drama and Theatre	
CLAS 2113	The Roman World to 337 A.D. (same as HIST 2113)	
EALL 3811	Confucian Literature in East Asia (same as REL 2811)	
EALL 3814	Religion and Philosophy in East Asia (same as REL 2814)	
or EALL 3814W	Religion and Philosophy in East Asia	
ENGL 1330	Myths of Britain	
or ENGL 1330W	Myths of Britain	
ENGL 1340	Essential Shakespeare	
or ENGL 1340W	Essential Shakespeare	
ENGL 1610	Introduction to Black American Literature I	
or ENGL 1610W	Introduction to Black American Literature I	
ENGL 1611	Introduction to Black American Literature II	
or ENGL 1611W	Introduction to Black American Literature II	

ENGL 1710	Introduction to Postcolonial Literature and Film I
or ENGL 1710W	Introduction to Postcolonial Literature and Film I
ENGL 1711	Introduction to Postcolonial Literature and Film II
or ENGL 1711W	Introduction to Postcolonial Literature and Film II
FREN 2006	Language, Culture & Society II
FREN 3020	Contemporary France
FREN 3100	Introduction to French Literature
or FREN 3100W	Introduction to French Literature
FREN 4540	19th-Century French Literature and Culture
GEOG 1001	Introduction to Human Geography
GER 2091	Introduction to German Literature—in English I
GER 2092	Introduction to German Literature—in English II
GER 2161	German Culture—in English I
GER 2162	German Culture—in English II
GREK 1001	Beginning Classical Greek I
HIST 1011	World History, 1500-Present
HIST 1110	European Civilization in Its World Context
HIST 1120	European Civilization in Its World Context
or HIST 1120W	European Civilization in its World Context
HIST 1121	The War of Ideas in European and International History, 1750–Present
HIST 1310	Introduction to American History
HIST 1311	Introduction to American History
HIST 2010	Early American Cultural History (same as AMST 2010)
HIST 2011	Modern American Cultural History (same as AMST 2011)
HIST 2050	History of Jewish Civilization: From the Bible to Modernity
HIST 2124	19th-Century Europe
HIST 2125	20th-Century Europe
HIST 2131	History of England Since 1689
HIST 2141	History of France Since 1814
HIST 2160	History of Germany
HIST 2312	The American Civil War and Reconstruction, 1850-1877
HIST 2313	History of the American West
HIST 2320	U.S. Media and Cultural History (same as AMST 2320)
HIST 2321	U.S. History, 1890-1945
HIST 2322	U.S. History since 1945
HIST 2350	U.S. Religion and Politics (same as AMST 2350)
HIST 2380	Sexuality in US Cultural Hist (same as AMST 2380 and WSTU 2380)
HIST 2410	20th-Century U.S. Immigration (same as AMST 2410)
HIST 2440	The American City (same as AMST 2440)
HIST 2710	The United States in Global Context, 1898–Present (same as AMST 2710)
HIST 2730	World War II in History and Memory (same as AMST 2730/2730W)
or HIST 2730W	World War II History & Memory
HIST 3044W	The Price of Freedom: Normandy 1944
HIST 3352	Women in the United States to 1865 (same as AMST 3352/AMST 3352W and WSTU 3352/3352W)
or HIST 3352W	Women in the United States I
HIST 3360	African American History to 1865 (same as AMST 3360)
HIST 3361	African American History Since 1865 (same as AMST 3361)
HIST 3811	The Middle East in the 20th Century
or HIST 3811W	Middle East in 20th Century
ITAL 4380	Italian Journeys Medieval to Postmodern

JAPN 3111	Japanese Literature in Translation
JAPN 3112	Japanese Literature in Translation
KOR 3111	Korean Literature in Translation
KOR 3112	Korean Literature in Translation
KOR 3123	Introduction to Korean Linguistics
KOR 3124	Introduction to Korean Linguistics
PHIL 2125	Philosophy of Race and Gender
or PHIL 2125W	Philosophy of Race and Gender
PHIL 2134	Philosophy of Human Rights
PSC 1001	Introduction to Comparative Politics
or PSC 1001W	Intro to Comparative Politics
PSC 1012W	Introduction to Politics II
PSC 2120W	Freedom in American Thought and Popular Culture (same as AMST 2120W)
PSTD 1010	Introduction to Peace Studies and Conflict Resolution
REL 1010	The New Testament
or REL 1010W	The New Testament
REL 2165	The Gospels
REL 2169	Lost Gospels
REL 2562	Mythologies of India
REL 2811	Confucian Literature in East Asia (same as EALL 2811)
REL 2814	Religion and Philosophy in East Asia (same as EALL 2814/EALL 2814W)
REL 2981	Women in Western Religion (same as WSTU 3981)
REL 3149	Biblical Issues
or REL 3149W	Biblical Issues
REL 3151	The Historical Jesus
or REL 3151W	The Historical Jesus
REL 3161	The Life and Thought of Paul
or REL 3161W	The Life and Thought of Paul
REL 3923	Violence and Peace in Judaism, Christianity, and Islam
SPAN 2005	Advanced Spanish I
SPAN 2006	Advanced Spanish II
SPAN 2056	Intensive Advanced Spanish
SPAN 3100	Readings in Spanish and Latin American Literature
SPHR 1071	Foundations of Human Communication
or SPHR 1071W	Foundations of Human Communication
SPHR 1084	Perspectives in Deaf Culture
WSTU 2380	Sexuality in US Cultural Hist (same as AMST 2380 and HIST 2380)
WSTU 3352	Women in the United States I (same as AMST 3352/3352W and HIST 3352/3352W)
WSTU 3981	Women in Western Religion (same as REL 2981)

Note: Global or Cross-Cultural courses can double count with an analysis/communication requirement.

Humanities

Code	Title	Credits
AMST 1050	Explorations in American Culture	
AMST 1160	Race, Gender and Law	
AMST 1200	The Sixties in America	
AMST 2010	Early American Cultural History (same as HIST 2010)	
AMST 2011	Modern American Cultural History (same as HIST 2011)	
AMST 2020	Washington, D.C.: History, Culture, and Politics (same as HIST 2020/ HIST 2020W)	
or AMST 2020W	Washington, D.C.: History, Culture, and Politics	
AMST 2120W	Freedom in American Thought and Popular Culture (same as PSC 2120W)	
AMST 2210	The African American Experience	
AMST 2320	U.S. Media and Cultural History (same as HIST 2320)	
AMST 2350	U.S. Religion and Politics (same as HIST 2350)	
AMST 2380	Sexuality in US History (same as HIST 2380 and WSTU 2380)	

AMST 2410	20th-Century U.S. Immigration (same as HIST 2410)
AMST 2440	The American City (same as HIST 2440)
AMST 2710	The United States in Global Context, 1898–Present (same as HIST 2710)
AMST 2730	World War II in History and Memory (same as HIST 2730/HIST 2730W)
or AMST 2730W	World War II in History and Memory
AMST 2750W	Latinos in the United States (same as ANTH 2750/ANTH 2750W)
AMST 3352	Women in the United States to 1865 (same as HIST 3352/HIST 3352W and WSTU 3352 and WSTU 3352W)
or AMST 3352W	Women in the United States to 1865
ANTH 2750	Latinos in the United States (same as AMST 2750W)
or ANTH 2750W	Latinos in the United States
CHIN 3111	Chinese Literature in Translation
CHIN 3112	Chinese Literature in Translation
CHIN 3123	Introduction to Chinese Linguistics
CHIN 3124	Introduction to Chinese Linguistics
CHIN 3163	Taiwanese Literature and Film
CLAS 2107	Greek and Roman Drama
CLAS 2113	The Roman World to 337 A.D. (same as HIST 2113)
EALL 3811	Confucian Literature in East Asia (same as REL 2811)
EALL 3814	Religion and Philosophy in East Asia (same as REL 2814)
or EALL 3814W	Religion and Philosophy in East Asia
ENGL 1050	Introduction to Literary Studies
ENGL 1315	Literature and the Financial Imagination
ENGL 1320	Literature of the Americas
or ENGL 1320W	Literature of the Americas
ENGL 1330	Myths of Britain
or ENGL 1330W	Myths of Britain
ENGL 1340	Essential Shakespeare
or ENGL 1340W	Essential Shakespeare
ENGL 1351	Shakespeare Seminar
ENGL 1410	Introduction to English Literature I
or ENGL 1410W	Introduction to English Literature I
ENGL 1411	Introduction to English Literature II
or ENGL 1411W	Introduction to English Literature II
ENGL 1510	Introduction to American Literature I
or ENGL 1510W	Introduction to American Literature I
ENGL 1511	Introduction to American Literature II
or ENGL 1511W	Introduction to American Literature II
ENGL 1610	Introduction to Black American Literature I
or ENGL 1610W	Introduction to Black American Literature I
ENGL 1611	Introduction to Black American Literature II
or ENGL 1611W	Introduction to Black American Literature II
ENGL 1710	Introduction to Postcolonial Literature and Film I
or ENGL 1710W	Introduction to Postcolonial Literature and Film I
ENGL 1711	Introduction to Postcolonial Literature and Film II
or ENGL 1711W	Introduction to Postcolonial Literature and Film II
ENGL 3446	Shakespearean London
ENGL 3910	Disability Studies
FREN 2006	Language, Culture & Society II
FREN 3020	Contemporary France
FREN 3100	Introduction to French Literature
or FREN 3100W	Introduction to French Literature
FREN 4540	19th-Century French Literature and Culture
GER 2091	Introduction to German Literature–in English I
GER 2092	Introduction to German Literature–in English II

GER 2161	German Culture—in English I
GER 2162	German Culture—in English II
GREK 1001	Beginning Classical Greek I
HIST 1011	World History, 1500-Present
HIST 1110	European Civilization in Its World Context
HIST 1120	European Civilization in Its World Context
or HIST 1120W	European Civilization in its World Context
HIST 1121	The War of Ideas in European and International History, 1750–Present
HIST 1310	Introduction to American History
HIST 1311	Introduction to American History
HIST 2010	Early American Cultural History (same as AMST 2010)
HIST 2011	Modern American Cultural History (same as AMST 2011)
HIST 2020	Washington, D.C.: History, Culture, and Politics (same as AMST 2020/ AMST 2020W)
or HIST 2020W	Washington, D.C.: History, Culture, and Politics
HIST 2050	History of Jewish Civilization: From the Bible to Modernity
HIST 2124	19th-Century Europe
HIST 2125	20th-Century Europe
HIST 2131	History of England Since 1689
HIST 2141	History of France Since 1814
HIST 2160	History of Germany
HIST 2312	The American Civil War and Reconstruction, 1850-1877
HIST 2320	U.S. Media and Cultural History (same as AMST 2320)
HIST 2321	U.S. History, 1890-1945
HIST 2322	U.S. History since 1945
HIST 2350	U.S. Religion and Politics (same as AMST 2350)
HIST 2380	Sexuality in US Cultural Hist (same as AMST 2380 and WSTU 2380)
HIST 2410	20th-Century U.S. Immigration (same as AMST 2410)
HIST 2440	The American City (same as AMST 2440)
HIST 2710	The United States in Global Context, 1898–Present (same as AMST 2710)
HIST 2730	World War II in History and Memory (same as AMST 2730/2730W)
or HIST 2730W	World War II History & Memory
HIST 3044W	The Price of Freedom: Normandy 1944
HIST 3352	Women in the United States to 1865 (same as AMST 3552/AMST 3552W and WSTU 3552/3552W)
or HIST 3352W	Women in the United States I
HIST 3360	African American History to 1865 (same as AMST 3360)
HIST 3361	African American History Since 1865 (same as HIST 3661)
HIST 3611	History of Modern China
HIST 3630	History of Korea
HIST 3811	The Middle East in the 20th Century
or HIST 3311W	The Jacksonian Era and the Rise of Mass Politics
HONR 1016	Honors Proseminar: Origins and Evolution of Modern Thought
HONR 2053	Honors Proseminar: Arts and Humanities
or HONR 2053W	Honors Proseminar: Arts and World Cultures
ITAL 4380	Italian Journeys Medieval to Postmodern
JAPN 3111	Japanese Literature in Translation
JAPN 3112	Japanese Literature in Translation
KOR 3111	Korean Literature in Translation
KOR 3112	Korean Literature in Translation
KOR 3123	Introduction to Korean Linguistics
KOR 3124	Introduction to Korean Linguistics
LATN 2001	Intermediate Latin
LATN 3001	Major Latin Authors I

or LATN 3001W	Major Latin Authors I
LATN 3002	Major Latin Authors II
or LATN 3002W	Major Latin Authors II
PHIL 1051	Introduction to Philosophy
PHIL 1153	The Meaning of Mind
PHIL 2124	Philosophies of Disability
or PHIL 2124W	Philosophies of Disability
PHIL 2125	Philosophy of Race and Gender
or PHIL 2125W	Philosophy of Race and Gender
PHIL 2131	Ethics: Theory and Applications
PHIL 2132	Social and Political Philosophy
PHIL 2133	Philosophy and Nonviolence
PHIL 2134	Philosophy of Human Rights
PHIL 2136	Contemporary Issues in Ethics
PHIL 2281	Philosophy of the Environment
PHIL 3142	Philosophy of Law
or PHIL 3142W	Philosophy of Law
PHIL 3151	Philosophy and Science
PHIL 3153	Mind, Brain, and Artificial Intelligence
PSC 2120W	Freedom in American Thought and Popular Culture (same as AMST 2120W)
PSTD 1010	Introduction to Peace Studies and Conflict Resolution
REL 1010	The New Testament
or REL 1010W	The New Testament
REL 2165	The Gospels
REL 2169	Lost Gospels
REL 2201	Judaism
REL 2301	Christianity
REL 2314	Contemporary Philosophy of Religion
REL 2401	Islam
REL 2501	Hinduism
REL 2562	Mythologies of India
REL 2811	Confucian Literature in East Asia (same as EALL 2811)
REL 2814	Religion and Philosophy in East Asia (same as EALL 2814/EALL 2814W)
REL 2981	Women in Western Religion (same as WSTU 3981)
REL 3149	Biblical Issues
or REL 3149W	Biblical Issues
REL 3151	The Historical Jesus
or REL 3151W	The Historical Jesus
REL 3161	The Life and Thought of Paul
or REL 3161W	The Life and Thought of Paul
REL 3405	Shi'ite Islam
REL 3614	Buddhist Philosophy
REL 3923	Violence and Peace in Judaism, Christianity, and Islam
SPAN 2005	Advanced Spanish I
SPAN 2006	Advanced Spanish II
SPAN 2056	Intensive Advanced Spanish
SPAN 3100	Readings in Spanish and Latin American Literature
WLP 1020	WLP Humanities Seminar
WSTU 2380	Sexuality in US Cultural Hist (same as AMST 2380 and HIST 2380)
WSTU 3352	Women in the United States I (same as AMST 3352/AMST 3352W and HIST 3352/HIST 3352W)
or WSTU 3352W	Women in the United States I
WSTU 3981	Women in Western Religion (same as REL 2981)

Language courses require placement tests.

Local/Civic Engagement

Code	Title	Credits
AMST 2020	Washington, D.C.: History, Culture, and Politics (same as HIST 2020/ HIST 2020W)	
or AMST 2020W	Washington, D.C.: History, Culture, and Politics	

BISC 1007	Food, Nutrition, and Service
BISC 1008	Understanding Organisms through Service Learning
CHEM 1003	Contemporary Science for Nonscience Majors
GEOG 1003	Society and Environment
HIST 2020	Washington, D.C.: History, Culture, and Politics (same as AMST 2020/ AMST 2020W)
or HIST 2020W	Washington, D.C.: History, Culture, and Politics
PHIL 2133	Philosophy and Nonviolence
PHIL 2136	Contemporary Issues in Ethics
PHIL 2281	Philosophy of the Environment
PHIL 3142	Philosophy of Law
or PHIL 3142W	Philosophy of Law
PSC 1002	Introduction to American Politics and Government
or PSC 1002W	Intro-American Politics & Govt
PSC 1011	Introduction to Politics I
SOC 1002	The Sociological Imagination
SOC 2169	Urban Sociology
SUST 1001	Introduction to Sustainability

Note: Local/civil engagement courses can double count with an analysis/communication requirement.

Mathematics or Statistics

Code	Title	Credits
MATH 1007	Mathematics and Politics	
MATH 1009	Mathematical Ideas I	
MATH 1010	Mathematical Ideas II	
MATH 1051	Finite Mathematics for the Social and Management Sciences	
MATH 1221	Calculus with Precalculus II *	
MATH 1231	Single-Variable Calculus I *	
MATH 1232	Single-Variable Calculus II	
MATH 1252	Calculus for the Social and Management Sciences *	
MATH 2233	Multivariable Calculus	
STAT 1051	Introduction to Business and Economic Statistics *	
STAT 1053	Introduction to Statistics in Social Science *	
STAT 1111	Business and Economic Statistics I *	
STAT 1127	Statistics for the Biological Sciences *	
STAT 2112	Business and Economic Statistics II	
STAT 2118	Regression Analysis	

*MATH 1221, 1231, and 1252 are equivalent courses. STAT 1051, 1053, 1111, and 1127 are equivalent courses. Credit cannot be earned for more than one in either group.

Natural or Physical Laboratory Sciences

Code	Title	Credits
ANTH 1001	Biological Anthropology	
ANTH 3412	Hominin Evolution	
ASTR 1001	Stars, Planets, and Life in the Universe	
ASTR 1002	Origins of the Cosmos	
BISC 1005	The Biology of Nutrition and Health *	
BISC 1006	The Ecology and Evolution of Organisms *	
BISC 1007	Food, Nutrition, and Service *	
BISC 1008	Understanding Organisms through Service Learning *	
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
CHEM 1003	Contemporary Science for Nonscience Majors	
CHEM 1004	Contemporary Science for Nonscience Majors	
CHEM 1111	General Chemistry I	
CHEM 1112	General Chemistry II	
CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I **	
CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II **	

GEOG 1002	Introduction to Physical Geography
GEOL 1001	Physical Geology ***
GEOL 1002	Historical Geology
GEOL 1005	Environmental Geology ***
GEOL 1006	Science & the Environment
HONR 1033	Honors Proseminar: Scientific Reasoning and Discovery
HONR 1034	Honors Proseminar: Scientific Reasoning and Discovery
PHYS 1003	Physics for Future Presidents
PHYS 1007	Music and Physics
PHYS 1011	General Physics I
PHYS 1012	General Physics II
PHYS 1021	University Physics I
PHYS 1022	University Physics II
PHYS 1025	University Physics I with Biological Applications
PHYS 1026	University Physics II with Biological Applications

*BISC 1005 and 1007 are equivalent courses; BISC 1006 and BISC 1008 are equivalent courses. Credit cannot be earned for both.

**To fulfill the G-PAC requirement, CHEM 2151 and CHEM 2153 must both be taken; same applies to CHEM 2152 and CHEM 2154.
***GEOL 1001 and GEOL 1005 are equivalent courses; credit cannot be earned for both.

Oral Communication

Code	Title	Credits
AMST 2010	Early American Cultural History (same as HIST 2010)	
ANTH 1004	Language in Culture and Society	
ANTH 2008	Foundations of Anthropological Thought	
or ANTH 2008W	Foundations of Anthropology	
ANTH 2502	Anthropology of Science and Technology: 21st-Century Brave New Worlds	
ANTH 3838	Theory and Practice in Archaeology	
or ANTH 3838W	Theory and Practice in Archaeology	
COMM 1040	Public Communication	
COMM 1041	Interpersonal Communication	
ECON 4198W	Proseminar in Economics	
ENGL 1510	Introduction to American Literature I	
or ENGL 1510W	Introduction to American Literature I	
ENGL 1710	Introduction to Postcolonial Literature and Film I	
or ENGL 1710W	Introduction to Postcolonial Literature and Film I	
ENGL 1711	Introduction to Postcolonial Literature and Film II	
or ENGL 1711W	Introduction to Postcolonial Literature and Film II	
ENGL 3481	The Eighteenth Century II	
or ENGL 3481W	The Eighteenth Century II	
ENGL 3620	American Poetry I	
FREN 2005	Language, Culture & Society I	
FREN 2006	Language, Culture & Society II	
FREN 3020	Contemporary France	
GER 2091	Introduction to German Literature—in English I	
GER 2092	Introduction to German Literature—in English II	
GER 2161	German Culture—in English I	
HIST 1110	European Civilization in Its World Context	
HIST 2010	Early American Cultural History (same AMST 2010)	
HIST 2050	History of Jewish Civilization: From the Bible to Modernity	
HIST 3044W	The Price of Freedom: Normandy 1944	
ITAL 4380	Italian Journeys Medieval to Postmodern	
MUS 2122	Music in the US	
or MUS 2122W	Music in the US	

PHIL 2124	Philosophies of Disability
or PHIL 2124W	Philosophies of Disability
PHIL 2133	Philosophy and Nonviolence
PHIL 2134	Philosophy of Human Rights
PHIL 4198	Proseminar
or PHIL 4198W	Proseminar in Philosophy
PSTD 1010	Introduction to Peace Studies and Conflict Resolution
REL 1010	The New Testament
or REL 1010W	The New Testament
SPAN 2006	Advanced Spanish II
SPAN 2056	Intensive Advanced Spanish
SPAN 3022	Advanced Oral Proficiency: Environmental and Social Sustainability in Latin America
SPAN 3100	Readings in Spanish and Latin American Literature

Note: Oral Communications courses can count toward analytic, perspective, WID, and major requirements.

Social Sciences

Code	Title	Credits
ANTH 1002	Sociocultural Anthropology	
or ANTH 1002W	Sociocultural Anthropology	
ANTH 1003	Archaeology	
ANTH 1004	Language in Culture and Society	
ANTH 2008	Foundations of Anthropological Thought	
or ANTH 2008W	Foundations of Anthropology	
ANTH 2502	Anthropology of Science and Technology: 21st-Century Brave New Worlds	
ANTH 3838	Theory and Practice in Archaeology	
or ANTH 3838W	Theory and Practice in Archaeology	
COMM 1025	Introduction to Communication Studies	
COMM 1040	Public Communication	
COMM 1041	Interpersonal Communication	
ECON 1011	Principles of Economics I	
ECON 1012	Principles of Economics II	
GEOG 1001	Introduction to Human Geography	
GEOG 1003	Society and Environment	
HONR 2043	Honors Microeconomics	
HONR 2044	Honors Macroeconomics	
HONR 2047	Honors Proseminar: Social and Behavioral Sciences	
or HONR 2047W	Honors Proseminar: Social and Behavioral Science	
PSC 1001	Introduction to Comparative Politics	
or PSC 1001W	Intro to Comparative Politics	
PSC 1002	Introduction to American Politics and Government	
or PSC 1002W	Intro-American Politics & Govt	
PSC 1011	Introduction to Politics I	
PSC 1012W	Introduction to Politics II	
PSYC 2011	Abnormal Psychology *	
or PSYC 2011W	Abnormal Psychology	
PSYC 2012	Social Psychology *	
PSYC 2013	Developmental Psychology *	
PSYC 2014	Cognitive Psychology *	
PSYC 2015	Biological Psychology *	
SMPA 1050	Media in a Free Society	
SMPA 2101	Journalism: Theory & Practice	
SMPA 2102	Introduction to Political Communication	
SOC 1002	The Sociological Imagination	
SOC 2101	Social Research Methods	
SOC 2102	Techniques of Data Analysis	
SOC 2103	Classical Sociological Theory	
or SOC 2103W	Classical Sociological Theory	
SOC 2104	Contemporary Sociological Theory	
or SOC 2104W	Contemporary Sociological Theory	
SOC 2169	Urban Sociology	

SPHR 1071	Foundations of Human Communication
or SPHR 1071W	Foundations of Human Communication
SPHR 1084	Perspectives in Deaf Culture
SUST 1001	Introduction to Sustainability

*PSYC 1001 is a prerequisite for all Psychology courses.

Writing

Code	Title	Credits
UW 1020	University Writing	
or HONR 1015	Honors Proseminar: UW 1020: Origins and Evolution of Modern Thought	

AFRICANA STUDIES

The Africana Studies program promotes an interdepartmental, interdisciplinary examination of the diverse histories, cultures, politics, and peoples of the African diaspora. Regional coverage includes the United States, Africa, the Caribbean, Latin America, Europe, and the Middle East. Students are introduced to methodology from core areas of the humanities and social sciences to develop skills in comparative, cross-cultural analysis and research. A student's course of study might range from Caribbean cultures, the literature of Black America, the historical evolution of African independence movements, or the sociology of power and equality in the United States, to an anthropological approach to the transatlantic slave trade.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in Africana studies (p. 97)

Minor

- Minor in Africana studies (p. 98)

FACULTY

Committee on Africana studies J. James (*Director*), N. Blyden, H.G. Carrillo, S. Lubkemann, J.A. Miller, G. Squires, G. Wald, A. Zimmerman

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

AFST 1001. Introduction to Africana Studies. 3 Credits. An interdisciplinary introduction to the study of people of Africa and the African diaspora in historical context. Links in the cultural, political, and intellectual experiences of people of African descent in the Americas, Caribbean, Europe, and Africa.

AFST 3001. Research in Africana Studies. 3 Credits.

BACHELOR OF ARTS WITH A MAJOR IN AFRICANA STUDIES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Required for the major—39 credits:

AFST 1001	Introduction to Africana Studies (taken within three semesters of declaring the major)
African American studies:	
HIST 3360	African-American History to 1865
SOC 2179	Race and Minority Relations
ENGL 3570	19th-Century Black Literature
or ENGL 3950	Cultural Theory and Black Studies
Another course from the following designated courses: *	
AMST 2440	The American City
ENGL 3940	Topics in African American Literary Studies
ENGL 3945	African American Poetry
HIST 3360	African-American History to 1865
HIST 3361	African-American History Since 1865
HIST 3362	Black Women in U.S. History
HIST 2312	Civil War and Reconstruction
MUS 1108	History of Jazz
MUS 3175	Topics in Music History and Literature
SOC 2151	Jackie Robinson: Race, Sports, and the American Dream

SOC 2170	Class and Inequality in American Society
SOC 2179	Race and Minority Relations
SOC 2169	Urban Sociology
Four courses in African studies:	
ANTH 3708	Anthropology of Africa
HIST 3520	Africans in the Making of the Atlantic World
or HIST 3540	West Africa to Independence
Two additional courses from the following list of designated courses *	
HIST 3501	Topics: Africa
HIST 3510	African History to 1880
HIST 3520	Africans in the Making of the Atlantic World
HIST 3530	Women in Africa
HIST 3540	West Africa to Independence
ANTH 3801	African Roots from Australopithecus to Zimbabwe
IAFF 2093	Africa: Problems and Prospects
PSC 2381	Comparative Politics of Middle and Southern Africa
PSC 2482	African International Politics
FREN 3300	Topics in French and FrancophoneLiteratures and Cultures in Translation
FREN 3560	Topics in 20th-Century Francophone Literature and Cinema
GEOG 3154	Geography of the Middle East and North Africa
GEOG 3164	The Geography of Africa
Two courses in Latin American, Latino, and Caribbean studies:	
HIST 3710	History of Latin America I
Another course from the following list of designated courses *	
ENGL 3920	U.S. Latina/o Literature and Culture
ENGL 3930	Topics in U.S. Latina/o Literature and Culture
FREN 3300	Topics in French and FrancophoneLiteratures and Cultures in Translation
FREN 3560	Topics in 20th-Century Francophone Literature and Cinema
GEOG 3161	Geography of Latin America
IAFF 2090	Latin America: Problems and Promise
HIST 3711	History of Latin America II
SPAN 3600	Special Topics
An upper-division course in gender studies from the following list of designated courses (this course may also count toward one of the above categories) *	
ANTH 2501	The Anthropology of Gender: Cross-Cultural Perspectives
HIST 3530	Women in Africa
HIST 3362	Black Women in U.S. History
PHIL 2125	Philosophy of Race and Gender
REL 3481	Women in Islam
One additional course from above or from the following:	
AMST 2020	Washington, D.C.: History, Culture, and Politics
AMST 2410	20th-Century U.S. Immigration
ENGL 1610	Introduction to Black American Literature
ENGL 1611	Introduction to Black American Literature
HIST 2803	The Ancient Near East and Egypt to 322 B.C.
REL 3475	Islamic Religion and Art
REL 3414	Islamic Philosophy and Theology
GEOG 2133	People, Land, and Food
GEOG 2141	Cities in the Developing World

MINOR IN AFRICANA STUDIES

REQUIREMENTS

The following requirements must be fulfilled: 21 credits, including a 3-credit required course and 18 credits in elective courses.

Code	Title	Credits
Required		
AFST 1001	Introduction to Africana Studies	
Electives		
18 credits in courses to be selected in consultation with the program director.		

AMERICAN STUDIES

American Studies explores the culture and politics of the United States, and the role of the United States in the world. Faculty and students analyze issues of race, gender, sexuality, and other forms of power in American life; transnational flows of culture, ideas and religious beliefs; the development and transformation of public cultures and spaces; and the ways that policy interacts with each of these areas of inquiry. The faculty is committed to bringing that scholarship to the public at large. At both the graduate and undergraduate levels, students are prepared for careers in academic and popular education, media, journalism, cultural resource management, museums, and preservation, as well as for further education in law, medicine, academia, and a wide range of disciplines.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in American studies (p. 104)

Combined program

- Combined Bachelor of Arts/Master of Arts (B.A./M.A.) (p. 105)

Minor

- Minor in American studies (p. 105)

GRADUATE

Master's program

- Master of Arts in the field of American studies (p. 105)

Doctoral program

- Doctor of Philosophy in the field of American studies (p. 105)

FACULTY

University Professor V.N. Gamble

Professors D. Bjelajac, R.W. Longstreth, T.A. Murphy, G. Wald (Chair)

Associate Professors E. Anker, J.N. Cohen-Cole, T. Guglielmo, C. Heap, J.K. Kosek, M. McAlister, S. Osman, E. Peña

Assistant Professors J. Nash, D. Orenstein, C.L. Warren

Professorial Lecturers K. Ott, J. Deutsch, R.D. Wagner

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

AMST 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details. Restricted to CCAS freshmen only.

AMST 1050. Explorations in American Culture. 0-3 Credits.
Exploration of different aspects of American culture depending on the topic. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AMST 1070. The American Cinema. 3 Credits.
History and criticism of American films. The course enables the student to recognize and evaluate cinema techniques, to express the evaluation clearly in writing, and to understand the role of films in the context of American culture. Laboratory fee. Same as AH 1070.

AMST 1100. Politics and Film. 0-3 Credits.
How American films interpret and challenge political power in America.

AMST 1160. Race, Gender and Law. 0-3 Credits.
Significant civil rights cases, critical race theory, feminist theory, and current public policy debates on domestic violence, mass imprisonment, sexual assault, and racial profiling.

AMST 1200. The Sixties in America. 3 Credits.
A survey of American society, culture, and politics during the decade of the 1960s. Topics include the civil rights movement, the student movement, the Vietnam War, and the counterculture.

AMST 2000. Sophomore Colloquium. 3 Credits.
The Sophomore Colloquia are small seminar-style courses limited to second-year students in Columbian College. These courses engage students deeply in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects of the students. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to Permission of the instructor.

AMST 2010. Early American Cultural History. 3 Credits.
How culture was important in the creation of the United States —in its origins as a colonial outpost and its expansion across the continent; in its hierarchies and expressions of power, especially as organized by race, class, ethnicity, or gender; in the creation of democracy and the valuing of free expression; and in the development of cities and the varied uses of the countryside. Same as HIST 2010.

AMST 2011. Modern American Cultural History. 3 Credits.
The effects of culture in the shaping of the United States since 1876. The role of the mass media; effects of cultural conceptions on the physical landscape; changing ideas of race, ethnicity, gender, and sexuality; and the political meanings of cultural conflict. Transnational influences on U.S. culture and effects of U.S. culture abroad. Same as HIST 2011.

AMST 2020. Washington, D.C.: History, Culture, and Politics. 0-3 Credits.
Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Same as HIST 2020.

AMST 2020W. Washington, D.C.: History, Culture, and Politics. 0-3 Credits.
Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Same as HIST 2020.

AMST 2071. Introduction to the Arts in America. 3 Credits.
A survey of American art from the period of colonial exploration and settlement to the postmodern present. Political and social meanings of painting, sculpture, architecture, prints, and photographs. The relationship of art to religion and nationalism; issues of class, race, and gender. Same as AH 2071.

AMST 2120W. Freedom in American Thought and Popular Culture. 0-3 Credits.
America was founded on the premise of providing freedom to its people. But what, exactly, is freedom? The question has been debated in America since its founding and continues today; this course examines varied answers provided by American political thought and popular culture. Same as PSC 2120.

AMST 2125. Varieties of Feminist Theory. 3 Credits.
Classical and contemporary texts on feminist explanations of women's status. Relationships within the sex/gender system and arrangements based on class and race. Evaluation, through the lens of feminist theory, of several academic disciplines in the sciences, social sciences, and humanities. Same as WSTU 2125. Prerequisite: WSTU 1020 or WSTU 2120 or permission of instructor.

AMST 2144. Explorations in Historical Geography. 3 Credits.
Examination of selected themes in the cultural geography of the United States over the course of its history, in relation to an overview of the historical geography of the country. Same as GEOG 2144.

AMST 2210. The African American Experience. 3 Credits.
This course will provide a survey of the historical, political, and cultural dimensions of the African American experience in the U.S. The course will be organized chronologically and thematically and will cover topics such as American slavery, medical experimentation, Hurricane Katrina, aesthetics, hip-hop, and Afro-futurism.

AMST 2320. U.S. Media and Cultural History. 3 Credits.
History and analysis of 20th-century U.S. media and culture, including the rise of consumer culture, film, and television. Racial, gendered, and national identities in the context of modernism, mass culture, and globalization. Same as HIST 2320.

AMST 2350. U.S. Religion and Politics. 3 Credits.
How religion and politics have influenced each other in the United States and how Americans have understood those influences. Religious violence; conflicts between faith and science; religious factors in racial and gender politics; and the separation of church and state. Same as HIST 2350.

AMST 2380. Sexuality in US History. 3 Credits.
Examination of the changing social organization and meaning of sexual practices and desires in American culture, with particular attention to the relationship between sexuality and gendered racial and class identities and politics. Same as HIST 2380/ WSTU 2380.

AMST 2410. 20th-Century U.S. Immigration. 3 Credits.
Survey of immigration policy and immigrants' lives. How immigrants have changed the United States and how the United States has changed immigrants. Same as HIST 2410.

AMST 2440. The American City. 3 Credits.
An interdisciplinary introduction to the ethnic, cultural, political, and architectural landscape of the American city. Urban theory, race and ethnicity, urban history, planning and architecture, city politics, and cultural representations of the city. Same as HIST 2440.

AMST 2490. Themes in U.S. Cultural History. 3 Credits.
Topical examination of the ideas, values, and modes of expression that have made American life distinctive, as revealed through a cross-cultural or global perspective. Topic vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. (Same as HIST 2490).

AMST 2490W. Themes in U.S. Cultural History. 3 Credits.
Topical examination of the ideas, values, and modes of expression that have made American life distinctive, as revealed through a cross-cultural or global perspective. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. (Same as HIST 2490W).

AMST 2495. Special Topics in African American History. 3 Credits.
Concentration on specific issues central to the African American experience. Consult the Schedule of Classes for issues to be addressed.

AMST 2520. American Architecture I. 3 Credits.
Stylistic properties, form and type characteristics, technological developments, and urbanistic patterns are introduced as a means of interpretation of historic meaning. Buildings are analyzed both as artifacts and as signifiers of social, cultural, and economic tendencies. 1600–1860. Same as AH 2154.

AMST 2521. American Architecture II. 3 Credits.
Continuation of AMST 2520. Stylistic properties, form and type characteristics, technological developments, and urbanistic patterns are introduced as a means of interpretation of historic meaning. Buildings are analyzed both as artifacts and as signifiers of social, cultural, and economic tendencies. 1860–present. Same as AH 2155.

AMST 2533. Material Culture in America. 3 Credits.
Review and analysis of the cultural messages embedded in our material surroundings. Consideration of a range of humanly created artifacts, ranging from specific objects to vast landscapes. Same as ANTH 2533.

AMST 2710. The United States in Global Context, 1898–Present. 0-3 Credits.
How the 20th- and 21st-century U.S. has been engaged globally, both politically and culturally, with attention to global culture, transnational ideas and social movements, foreign policy, and economic transformations. Same as HIST 2710.

AMST 2730. World War II in History and Memory. 0-3 Credits.
Examination of Americans' histories and memories of World War II. Same as HIST 2730.

AMST 2730W. World War II in History and Memory. 0-3 Credits.
Examination of Americans' histories and memories of World War II. Same as HIST 2730.

AMST 2750W. Latinos in the United States. 3 Credits.
Exploration of the term Latino and its impact on discussions of race, identity, and citizenship expectations throughout U.S. history. How geographic, linguistic, aesthetic, political, and economic factors construct Latino identity and influence policymaking and international relations. (Same as ANTH 2750W).

AMST 3151. American Art in the Age of Revolution. 3 Credits.
Same as AH 3151.

AMST 3152. American Art in the Era of National Expansion. 3 Credits.
American art from the opening of the Erie Canal in 1825 to the Spanish-American War in 1898. Emphasis on the role of art in the expansion of the United States, exploring issues of race, class, and gender; art, and religion. (Same as AH 3152).

AMST 3324. US Urban History. 3 Credits.
History of American urban life and culture from the colonial era to the present, focusing on transitions from pre-industrial to industrial and post-industrial forms. The social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as HIST 3324.

AMST 3351. U.S. Social History. 3 Credits.
Survey of American society and social change from the Civil War to the present. Gender, sexuality, race, ethnicity, and class perspectives. (Same as HIST 3351).

AMST 3352. Women in the United States to 1865. 3 Credits.
Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. (Same as HIST 3352, WSTU 3352).

AMST 3352W. Women in the United States to 1865. 3 Credits.
Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. (Same as HIST 3352W, WSTU 3352W).

AMST 3353. Women in the United States II. 3 Credits.
Continuation of AMST 3352. Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. Same as HIST 3353/ WSTU 3353.

AMST 3360. African American History to 1865. 3 Credits.
Major themes and concepts emerging from the early history of the African presence in the Americas and black experiences in the new nation of the United States. Focus on the emergence and evolution of the concept of race, the ways race evolved in concert with Atlantic slavery, and how race intersected with gender, economics, religion, and nationality. (Same as HIST 3360).

AMST 3361. African American History II. 3 Credits.
Continuation of AMST 3360. Survey of the African American experience, emphasizing the contributions of black Americans to and their impact upon American history. Same as HIST 3361.

AMST 3362. African American Women's History. 3 Credits.
Addresses the history of African American women's labor, cultural expression, institution-building, activism and strategies to combat oppression from the antebellum period through the late 20th century. Investigates the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement and African American women's experiences. (Same as HIST 3362, WSTU 3362).

AMST 3362W. Black Women in U.S. History. 3 Credits.
Black women from the Middle Passage to contemporary times. Same as HIST 3362/WSTU 3362.

AMST 3367. The American Jewish Experience. 3 Credits.
The study of the Jewish minority in America from colonial times to the present. Emphasis on the interaction between a powerful majority culture and that of protean minority people. (Same as HIST 3367).

AMST 3810. Planning Cities. 3 Credits.
An examination of historical and contemporary trends and dynamics in urban planning in the United States and abroad. Same as GEOG 3810. Prerequisite: GEOG 1001.

AMST 3811. Historical Archaeology. 3 Credits.
Survey of the basic data and methods of research in the material culture of recent history. Same as ANTH 3811.

AMST 3835. Historical Archaeology Field Program. 3 Credits.
Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as ANTH 3835.

AMST 3900. Critiquing Culture. 3 Credits.
Modes of analysis, including ethnography and other cultural studies methods, applied to examination of the interaction of cultural texts and practices with structures of power. Theories and themes central to American studies; scholarly debate about mass culture, ideology, visuality, discourse, and affect. For departmental majors; minors admitted with permission of instructor.

AMST 3901. Examining America. 3 Credits.
Modes of power and forms of identification within and across U.S. national borders. Social constructions of the nation; forms of diversity and identity, such as race, gender, and sexuality; and the transnational flow of people, ideas, culture, and religion. Restricted to American Studies majors.

AMST 3950. Special Topics. 3 Credits.
May be repeated for credit provided the topic differs. Topics announced in the Schedule of Classes.

AMST 3950W. Special Topics. 3 Credits.
May be repeated for credit provided the topic differs. Topic announced in the Schedule of Classes.

AMST 4400. Independent Study. 1-3 Credits.
Open to a limited number of American studies majors as directed research or as an internship with a Washington museum or historical society. Approval of advisor required.

AMST 4450. Internship. 1-3 Credits.
Open to a limited number of American studies majors pursuing an internship directly related to the study of American culture. Students must make the case for a scholarly project that emerges from the internship and must write a significant final paper. Approval of a supervising faculty member required for registration. P/NP grading only.

AMST 4500. Proseminar in American Studies. 3 Credits.
For American studies majors. Directed research and writing on special topics. Prerequisite: at least two of the required courses for the major (AMST 2010, AMST 2011, AMST 3900, AMST 3901). May be repeated for credit provided the topic differs.

AMST 4500W. Proseminar in American Studies. 3 Credits.
For American studies majors. Directed research and writing on special topics. Prerequisite: at least two of the required courses for the major (AMST 2010, AMST 2011, AMST 3900, AMST 3901). May be repeated for credit provided the topic differs.

AMST 4701W. Epidemics in American History. 3 Credits.
The history of epidemics in the United States from the late nineteenth to the early twentieth century. The development of medical and public health responses to epidemics, and their social, political, cultural, and economic impacts. Sources include primary documents, historical accounts, memoirs, fiction, and films.

AMST 4702W. Race, Medicine, and Public Health. 3 Credits.
The experiences of African Americans as patients and health care providers; the history of the relationship between race, American medicine, and public health. Emphasis on the importance of understanding the historical roots of contemporary policy dilemmas such as racial and ethnic disparities in health and health care.

AMST 6100. Scope and Methods in American Studies. 3 Credits.
Consideration of American studies as an area for research and teaching; introduction to bibliography. Required of candidates for the degree of Master of Arts in the field of American studies.

AMST 6110. Cultural Theory and American Studies. 3 Credits.
Major issues in critical and cultural theory as they relate to American culture. Various interpretive approaches including discourse analysis, cultural studies, new historicism, anthropological theory, etc. Prerequisite: AMST 6100 or permission of instructor.

AMST 6120. Theories and Practices in the Study of Media. 3 Credits.
Examination of theories and methods in the study of media and popular culture; case studies explore specific issues related to cultural products such as film, television, music, and the Internet.

AMST 6190. Topics in American Studies. 1-4 Credits.
Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

AMST 6195. Research Seminar in American Studies. 3 Credits.
May be repeated for credit provided the topic differs.

AMST 6210. The United States in a Global Context. 3 Credits.
Analysis of the cultural constructions of the nation and international power, comparing the context of the 18th and 19th century, European colonialism, and U.S. expansion in the 20th century. The role of literature and mass media in furthering the logic of globalization. Readings are both theoretical and historical.

AMST 6220. Theory and Emotions. 3 Credits.
Interdisciplinary exploration of politics of emotion, with an emphasis on the emotions that attach to race, gender, and sexuality.

AMST 6230. The Politics of Freedom. 3 Credits.
This seminar examines critical interventions into the theories, rhetorics, and practices of freedom. It will focus on the politics of freedom in relation to an array of themes that may include liberalism, slavery, imperialism, political economy, individualism, and neoliberalism.

AMST 6240. Borders and Boundaries. 3 Credits.
Exploration of borders (the literal edge or limit of a territory) and boundaries (intra-societal differences). Readings from cultural anthropology, political science, and social history examine classic tensions between state formation and nation building. The U.S.–Mexico border and other border zones across the globe are used to assess and challenge what is local and particular about border space.

AMST 6410. Readings in American Cultural History. 3 Credits.
Studies in the cultural history of the United States.

AMST 6420. Religion & American Culture. 3 Credits.
Interdisciplinary analysis of religious beliefs, practices, and representations in the United States, as well as intersections of the religious and the secular. Relationships of religion to race, gender, capitalism, science, mass media, and material culture. Same as HIST 6420.

AMST 6430. Gender, Sexuality, and American Culture I. 3 Credits.
The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. Pre-colonial to 1877. (Same as HIST 6430, WSTU 6430).

AMST 6431. Gender, Sexuality, and American Culture II. 3 Credits.
Continuation of AMST 6430. The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. 1877 to present. Same as HIST 6431/ WSTU 6431.

AMST 6435. Readings on Women in American History. 3 Credits.
Important works in American women's history; evolution of the field in historiographical context. Same as HIST 6435/ WSTU 6435.

AMST 6450. Race in America. 3 Credits.
Interdisciplinary analysis of the history of race and its changing political, social, and cultural meanings in the United States. Transnational racial formations, struggles for and against civil rights, multiracialism, and interracialism. Same as HIST 6450.

AMST 6455. American Social Movements. 3 Credits.
The history of social movements in the United States, with emphasis on civil rights, feminism, conservatism, and labor in local, national, and transnational contexts; the historical rise and fall of these movements and their larger impact on American life. Same as HIST 6455.

AMST 6460. Popular Music Studies. 3 Credits.
Readings in popular music studies; varying methodologies for American studies work on sound and popular music; cultural histories of popular music; American music transnationally. Restricted to Registration restricted to graduate students.

AMST 6470. Cityscapes. 3 Credits.
Interdisciplinary examination of the American city, including urban theory, history, planning, architecture, urban politics, and cultural representations of the city. Same as HIST 6470.

AMST 6475. US Urban History. 3 Credits.
History of American urban life and culture from the Colonial era to the present, focusing on the transitions from pre-industrial to industrial and post-industrial forms, the social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as HIST 6475.

AMST 6480. Theory and Practice of Public History. 3 Credits.
Theoretical and practical dimensions of public history, as illustrated by recent controversies surrounding public exhibitions and debates on revisionist history as well as more traditional means of presenting the past in public forums. Same as HIST 6480.

AMST 6495. Historic Preservation: Principles and Methods. 3 Credits.
The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as HIST 6495.

AMST 6496. Historic Preservation: Principles and Methods. 3 Credits.
Continuation of AMST 6495. The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as HIST 6496.

AMST 6520. Economics of Preservation. 3 Credits.
Analysis of economic techniques and benefits used to encourage the retention and reuse of historic buildings and districts in the United States. Emphasis on revitalization of older commercial centers and the Mainstreet program. Prerequisite: Permission of instructor.

AMST 6525. The Politics of Historic Preservation. 3 Credits.
Overview of the political issues, forces, events, and players that have shaped contemporary preservation practice, with an emphasis on public policy issues that have not been resolved and continue to confront preservation objectives. Prerequisite: Permission of instructor.

AMST 6530. Field Methods in Architectural Documentation. 3 Credits.
In-depth thematic examination of cultural landscape, focusing on field techniques for recording, analysis, and interpretation of historic properties. Work at field sites is supplemented by lectures, discussion, and readings.

AMST 6550. Seminar in American Architecture. 3 Credits.
Advanced research problems addressing artistic, cultural, social, technical, and urbanistic aspects of American architecture in the 19th and 20th centuries. Topics vary. Prerequisite: AMST 2520 or AMST 2521 , or permission of instructor.

AMST 6560. Vernacular Architecture. 3 Credits.

AMST 6650. Advanced Workshop in American Studies. 1-4 Credits.
Required for first- and second-year PhD students; open to other graduate students. Provides instruction and guidance in the process of writing, revising, and submitting journal articles, conference papers, and dissertations. Faculty and peer review of written work. Students are expected to enroll for the full academic year. Restricted to American studies graduate students.

AMST 6709. Interpretation in the Historic House Museum. 3 Credits.
Seminar integrating advanced practices of museum education with current scholarship in architectural history, material culture, and social history. Extensive use of Washington museum resources. Admission by permission of instructor. Same as EDUC 6709.

AMST 6710. American Material Culture. 3 Credits.
Opportunities for research and publication based on historical objects in the collections of the Smithsonian Institution.

AMST 6720. American Decorative Arts I. 3 Credits.
Recognition and evaluation of domestic artifacts from the 17th, 18th, and 19th centuries.

AMST 6721. American Decorative Arts II. 3 Credits.
Continuation of AMST 6720. Recognition and evaluation of domestic artifacts from the 17th, 18th, and 19th centuries.

AMST 6730. Studies in American Art and History. 3 Credits.
Selected problems and themes in American cultural history involving the use of artistic materials in different media; emphasis on methodology and analytic techniques. May be repeated for credit. Same as AH 6255.

AMST 6835. Historical Archaeology Field Program. 3 Credits.
Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as ANTH 6835.

AMST 6930. Independent Study. 3 Credits.
Limited to master's and doctoral candidates. Written permission of instructor required.

AMST 6998. Thesis Research. 3 Credits.

AMST 6999. Thesis Research. 3 Credits.

AMST 8998. Advanced Reading and Research. 3-9 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

AMST 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

BACHELOR OF ARTS WITH A MAJOR IN AMERICAN STUDIES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Required		
Two semesters of a foreign language or placement into the third semester of a foreign language by examination.		
AMST 2010	Early American Cultural History	
AMST 2011	Modern American Cultural History	
AMST 3900	Critiquing Culture	
AMST 3901	Examining America	
AMST 4500	Proseminar in American Studies	
Electives		
Five additional AMST courses, no more than two of which may be at the 1000-level.		

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors in American Studies, a major must receive a grade of *A* on the senior paper written for AMST 4500 Proseminar in American Studies.

COMBINED PROGRAM, AMERICAN STUDIES

REQUIREMENTS

The Department of American Studies offers a program leading to combined bachelor's and master's degrees. The programs allow students to take a specified number of graduate credits as part of their undergraduate degree, thereby decreasing the number of credits normally required for the master's degree.

Students interested in the combined B.A./M.A. degree program should consult the department's master of arts advisor by the middle of their junior year. For more information visit the program website (http://americanstudies.columbian.gwu.edu/combined-bama-program).

MINOR IN AMERICAN STUDIES

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
AMST 2010	Early American Cultural History	
AMST 2011	Modern American Cultural History	
Electives		
12 credits in AMST courses taken at the 2000–3000 level.		

MASTER OF ARTS IN THE FIELD OF AMERICAN STUDIES

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

Completion of course and other requirements in either general studies or one of two concentrations.

General studies

Required: 30 credits, including a 3-credit required course, 6 credits in research seminar courses, and 21 credits in elective courses.

Code	Title	Credits
AMST 6100	Scope and Methods in American Studies	
At least six credits in research seminars. This may include AMST 6195 taken twice or other approved research courses.		
A minimum of 21 credits in elective courses pertaining to the study of American culture approved by the department. These may include graduate courses in anthropology, English, fine arts and art history, geography, history, media and public affairs, and political science.		
An optional thesis may be undertaken for 6 credits as part of these 21 credits.		

Concentration in museums and material culture

This concentration, offered in association with the Smithsonian Institution, emphasizes the use of physical objects and spaces in historical research.

Required: 30 credits, including 6 credits in required courses, 6 credits in research seminars, and 18 credits in elective courses.

Code	Title	Credits
AMST 6100	Scope and Methods in American Studies	
AMST 6710	American Material Culture	
At least two designated research seminars		
At least 18 additional credits of courses pertaining to the study of American culture, museum studies, and museum education		

DOCTOR OF PHILOSOPHY IN THE FIELD OF AMERICAN STUDIES

The Doctor of Philosophy in the field of American studies degree program combines work in the humanities and/or social sciences as preparation for careers in a range of institutions, including universities, museums, archives, libraries, preservation offices, and related public and private enterprises.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy program (p. 82).

Code	Title	Credits
Required		
AMST 6100	Scope and Methods in American Studies	
At least two designated research seminars.		
At least one course in theory approved by the advisor.		

Degree candidates must pass a general examination in three areas, to be taken over the course of one month, by the end of the third year from matriculation. The three fields are elected with approval of the advisory committee and should constitute a coherent, interdisciplinary program of study; one field may be devoted to the comparative study of a non-U.S. culture.

ANATOMY AND REGENERATIVE BIOLOGY

The Department of Anatomy and Regenerative Biology offers two pre-medicine academic enhancer programs for candidates interested in applying to medical schools, physician assistant programs, or biomedical sciences doctoral programs: the graduate certificate in anatomical and translational sciences (GCATS) and master of science in the field of anatomical and translational sciences (M-ATS), a pre-med special master's program. Both programs are designed to enhance a graduate's competitiveness when applying to medical school or physician assistant programs, or to transition to an advanced graduate degree in the biomedical sciences. Applicants select a program based on their level of readiness for admission to a health professional school.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Consult the (http://gsehd.gwu.edu/programs/museum-education)Department of Anatomy and Regenerative Biology website (http://smhs.gwu.edu/anatomy) for additional program information.

GRADUATE

Master's program

- Master of Science in the field of anatomical and translational sciences (p. 108)

CERTIFICATE

- Graduate certificate in anatomical and translational sciences (p. 109)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ANAT 2130. Human Embryology. 3 Credits.
Development of the basic organ systems; molecular control of development, congenital birth defects, and assisted reproductive technologies.

ANAT 2150. Human Microscopic Anatomy. 3 Credits.
Normal histological structure of cells, tissues, and organs. Structural–functional correlates; the relationship between histological structure–function and the etiology of disease states.

ANAT 2160. Human Functional Neuroanatomy. 3 Credits.
The central and peripheral nervous systems; diseases and injuries with impact on the normal structural-functional relationship.

ANAT 2181. Human Gross Anatomy. 3 Credits.
Structure and function of the musculoskeletal system; regional organization, structure, and function of the major organ systems; structural organization of the head and neck. Same as BISC 2581.

ANAT 6130. Clinically Oriented Human Embryology. 3 Credits.
The mechanisms of human embryology with clinical correlations of embryological development. Developmental control mechanisms and development of basic organ systems. Molecular control of development. Assisted reproductive technologies. Congenital birth defects. Demonstration labs and online animations for clinical correlates. Restricted to students enrolled in the Graduate Certificate in Anatomical and Translational Sciences program. Recommended background: introductory course in biology or its equivalent. Same as ANAT 2130.

ANAT 6150. Clinically Oriented Human Microscopic Anatomy. 3 Credits.
The normal histological structure of cells, tissues, and organs of the human body with emphasis on clinical relevance; structural/functional correlates at both the light and electron microscopic levels; alterations in normal histology through disease or injury and the etiology of various disease states; integration of histological concepts with clinical correlates. Restricted to students in either the Graduate Certificate in Anatomical and Translational Sciences (GCATS) or Special Master's in Anatomical and Translational Sciences (M-ATS) program. Prerequisites: BISC 1111 and BISC 2202.

ANAT 6160. Clinically Oriented Human Functional Neuroanatomy. 3 Credits.
Structure/function relationships of the human central and peripheral nervous systems and clinical correlations of diseases or injuries whose occurrence or expression has an abnormal impact on the normal structure/function relationship. Integration of neuroanatomy concepts with contemporary clinical neuroscience. Demonstrations of human brain material in the anatomy lab. Prerequisites: Introductory Biology for Science or non-Science Majors. Restricted to students enrolled in the Graduate Certificate in Anatomical and Translational Sciences program.

ANAT 6181. Clinically Oriented Human Gross Anatomy. 3 Credits.
Structural organization of the human body and the relationship of the organization to regional and systems-related functions. Clinical implications and how disease or injury affects normal anatomical structure/function relationships. Clinical cases match the topic of each lecture. Online manual uses content from the department's NetAnatomy website. Demonstrations in the gross anatomy laboratory. Restricted to Graduate Certificate in Anatomical and Translational Sciences. Prerequisites: Introductory Biology for Science or non-Science Majors.

ANAT 6182. Fundamentals of Regenerative Biology and Systems Physiology. 4 Credits.
This course is similar to BMSC 8212 but with additional time to introduce techniques of confocal laser scanning microscopy and laser-based quantitative and functional cell analyses. Topics include genetic control mechanisms, cell signaling pathways, and tissue regeneration and repair. Introduction of concepts on the functions and regulation of organ systems complement the learning objectives of human gross anatomy and microscopic anatomy. Restricted to Graduate Certificate in Anatomical and Translational Sciences. Prerequisites: Introductory Biology for Science or non-Science Majors.

ANAT 6203. Human Developmental Anatomy. 1 Credit.

ANAT 6204. Neuroanatomy. 2 Credits.

ANAT 6212. Neurobiology. 3 Credits.
Same as Idis 212.

ANAT 6213. Microscopic Anatomy. 4 Credits.
Required for medical students.

ANAT 6215. Anatomy for Health Sciences Students. 3 Credits.
A gross anatomy course that includes examination of prosected cadavers. Sessions on how to conduct a physical examination of a particular body region are preceded immediately by lectures on the same region.

ANAT 6216. Cellular Anatomy & Histology. 2 Credits.

ANAT 6221. Spec Topics-Stem Cell Biology. 1-3 Credits.

ANAT 6222. Spec Topics-Stem Cell Biology. 1-3 Credits.

ANAT 6223. Special Topics in Regenerative Medicine. 2 Credits.
Students attend seminars given by invited lecturers to present their research findings and breakthroughs on topics of regenerative medicine. Seminars can be sponsored by the Department of Anatomy and Regenerative Biology, the Stem Cell Interest Group Journal and Data Club, the Molecular Medicine Graduate Program (MMED 8214), and the GW Institute for Neuroscience. Restricted to Graduate Certificate in Anatomical and Translational Sciences only. Prerequisites: Introductory Biology for Science or non-Science Majors.

ANAT 6249. Intro to Anatomical Research. 1 Credit.

ANAT 6252. Human Variation. 1 Credit.

ANAT 6253. Developmental Neurobiology. 3 Credits.

ANAT 6260. Developmental Genetics. 2 Credits.

ANAT 6262. Gross Anat-Upper/Lower Extrem. 2 Credits.

ANAT 6264. Gross Anatomy of Head & Neck. 2 Credits.

ANAT 6266. Gross Anatomy-Thorax & Abdomen. 2 Credits.

ANAT 6268. Gr Anat-Pelvis/Perineum/Low Ex. 2 Credits.

ANAT 6275. Advanced Studies in Translational Sciences. 3 Credits.
Student research opportunities in laboratories conducting translational research. Application of fundamental concepts learned in didactic courses. Development of versatility with new technologies. Students spend the equivalent of three full days per week in a research laboratory during the semester. The course director must approve all laboratory assignments prior to initiating research studies in a laboratory. Restricted to students in the Graduate Certificate in Anatomical and Translational Sciences. Prerequisites: Introductory Biology for Science or non-Science Majors.

ANAT 6276. Advanced Studies in Anatomy. 1 Credit.
Detailed study of an anatomic topic tailored to the needs of the individual student. Restricted to graduate students who are in the Graduate Certificate in Anatomical and Translational Sciences program or who have permission of the program director and medical students.

ANAT 6277. Special Topics in Neurobiology. 1-3 Credits.

ANAT 6279. Applied Regional Anatomy. 1-5 Credits.
Regional dissection, guided readings.

ANAT 6284. Appl Surface Anat & Radiology. 5 Credits.

ANAT 6288. Surface Anatomy and Radiology. 1 Credit.

ANAT 6291. Special Projects in Anatomy. 1-12 Credits. Independent study on any aspect of gross anatomy.

ANAT 6292. Projects in Anatomical Sciences. 2 Credits. Various imaging techniques and approaches to visualize normal anatomy toward development and application of skills in teamwork, presentation, and discussion. Literature searches. The course is taken in conjunction with ANAT 6181. Restricted to Graduate Certificate in Anatomical and Translational Sciences. Prerequisites: ANAT 6181. Recommended background: Human clinically-oriented gross anatomy (previously or simultaneously).

ANAT 6295. Research. 1-12 Credits.

ANAT 8120. Graduate Human Gross Anatomy. 4 Credits. An in-depth introduction to human gross anatomy with cadaveric dissection. The structural organization of the human body, including its regional and systems-related functions. The relationship between normal human anatomical variation in structure and function and how disease and/or injury affect these relationships. Prerequisites: Permission of the instructor. Recommended background: Graduate students with prior coursework in the biological sciences or anthropology.

ANAT 8501. Didactic Anatomy. 3 Credits. Development of a didactic program to include human developmental anatomy, microscopic anatomy, gross anatomy, and/or neuroanatomy. May also include interdepartmental study.

ANAT 8800. Summer Remedial: Gross Anatomy. 6 Credits.

ANAT 8802. Summer Remedial:Human Dev Anat. 1 Credit.

MASTER OF SCIENCE IN THE FIELD OF ANATOMICAL AND TRANSLATIONAL SCIENCES

The master of science in the field of anatomical and translational sciences (M-ATS) is a non-thesis master's program designed to give students advanced, comprehensive knowledge in basic medical sciences. M-ATS is a 38-credit, interdisciplinary program taken over two years. M-ATS is an extension of the graduate certificate in anatomical and translational sciences (GCATS), which can serve as year 1 of the M-ATS program. Year 2 of the M-ATS curriculum integrates biomedical knowledge related to regenerative biology, systems physiology, pharmacology, pharmacogenomics, genomic medicine, and bioinformatics. The M-ATS program provides students with a solid background in personalized medicine and the methodological aspects of translational research and clinical investigations as well as opportunities to carry out research in translational medicine. As a result, graduates maximize their academic and career opportunities by enhancing competitiveness of applications to medical schools, physician assistant programs, and Ph.D. programs in biomedical sciences.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://smhs.gwu.edu/anatomy/education/m-ats) for additional information

REQUIREMENTS

The following requirements must be fulfilled: 38 credits in required courses.

Code	Title	Credits
Required		
Year 1		
ANAT 6130	Clinically Oriented Human Embryology	
ANAT 6150	Clinically Oriented Human Microscopic Anatomy	
ANAT 6160	Clinically Oriented Human Functional Neuroanatomy	
ANAT 6181	Clinically Oriented Human Gross Anatomy	
ANAT 6292	Projects in Anatomical Sciences	
And one or both of the following*		
ANAT 6223	Special Topics in Regenerative Medicine	
ANAT 6275	Advanced Studies in Translational Sciences	
Year 2		
ANAT 6182	Fundamentals of Regenerative Biology and Systems Physiology	
BMSC 6218	Ethics for Translational Sciences	
HSCI 6273	Bioinformatics for Genomics	
or MMED 8281	Molecular Pharmacology and Neurobiology of Excitable Tissues	
MICR 6236	Fdmntls/Geonomics&Proteomics I	
PHAR 6205	Pharmacology	
PHAR 6206	Advanced Pharmacology	
PHAR 6116	Pharmacogenomics and Personalized Medicine	

*As part of the required curriculum, students choose one of the following options in Year 1: ANAT 6223 taken twice; or, ANAT 6275 taken twice; or, ANAT 6223 and ANAT 6275, each taken once. Students must consult the academic advisor before enrolling in either of these two courses.

GRADUATE CERTIFICATE IN ANATOMICAL AND TRANSLATIONAL SCIENCES

The graduate certificate in anatomical and translational sciences (GCATS) program provides students in medical and translational sciences with an understanding of human gross anatomy, embryology, functional histology, neuroanatomy, modern stem cell and developmental biology, and technology for biomedical molecular imaging. GCATS offers a contemporary clinical emphasis using problem-based learning. The certificate program is designed to maximize career opportunities in the health fields, to enhance competitiveness of applications to medical school or physician assistant programs, or to transition into an advanced graduate degree program in the biomedical sciences.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://smhs.gwu.edu/anatomy/education/gcats) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required:		
ANAT 6130	Clinically Oriented Human Embryology	
ANAT 6150	Clinically Oriented Human Microscopic Anatomy	
ANAT 6160	Clinically Oriented Human Functional Neuroanatomy	
ANAT 6181	Clinically Oriented Human Gross Anatomy	
ANAT 6292	Projects in Anatomical Sciences	
One of the following options:		
ANAT 6223 taken twice; or ANAT 6275 taken twice; or ANAT 6223 and ANAT 6275 each taken once. Students must consult the academic advisor before selecting one of these options.		

ANTHROPOLOGY

The Anthropology program includes four concentrations:

- Biological anthropology explores human evolution, anatomy and primatology.
- Sociocultural anthropology examines the role culture plays in shaping human action.
- Linguistic anthropology considers the role of language in human thought.
- Archaeology examines both human origins and more recent issues of state formation and urbanization.

In teaching and research, the program collaborates with the Smithsonian Institution's National Museum of Natural History, as well as departments within the University.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in anthropology (p. 117)
- Bachelor of Arts with a major in archaeology (p. 117)
- Bachelor of Science with a major in biological anthropology (p. 119)

Combined Programs

Combined bachelor's/master's degree programs (p. 121):

- Bachelor of Arts with a major in anthropology and Master of Arts in the field of anthropology
- Bachelor of Arts with a major in archaeology and Master of Arts in the field of anthropology
- Bachelor of Science with a major in biological anthropology and Master of Arts in the field of anthropology

Minors

- Minor in anthropology (p. 121)
- Minor in archaeology (p. 121)
- Minor in biological anthropology (p. 122)
- Minor in cross-cultural communication (p. 122)
- Minor in sociocultural anthropology (p. 123)

GRADUATE

Master's program

- Master of Arts in the field of anthropology (p. 124)

Doctoral program

- Doctor of Philosophy in the field of anthropology (p. 125)

FACULTY

University Professor B. Wood

Professors A.S. Brooks, E.H. Cline, R.R. Grinker, H. Gusterson, J.C. Kuipers, B.D. Miller, C. Sherwood (*Chair*)

Associate Professors J. Blomster, B.J. Bradley, D.R. Braun, A.S. Dent, M. Edberg, I. Feldman, S.C. Lubkemann, B.G. Richmond, S.E. Wagner

Assistant Professors A. Ahmad, S. Almecija, K.G. Hatala *(Research),* S.C. McFarlin, C.M. Murray, E. Uretsky

Professorial Lecturers P.J. Cressey, D. Hunt, S. Johnston, J. Love, D.H. Ubelaker,

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ANTH 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details.

ANTH 1001. Biological Anthropology. 0-4 Credits.
Survey of human evolution, genetics and physical variation, and primatology. Regular laboratory exercises. Laboratory fee.

ANTH 1002. Sociocultural Anthropology. 3 Credits.
Survey of the world's cultures, illustrating the principles of cultural behavior.

ANTH 1002W. Sociocultural Anthropology. 3 Credits.
Survey of the world's cultures, illustrating the principles of cultural behavior.

ANTH 1003. Archaeology. 0-3 Credits.
Introduction to archaeological survey and excavation techniques and laboratory methods of dating and analysis. Brief history of archaeology and survey of world prehistory. Films and laboratory exercises. (Fall and spring).

ANTH 1004. Language in Culture and Society. 3 Credits.
Comparison and analysis of how cultures use language to communicate. The relationship of language to issues of human nature, gender, race, class, artistic expression, and power. Laboratory fee.

ANTH 1005. The Biological Bases of Human Behavior. 4 Credits.
Human behavior from an evolutionary perspective, including issues such as communication, intelligence, reproductive behavior, parental behavior, aggression, and cooperation, and drawing on an understanding of the behavior and biology of the nonhuman primates. Laboratory fee.

ANTH 2008. Foundations of Anthropological Thought. 3 Credits.
The development of anthropological thought in historical context. Exploration of selected basic concepts and theories of contemporary anthropology. To be taken in the junior or senior year. Prerequisite: ANTH 1002.

ANTH 2008W. Foundations of Anthropology. 3 Credits.
The development of anthropological thought in historical context. Exploration of selected basic concepts and theories of contemporary anthropology. To be taken in the junior or senior year. Prerequisites: ANTH 1002 or ANTH 1002W.

ANTH 2406. Human Evolutionary Genetics. 3 Credits.
Introduction to the patterns and processes of human genetic variation. Topics include human origins and migration; molecular adaptations to environment, lifestyle, and disease; ancient and forensic DNA analyses; and genealogical reconstructions.

ANTH 2501. The Anthropology of Gender: Cross-Cultural Perspectives. 3 Credits.
Anthropological representations of gender relations in "other" cultures have provided important case material for feminist theorizing of sex differences and gender roles and statuses. How a cross-cultural approach can inform our understanding of gender. Same as WSTU 2121.

ANTH 2502. Anthropology of Science and Technology: 21st-Century Brave New Worlds. 3 Credits.
The relationship between science and society, with consideration of how scientific knowledge and emergent technologies affect our lives, identities, social relations, and material conditions. The sociopolitical context in which scientific knowledge is produced and the ethnographic study of biotechnology, especially genetics and its various applications.

ANTH 2505. Introduction to Ethnomusicology. 3 Credits.
Models of understanding music as a cultural endeavor. Application and critique of models in the design and execution of student independent field research. Same as MUS 2105. Prerequisite: MUS 1101 or ANTH 1002 or ANTH 1004 or permission of instructor.

ANTH 2506. Religion, Myth, and Magic. 3 Credits.
Theories of religion developed by anthropologists; survey of world religions with emphasis on non-Western societies; religious process and change. (Same as REL 3506).

ANTH 2533. Material Culture in America. 3 Credits.
Review and analysis of the cultural messages embedded in our material surroundings. Consideration of a range of humanly created artifacts, ranging from specific objects to vast landscapes. Same as AMST 2533.

ANTH 2750. Latinos in the United States. 3 Credits.
Exploration of the term Latino and its impact on discussions of race, identity, and citizenship expectations throughout U.S. history. How geographic, linguistic, aesthetic, political, and economic factors construct Latino identity and influence policymaking and international relations.

ANTH 2750W. Latinos in the United States. 3 Credits.
Exploration of the term Latino and its impact on discussions of race, identity, and citizenship expectations throughout U.S. history. How geographic, linguistic, aesthetic, political, and economic factors construct Latino identity and influence policymaking and international relations. Same as AMST 2750.

ANTH 3401. Human Functional Anatomy. 3 Credits.
The anatomy of the human body, how it works, and how it differs from other animals, especially other primates. Principles and approaches of functional morphology and biomechanics and how function can be reconstructed from fossils, with special focus on the musculoskeletal system. No prior knowledge of anatomy is required. Laboratory fee. Prerequisite: ANTH 1001.

ANTH 3402. Human Evolutionary Anatomy. 3 Credits.
The structure and function of human anatomy, as compared to our closest relatives, the great apes. Using this comparative approach, the course investigates the fossil record of human evolution, with an emphasis on reconstructing relationships, function, behavior, and adaptation in fossil hominins. Prerequisite: ANTH 1001.

ANTH 3403. Forensic Anthropology Laboratory. 2 Credits.
Identification of human skeletal remains by body part, age, sex, race, and individual disease or trauma history; study of skeletal variation in modern and recent populations. Taught at the Smithsonian. Corequisite: Anth 3404.

ANTH 3404. Human Variation. 1 Credit.
An overview of human variation, with special emphasis on the skeleton. Includes history of physical anthropology, individual and population variations, archaeological recovery of human remains, paleodemography, growth, paleopathology, and forensic anthropology. Prerequisite: Anth 1001; corequisite for undergraduates: ANTH 3403.

ANTH 3406. Advanced Human Osteology. 3 Credits.
Advanced techniques in determination of age, sex, ancestry, and pathological conditions using the skeleton. Taught at the Smithsonian. Prerequisite: ANTH 3403, ANTH 3404.

ANTH 3407. Conservation in a Changing World: Human and Animal Behavior. 3 Credits.
How humans and animals interact in a wide variety of settings, how human and animal welfare can be ensured, and how we can create a scientifically sound, yet socially and economically acceptable, conservation of the planet's biodiversity. Prerequisites: ANTH 1001.

ANTH 3408. The Evolution of Human Families. 3 Credits.
Human parental behavior considered from an evolutionary perspective, including parental care among mammals, concepts of parental investment, and parent-offspring conflict. Focus on parenting in the human lineage from early hominins to hunter-gatherers to the modern context. Prerequisites: ANTH 1001.

ANTH 3411. Primatology. 3 Credits.
Physical and behavioral characteristics of the various primate groups and their relationship to human physical and cultural evolution. Prerequisite: ANTH 1001.

ANTH 3412. Hominin Evolution. 3 Credits.
The fossil record of human evolution, including its context. Review of the fossil evidence that concentrates on the distinctive features of each taxon. Pleistocene remains. Laboratory fee. Prerequisite: ANTH 1001.

ANTH 3412W. Hominin Evolution. 3 Credits.
The fossil record of human evolution, including its context. Review of the fossil evidence that concentrates on the distinctive features of each taxon. Pleistocene remains. Laboratory fee. Prerequisite: ANTH 1001.

ANTH 3413. Evolution of the Human Brain. 3 Credits.
Examination of how the human brain is unique in comparison to other animals, with an emphasis on understanding our species' distinctive neurobiology in terms of the evolution of cognitive abilities such as language, social comprehension, tool making, and abstract thinking.

ANTH 3491. Topics in Biological Anthropology. 3 Credits.
Topic announced in the Schedule of Classes. Instructors will be drawn from GW faculty and Smithsonian Institution staff. May be repeated for credit if topic varies. Prerequisite: ANTH 1001.

ANTH 3501. Anthropology of Development. 3 Credits.
The impact of the world economy on nonindustrial societies. Analysis of the role of anthropology in international development programs aimed at alleviating problems in the Third World. Prerequisites: ANTH 1002 or ANTH 1002W.

ANTH 3502. Cultural Ecology. 3 Credits.
Basic principles of cultural ecology. Human interaction with the ecosystem both past and present; emphasis on the application of anthropological precepts to current environmental problems. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004 or ANTH 1004W or permission of instructor.

ANTH 3503. Psychological Anthropology. 3 Credits.
The cross-cultural study of the relationship between culture and personality. Topics include emotion, conceptions of the self, mental health and illness, sexuality, marriage and parenting, and cognition. Psychobiological, cultural, ecological, and psychoanalytical theories are examined. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3504. Illness, Healing, and Culture. 3 Credits.
Introduction to medical anthropology. What the record of human evolution and prehistory tells about human health; the epidemiology of health and illness; how different cultures define disease; understanding illness and healing systems cross-culturally; and the role of medical anthropology in health care and international development. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3506. Politics, Ethnicity, and Nationalism. 3 Credits.
Comparative analysis of political systems; political processes, such as factionalism, styles of leadership, political ritual. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3507. Kinship, Family, and Community. 3 Credits.
Cross-cultural analysis of how people form, maintain, and transform social groups and boundaries. Focus on how communities such as family, ethnic group, and nation are defined in moral terms. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3508. Art and Culture. 3 Credits.
The role of art in culture, with emphasis on small-scale societies; influences upon the artist, and beliefs and practices associated with art production. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3513. Anthropology of Human Rights. 3 Credits.
Issues of basic human rights and their violation by different cultures, states, and organizations. Genocide, ecocide, abuses on the basis of ethnicity, religion, or similar factors, and the treatment of those seeking asylum. Rights of informants and groups studied in anthropological research. Prerequisites: ANTH 1002 or ANTH 1002W.

ANTH 3513W. Anthropology of Human Rights. 3 Credits.
Issues of basic human rights and their violation by different cultures, states, and organizations. Genocide, ecocide, abuses on the basis of ethnicity, religion, or similar factors, and the treatment of those seeking asylum. Rights of informants and groups studied in anthropological research. Prerequisites: ANTH 1002 or ANTH 1002W.

ANTH 3521. Ethnographic Film. 3 Credits.
Still and motion-picture photography as an integral aspect of anthropological research. A study of recent and historic ethnographic films and an introduction to the forms and methods of making visual ethnographic records. Material fee. Prerequisites: ANTH 1002 or ANTH 1002W or permission of instructor.

ANTH 3531. Methods in Sociocultural Anthropology. 3 Credits.
Approaches to field research. Conceptual bases and biases in the delineation of problems and in the selection, analysis, and organization of data. Students design and carry out their own field projects in the Washington area. Prerequisite: ANTH 1002.

ANTH 3601. Language, Culture, and Cognition. 3 Credits.
The role of language and culture in the organization of human experience. Beginning with debates about linguistic relativity, the course explores the way language use shapes cognition and practice in a variety of cultures and social contexts. Same as LING 3601. Prerequisite: ANTH 1004. Laboratory fee.

ANTH 3602. Ethnographic Analysis of Speech. 3 Credits.
Linguistic variation and change in discourse practices; social and political correlates of linguistic interaction; recording, transcription, and analysis of verbal interaction. Prerequisites: ANTH 1004. (Same as LING 3602).

ANTH 3602W. Ethnographic Analysis of Speech. 3 Credits.
Linguistic variation and change in discourse practices; social and political correlates of linguistic interaction; recording, transcription, and analysis of verbal interaction. Prerequisites: ANTH 1004.

ANTH 3603. Psycholinguistics. 3 Credits.
Language as species-specific property of the human mind. Psychological processes involved in the encoding and decoding of language; first and second language acquisition and bilingualism. Same as LING 3603.

ANTH 3691. Special Topics in Linguistic Anthropology. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Same as LING 3691. Prerequisite: ANTH 1004 or permission of instructor.

ANTH 3701. Native Peoples - North America. 3 Credits.
Comparative study of Indian groups representative of the different culture areas of the United States and Canada. Contemporary issues involving indigenous groups, the wider society, and the state. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3702. Anthropology of Latin America. 3 Credits.
Culture history and ways of life in a selected region of Central or South America. Regional focus to be announced in the Schedule of Classes. Prerequisites: Anth 1002 or Anth 1002W or ANTH 1004.

ANTH 3703. Cultures of the Pacific. 3 Credits.
Culture history and ways of life among native peoples of Melanesia, Micronesia, and Polynesia. Prerequisites: ANTH 1002 or 1002W or 1004 or 1004W.

ANTH 3704. Cultures of Southeast Asia. 3 Credits.
Introduction to the history, art, ecology, and politics of Southeast Asia. Comparison and interpretation of recent ethnographic case studies, archaeological evidence, and current political events in order to understand the diversity of Southeast Asian traditions. Prerequisite: ANTH 1002 or ANTH 1002W or ANTH 1004.

ANTH 3705. Anthropology of East Asia. 3 Credits.
Intensive study of the culture and history of selected peoples of East or Central Asia. Specific area to be announced in the Schedule of Classes. May be repeated for credit. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004 or ANTH 1004W.

ANTH 3707. Anthropology of the Middle East. 3 Credits.
Geographic environment, language, religion, and social structure of settled and nomadic peoples of the Middle East; emphasis on the Arab world. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004 or ANTH 1004W.

ANTH 3708. Anthropology of Africa. 3 Credits.
Comparative examination of the history, cultural development, and contemporary problems of sub-Saharan African cultures. New World African cultures are also considered. Prerequisites: ANTH 1002 or 1002W or 1004 or 1004W.

ANTH 3709. Japanese Culture Through Film. 3 Credits.
Survey of the Japanese cultural heritage presented through films. Topics include literature, philosophy, art, religion, and social history from premodern times to the modern era. Lectures and discussion in English. Same as JAPN 3162.

ANTH 3791. Topics in Regional Anthropology. 3-4 Credits.
Culture, history, and ways of life in a selected region of the world. Topics vary. Consult the Schedule of Classes for more details. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004.

ANTH 3801. African Roots from Australopithecus to Zimbabwe. 3 Credits.
The development and contributions of Africa from human beginnings through medieval states. Topics include human evolution, origins of art, technology, trade, and animal/plant domestication, rise of African states, early relations with Europe and Asia, antecedents of contemporary African diversity. Prerequisite: ANTH 1003 or permission of instructor.

ANTH 3801W. African Roots from Australopithecus to Zimbabwe. 3 Credits.
The development and contributions of Africa from human beginnings through medieval states. Topics include human evolution, origins of art, technology, trade, animal/plant domestication, rise of African states, early relations with Europe and Asia, antecedents of contemporary African diversity. Prerequisites: ANTH 1003.

ANTH 3802. Human Cultural Beginnings. 3 Credits.
Survey of prehistory in Europe, Africa, and Asia from the earliest hominid cultures to the beginnings of agriculture. Prerequisite: ANTH 1003.

ANTH 3802W. Human Cultural Beginnings. 3 Credits.
Survey of prehistory in Europe, Africa, and Asia from the earliest hominid cultures to the beginnings of agriculture. Prerequisite: ANTH 1003.

ANTH 3803. Old World Prehistory: First Farmers to First Cities. 3 Credits.
Archaeology of the Near East, Egypt, Europe, and other areas, from the beginnings of agriculture to the rise of Babylon. Prerequisites: ANTH 1003.

ANTH 3803W. Old World Prehistory: First Farmers to First Cities. 3 Credits.
Archaeology of the Near East, Egypt, Europe, and other areas, from the beginnings of agriculture to the rise of Babylon. Prerequisites: ANTH 1003.

ANTH 3804. Origins of the State and Urban Society. 3 Credits.
Emergence of urbanism and the state in the prehistory of various world regions. Regions covered might include India, China, Mexico, and the Pacific, among others. Prerequisites: ANTH 1003.

ANTH 3805. Archaeology of Israel and Neighboring Lands. 3 Credits.
The archaeology of Israel and adjacent areas (Syria, Jordan, Lebanon). Examination of many major sites and monuments. Significant problems and current debates. Same as AH 3106.

ANTH 3806. Art and Archaeology of the Aegean Bronze Age. 3 Credits.
Excavational and multidisciplinary aspects of classical archaeology. Minoan and Mycenaean civilizations (1700–1200 B.C.) Same as AH 3104.

ANTH 3808. Archaeology and the Celts. 3 Credits.
Historical and archaeological study of the Celtic people.

ANTH 3811. Historical Archaeology. 3 Credits.
Survey of the basic data and methods of research in the material culture of recent history. Same as AmSt 3811.

ANTH 3812. The Aztec Empire. 3 Credits.
The Aztecs (or Mexica) of Mexico created a large empire, and while frequently the focus is on warfare and human sacrifice, they produced some of the most naturalistic art and reflective poetry that have survived the Spanish Conquest. Using archaeology, art, and ethnohistoric documents, this course focuses the importance of power in Aztec society and how the normalization of violence created a form of social cohesion central to the state. Prerequisites: ANTH 1003. (Same as AH 3116).

ANTH 3813. Archaeology of North America. 3 Credits.
History of American archaeology; survey of North American culture history from human entry into the Americas during the Pleistocene period until the time of the first European contacts. Focus on peoples north of Mexico. Prerequisite: ANTH 1003.

ANTH 3814. Ancient Mexican Civilizations. 3 Credits.
Cultural history of pre-Columbian societies in Middle America; the emergence of Mesoamerican civilization from the earliest hunter–gatherers and first farmers to the Aztec Empire. Prerequisites: ANTH 1003. Same as AH 3107.

ANTH 3821. Myths and Mysteries in Archaeology. 3 Credits.
Topics ranging from King Arthur to Atlantis are used to illustrate how archaeological methods and techniques can falsify-or support-exotic beliefs about the past.

ANTH 3822. Archaeology in Film and Television. 3 Credits.
As visual media increase public awareness of archaeology, misrepresentations and distortions abound. This course examines the relationships among archaeology, the media, and popular culture. Issues considered include nationalism, descendant communities, gender, race, and colonialism.

ANTH 3823. Archaeology of Ritual and Religion. 3 Credits.
Archaeological and ethnographic examples from around the world are used to critically evaluate how archaeologists make inferences about ritual practices and the religious lives of past peoples. Issues include the origins of symbolic behavior, sacred landscapes, shamanism, ancestor veneration, and sorcery/witchcraft.

ANTH 3832. Paleoanthropological Field Program. 0-4 Credits.
Field research in paleoanthropology, including excavation methods, identification and analysis of materials, paleoecology, archaeology, and human anatomy. Conducted at selected sites in Eurasia, Africa, or Australia. Visits to comparative sites and collections in the region.

ANTH 3833. Field Research: New World. 1-6 Credits.
Survey, excavation, and/or laboratory analysis at localities in North or South America. See Schedule of Classes for details.

ANTH 3834. Field Research: Old World. 1-6 Credits.
Survey, excavation, and/or laboratory analysis at Neolithic or later localities in Eurasia, Africa, or Oceania. See Schedule of Classes for details.

ANTH 3835. Historical Archaeology Field Program. 3 Credits.
Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as AMST 3835.

ANTH 3838. Theory and Practice in Archaeology. 3 Credits.
The primary literature in archaeology theory since the 1960s. Ethics, topical issues, and archaeological practice. Prerequisite: Anth 1003.

ANTH 3838W. Theory and Practice in Archaeology. 3 Credits.
The primary literature in archaeology theory since the 1960s. Ethics, topical issues, and archaeological practice. Prerequisite: ANTH 1003.

ANTH 3839. Lab Research Methods in Archaeology. 3 Credits.
Research methods and techniques used by archaeologists. Emphasis on hands-on experience in one or more techniques. Prerequisite: Anth 1003.

ANTH 3891. Special Topics in Archaeology. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Prerequisite: ANTH 1003 or permission of instructor.

ANTH 3991. Special Topics. 0-3 Credits.
Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 3991W. Special Topics. 3 Credits.
Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 3995. Undergraduate Research. 1-12 Credits.
Individual research problems to be arranged with a member of the faculty. May be repeated for credit. Prerequisite: permission of instructor.

ANTH 4008. Seminar: Contemporary Anthropological Theory. 3 Credits.
The development of major trends in anthropological theory. How anthropologists from the four fields—sociocultural, linguistic, biological, and archaeology—have deployed and developed the ideas of theorists in their own empiricalresearch and theorizing about specific processes. Prerequisite: ANTH 2008.

ANTH 6101. Proseminar in Biological Anthropology. 3 Credits.
Comprehensive overview of theory and practice in biological anthropology.

ANTH 6102. Proseminar in Sociocultural Anthropology. 3 Credits.
Comprehensive overview of theory and practice in sociocultural anthropology.

ANTH 6103. Proseminar in Archaeology. 3 Credits.
Survey of the most recent archaeological techniques and theoretical approaches to reconstructing and interpreting the cultures of the past.

ANTH 6104. Proseminar in Linguistic Anthropology. 3 Credits.
Contemporary anthropological studies of language in biological, social, and historical perspectives.

ANTH 6200. Museum Anthropology. 3 Credits.
How anthropological collections take shape in the past and carry meaning in the present. Critical examination of artifacts and forms of documentation. Application of material culture theory to museum records, collected objects, the changing meaning given to objects, and the context of collecting.

ANTH 6201. Methods in Museum Anthropology. 3 Credits.
How anthropological collections take shape in the past and carry meaning in the present. Research and analysis of existing collections; issues in museum anthropology.

ANTH 6202. Museums and the Public: Exhibiting Culture. 3 Credits.
Study of the issues and problems involved in "exhibiting culture," past and present, including issues of representation, message and interpretation, audience, ownership of objects and symbols, and ways of reconstructing the past. Critical examination of museum exhibits.

ANTH 6203. Preventive Conservation Concepts. 3 Credits.
Historical development of preventive conservation in museums, conservation ethics, team approaches to conservation, interactions of various materials with agents of deterioration. Basics of materials testing, preparation of condition reports, choosing museum storage and exhibition materials, and risk assessment. Same as MSTD 6203/ AH 6286.

ANTH 6204. Preventive Conservation Techniques. 3 Credits.
Practical applications of preventive conservation of materials, monitoring environmental conditions, conducting risk assessments, evaluation of exhibit and storage areas; developing plans, policies, and procedures for collections care; grant proposal preparation for collections care initiatives. Same as MSTD 6204/ AH 6287.

ANTH 6205. Problems in Conservation. 3 Credits.
Individual conservation projects to determine composition, construction, decomposition of materials, and possible stabilization techniques. Conservation laboratory experience. Prerequisite or concurrent registration: Anth 6203/AH 6286.

ANTH 6230. Internship in Museum Anthropology. 1-6 Credits.
Supervised individual research and/or field work at the Smithsonian Institution or other area museums, arranged in consultation with the museum and the Anthropology Department. Admission by arrangement with the department chair or museum training advisor. May be repeated for credit up to a maximum of 6 credits.

ANTH 6301. The Anthropology of Development. 3 Credits.
Theoretical perspectives that distinguish the contribution of anthropology to understanding processes of change in the Third World. Focus on health, population, environment, gender, and tourism issues. The role of anthropology in planning and implementing projects and policy.

ANTH 6302. Issues in Development. 3 Credits.
Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 6330. Internship in Development Anthropology. 3 Credits.
Supervised participation in a selected development agency or other relevant organization. Opportunity to observe agency procedures and gain practical experience. Admission by permission of instructor or department chair.

ANTH 6331. Research Methods in Development Anthropology. 3 Credits.
Anthropologists' roles in research-related activities, such as feasibility studies, social soundness analysis, and evaluations. Innovative research techniques, such as interactive data gathering, team survey methods, and rapid rural appraisal. Admission by permission of instructor.

ANTH 6391. Anthropology and Contemporary Problems. 3 Credits.
Exploration of anthropological perspectives on a current issue, such as refugees, ethnic violence, national mythologies, and women's health in developing countries. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 6401. Human Functional Anatomy. 3 Credits.
Growth and function of the musculoskeletal system, including the development, anatomy, and histology of bone, biomechanics of muscle and skeletal tissue, craniofacial and dental growth and morphology, and locomotion. No prior knowledge of anatomy required. Laboratory fee.

ANTH 6404. The Evolution of Primate Life Histories. 3 Credits.
Recent developments in the study of human and non-human life histories. Life history theory. Life history traits compared among primate groups in order to determine how selective pressures have shaped extant primate life history patterns. Laboratory fee.

ANTH 6406. Human Genetic Variation. 3 Credits.
The genetic variation in human populations as a framework for measurement and analysis of genetic diversity and evolutionary process. Consideration of the possible roles of cultural change leading to adaptive/selective events. Same as FORS 6246.

ANTH 6412. Paleoanthropology. 1-3 Credits.
Survey of current research in hominid and hominoid evolution, focusing on the integrated nature of the field. Contributions from the geological and biological sciences will be stressed, together with innovative geochemical techniques for establishing chronological sequences. Prerequisite: ANTH 3412 or BISC 2450 .

ANTH 6413. Analytical Methods in Human Evolutionary Studies. 3 Credits.
A survey of methods and approaches for data collection and analysis in human evolutionary biology research. Topics include comparative methods and basic and multivariate statistics.

ANTH 6491. Topics in Biological Anthropology. 3 Credits.
Topic announced in the Schedule of Classes. Instructors will be drawn from GW faculty and Smithsonian Institution staff. May be repeated for credit if topic varies.

ANTH 6501. Gender and Sexuality. 3 Credits.
Study of new theoretical and methodological approaches developed in the anthropology of gender. Topics include postcolonialism, sexuality, and literary representations of gender. Same as WSTU 6257.

ANTH 6505. Medical Anthropology. 3 Credits.
Concepts and theories in contemporary medical anthropology, including "critical" versus "conventional" medical anthropology, changes in approaches since the mid-twentieth century; structural and cultural construction of illness and suffering; ethnographic and epidemiological perspectives.

ANTH 6506. Topics in Medical Anthropology. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit if the topic varies.

ANTH 6507. Nationalism and Ethnicity. 3 Credits.
Major theoretical and ethnographic issues in the study of nationalism worldwide. Explores how ethnic groups emerge in colonial and contemporary plural societies and how states attempt to integrate ethnic groups into nations.

ANTH 6508. Ethics and Cultural Property. 3 Credits.
Survey of ethical issues in anthropology, focusing on cultural property and repatriation; the epistemological, ethical, and political dilemmas of excavating, collecting, and owning cultural artifacts.

ANTH 6509. Anthropology of Art, Aesthetics, and Symbolism. 3 Credits.
Anthropological approaches to aesthetic problems and theories of symbolism in the context of ethnographic materials.

ANTH 6531. Methods in Sociocultural Anthropology. 3 Credits.
Epistemology; the definition of research problems; selection of research subjects and sites; techniques of data collection (e.g., surveys, interviews); data management and organization; ethical protocols; issues of safety; grant writing and funding.

ANTH 6561. American Folklife. 3 Credits.
The materials of American folk culture, concentrating on folk architecture, crafts, and art. Major organizing themes are regionalism and the use of objects as indicators of cultural intention. Same as AMST 6561.

ANTH 6562. Folklore Theory. 3 Credits.
An intellectual history of American folklore research; analysis of particular theories and methods. Same as AMST 6562.

ANTH 6591. Topics in Sociocultural Anthropology. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit if the topic varies.

ANTH 6691. Topics in Linguistic Anthropology. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit if the topic varies.

ANTH 6702. Issues in Latin American Anthropology. 3 Credits.
Intensive study of a selected topic in the anthropology of Central and/or South America. Topic to be announced.

ANTH 6707. Issues in Middle East Anthropology. 3 Credits.
Selected topics in the anthropology of the Middle East. Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 6801. Paleolithic Archaeology. 3 Credits.
Current problems relating to materials from the Old World.

ANTH 6802. Problems in Eurasian and African Archaeology. 3 Credits.
Topic announced in the Schedule of Classes. Topics may include Bronze Age conflict, the Celts, etc. May be repeated for credit.

ANTH 6803. Problems in New World Archaeology. 3 Credits.
Current archaeological problems relating to the origin and development of aboriginal cultures. Specific topic to be announced in the Schedule of Classes. May be repeated for credit.

ANTH 6804. Problems in Mesoamerican Archaeology. 3 Credits.
Topics range from specific civilizations, such as the Olmec, to pan-Mesoamerican topics, such as religion and exchange. May be repeated for credit.

ANTH 6806. Technology. 3 Credits.
Cross-cultural examination of the form, function, meaning, and use of material culture (such as ceramics or stone tools) and the behavior patterns involved in its production. Topic vary by semester. Consult the Schedule of Classes for more details.

ANTH 6807. Public Archaeology. 3 Credits.
The use and creation of the past and the relationship between archaeologists and different publics.

ANTH 6832. Paleoanthropological Field Program. 0-4 Credits.
Intensive course on field research in paleoanthropology, including excavation methods, identification and analysis of materials, paleoecology, archaeology, and human anatomy. Conducted at selected sites in Eurasia, Africa, or Australia. Visits to comparative sites and collections in the region.

ANTH 6835. Historical Archaeology Field Program. 3-6 Credits.
Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as AMST 6835.

ANTH 6838. Archaeological Theory. 3 Credits.
Overview of major theories and positions in American archaeology; examination of new issues and directions in which the field appears to be moving.

ANTH 6839. Lab Research Methods in Archaeology. 3,4 Credits.
Research methods and techniques used by archaeologists. Emphasis on hands-on experience in one or more techniques. Laboratory fee.

ANTH 6891. Topics in Archaeology. 3 Credits.
Major issues related to the theory and practice of archaeology. Topic announced in the Schedule of Classes.

ANTH 6995. Research. 1-12 Credits.
May be repeated for credit.

ANTH 6998. Thesis Research. 3 Credits.

ANTH 6999. Thesis Research. 3 Credits.

ANTH 8695. Linguistic Field Methods. 3 Credits.
The relationship between language and thought in dialogue with the study of a particular foreign language. Ethnographic study of language and cognition and the application of linguistic theory and method to anthropological research. Methods of elicitation and textual analysis, and technologies used for storing and analyzing linguistic data. Restricted to graduate students.

ANTH 8998. Advanced Reading & Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

ANTH 8999. Dissertation Research. 1-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

BACHELOR OF ARTS WITH A MAJOR IN ANTHROPOLOGY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Prerequisite courses:		
ANTH 1001	Biological Anthropology	
ANTH 1002	Sociocultural Anthropology	
ANTH 1003	Archaeology	
ANTH 1004	Language in Culture and Society	

Code	Title	Credits
Required courses in other areas:		
Two-year proficiency in a single foreign language, as demonstrated by completion of four semesters of college-level language study or the equivalent		
6–12 credits of coursework in related departments approved by the advisor. Recommended for sociocultural emphasis are courses in economics, history, political science, psychology, religion, and sociology; for archaeological emphasis, courses in American studies, art history, geography, geological sciences, and history; for emphasis in biological anthropology, courses in anatomy, biological sciences, chemistry, and physical geography; for emphasis in linguistic anthropology, courses in linguistics and in speech and hearing science. Courses in statistics are strongly recommended for all anthropology majors		
Requirements for the major:		
In addition to the four prerequisite courses, 24–36 credits in anthropology courses, including:		
ANTH 2008	Foundations of Anthropological Thought	
At least one course from three of the following four categories:		
Sociocultural anthropology (ANTH 2500s, 2700s, 3500s, and 3700s)		
Linguistics (ANTH/LING 3600s)		
Biological anthropology (ANTH 3400s)		
Archaeology (ANTH 3800s)		
An approved methods course in any category, including but not limited to the courses listed below. (Methods courses can be double-counted as courses in their subject categories.)		
ANTH 3531	Methods in Sociocultural Anthropology	
ANTH 3602	Ethnographic Analysis of Speech	
ANTH 3832	Paleoanthropological Field Program	
ANTH 3833	Field Research: New World	
ANTH 3834	Field Research: Old World	
ANTH 3835	Historical Archaeology Field Program	
ANTH 3839	Lab Research Methods in Archaeology	
ANTH 6806	Technology	
In addition, a senior capstone experience is required; it may be met by taking ANTH 4008, ANTH 3995 (for 3 credits), or an approved 6000-level course. Qualified seniors may enroll in graduate-level courses with the permission of the instructor.		

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors in anthropology, archaeology, or biological anthropology, students must have a grade-point average of 3.5 or better in courses required for the major, register for 3 credit hours of ANTH 3995 Undergraduate Research, and write a paper of special distinction arising out of a program of directed reading or research. Students must confer with an advisor before beginning the work.

BACHELOR OF ARTS WITH A MAJOR IN ARCHAEOLOGY

REQUIREMENTS

An interdepartmental major offered by the Anthropology Department (http://anthropology.columbian.gwu.edu) in cooperation with the Fine Arts and Art History Department (http://art.gwu.edu), and the Classical and Near Eastern Languages and Civilizations Department (http://departments.columbian.gwu.edu/cnelc).

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Prerequisite courses:		
ANTH 1002	Sociocultural Anthropology	
ANTH 1003	Archaeology	

Code	Title	Credits
Required courses in other areas:		
Completion of a two-year language proficiency through the intermediate level in French, Spanish, Italian, German, Arabic, Hebrew, Latin, or Greek, or placement above the intermediate level.		
Requirements for the major:		
ANTH 3838	Theory and Practice in Archaeology	
or ANTH 3838W	Theory and Practice in Archaeology	
3-6 credits of archaeological field or laboratory courses selected from:		
ANTH 3832	Paleoanthropological Field Program	
ANTH 3833	Field Research: New World	
ANTH 3834	Field Research: Old World	
ANTH 3835	Historical Archaeology Field Program	
ANTH 3839	Lab Research Methods in Archaeology	
ANTH 3995	Undergraduate Research	
ANTH 3995 can be counted with advisor's approval.		
ANTH 6806	Technology	
Qualified juniors and seniors are permitted to take ANTH 6806 with departmental approval.		
12-15 credits from anthropological archaeology and archaeology of ancient civilizations (section 4 below). At least one course must be taken from both and no course can count in more than one category. Either ANTH 3821 or ANTH 3822 can count for the major, but not both.		
Anthropological archaeology		
ANTH 3801	African Roots from Australopithecus to Zimbabwe	
or ANTH 3801W	African Roots from Australopithecus to Zimbabwe	
ANTH 3802	Human Cultural Beginnings	
or ANTH 3802W	Human Cultural Beginnings	
ANTH 3803	Old World Prehistory: First Farmers to First Cities	
or ANTH 3803W	Old World Prehistory: First Farmers to First Cities	
ANTH 3811	Historical Archaeology	
ANTH 3822	Archaeology in Film and Television	
ANTH 3823	Archaeology of Ritual and Religion	
ANTH 3891	Special Topics in Archaeology	
15 credit hours of ancient civilizations, including at least one in each category below.		
Art history		
AH 3101	Ancient Art of the Bronze Age and Greece	
AH 3102	Ancient Art of the Roman Empire	
AH 3103	Art and Archaeology of Egypt and the Near East	
AH 3104	Art and Archaeology of the Aegean Bronze Age	
AH 3105	Topics in Ancient Art and Archaeology	
AH 3106	Art and Archaeology of Israel and Neighboring Lands	
AH 3117	Special Topics in Precolumbian Art and Archaeology	
Classical civilization		
CLAS 2105	Special Topics	
CLAS 2106	Mythology of the Classical World	
CLAS 2107	Greek and Roman Drama	
CLAS 3114	Topics in Ancient Literatures and Cultures	
CLAS 3115	Topics in Ancient Art and Archaeology	
History		
CLAS 2112	History of Ancient Greece	
CLAS 2113	The Roman World to 337 A.D.	
CLAS 2803	The Ancient Near East and Egypt to 322 B.C.	
CLAS 2804	History of Ancient Israel	
HIST 2112	History of Ancient Greece	

HIST 2113	The Roman World to 337 A.D.
HIST 2803	The Ancient Near East and Egypt to 322 B.C.
HIST 2804	History of Ancient Israel
HIST 3111	Topics in Ancient History
Archaeology of ancient civilizations	
ANTH 3804	Origins of the State and Urban Society
ANTH 3805	Archaeology of Israel and Neighboring Lands
ANTH 3806	Art and Archaeology of the Aegean Bronze Age
ANTH 3808	Archaeology and the Celts
ANTH 3812	The Aztec Empire
ANTH 3813	Archaeology of North America
ANTH 3814	Ancient Mexican Civilizations
ANTH 3821	Myths and Mysteries in Archaeology
AH 3107	Ancient Mexican Civilizations

A given course cannot count toward more than one requirement for the major.

See the Anthropology Department (http://anthropology.columbian.gwu.edu) for more detailed information.

SPECIAL HONORS

For Special Honors in anthropology, archaeology, or biological anthropology, a major must meet the special honors requirements stated under University Regulations (http://bulletin.gwu.edu/university-regulations), have a grade-point average of 3.5 or better in courses required for the major, register for 3 credit hours of ANTH 3995 Undergraduate Research and write a paper of special distinction arising out of a program of directed reading or research. Students must confer with an advisor before beginning the work.

BACHELOR OF SCIENCE WITH A MAJOR IN BIOLOGICAL ANTHROPOLOGY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Introductory courses (21 credits):		
ANTH 1001	Biological Anthropology	
ANTH 1002	Sociocultural Anthropology	
or ANTH 1002W	Sociocultural Anthropology	
ANTH 1003	Archaeology	
ANTH 1004	Language in Culture and Society	
BISC 1111 & BISC 1112	Introductory Biology: Cells and Molecules and Introductory Biology: The Biology of Organisms	

Code	Title	Credits
12 credits from the following:		
ANTH 2406	Human Evolutionary Genetics	
ANTH 3401	Human Functional Anatomy	
ANTH 3402	Human Evolutionary Anatomy	
ANTH 3403	Forensic Anthropology Laboratory	
ANTH 3404	Human Variation	
ANTH 3405	Human Growth and Development	
ANTH 3406	Advanced Human Osteology	
ANTH 3407	Conservation in a Changing World: Human and Animal Behavior	
ANTH 3408	The Evolution of Human Families	
ANTH 3411	Primatology	
ANTH 3412	Hominin Evolution	
or ANTH 3412W	Hominin Evolution	
ANTH 3413	Evolution of the Human Brain	
ANTH 3491	Topics in Biological Anthropology	
ANTH 3802	Human Cultural Beginnings	
or ANTH 3802W	Human Cultural Beginnings	
ANTH 3832	Paleoanthropological Field Program	
9 credits of biology (BISC) courses numbered 2000 or above, including at least one course from each of the following categories:		
Cell/molecular biology		

BISC 2202	Cell Biology
BISC 2207	Genetics
BISC 2208	Genetics Laboratory
BISC 2213	Biology of Cancer
BISC 2214	Developmental Biology
BISC 2220	Developmental Neurobiology
BISC 3209	Molecular Biology
BISC 3210	Nanobiotechnology
BISC 3211	Nanobiotechnology Laboratory
BISC 3212	Immunology
BISC 3213	Applied Immunology
BISC 3261	Introductory Medical Biochemistry
BISC 3262	Biochemistry Laboratory
BISC 3263	Special Topics in Biochemistry
Organismal/sub-organismal biology	
BISC 2318	Histology
BISC 2320	Neural Circuits and Behavior
BISC 2322	Human Physiology
or BISC 2322W	Human Physiology
BISC 2323	Human Physiology Laboratory
BISC 2330	Invertebrate Zoology
BISC 2332	Comparative Vertebrate Anatomy
BISC 2333	Evolution and Extinction of Dinosaurs
BISC 2334	Integrative Biology of Fishes
or BISC 2334W	Integrative Biology of Fishes
BISC 2337	Introductory Microbiology
or BISC 2337W	Introductory Microbiology
BISC 2339	Parasitology
BISC 3320	Human Neurobiology
BISC 3321	Comparative Endocrinology
BISC 3325	Environmental Physiology
Ecology/evolution	
BISC 2450	Organic Evolution
BISC 2451	History of Life
BISC 2452	Animal Behavior
BISC 2454	General Ecology
or BISC 2454W	General Ecology
BISC 3458	Plant Comparative Structure and Function
BISC 3460	Conservation Biology
BISC 3461	Plant-Animal Interactions
BISC 3462	Plant-Animal Interactions Laboratory
BISC 3463	Ecological and Evolutionary Genetics
One course from the following:	
CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
CHEM 2085	Environmental Chemistry
CHEM 3140	Geochemistry
or GEOL 3140	Geochemistry
CHEM 3165	Biochemistry I
CHEM 3166	Biochemistry II
PSYC 2014	Cognitive Psychology
PSYC 2015	Biological Psychology
PSYC 3112	Psychology of Adolescence
PSYC 3118	Neuropsychology
BISC 1005	The Biology of Nutrition and Health
or BISC 1007	Food, Nutrition, and Service
BISC 1006	The Ecology and Evolution of Organisms
or BISC 1008	Understanding Organisms through Service Learning
GEOL 1001	Physical Geology
or GEOL 1005	Environmental Geology
GEOL 1002	Historical Geology
STAT 1127	Statistics for the Biological Sciences

6 credits of anthropology (ANTH) courses numbered 2000 or above but not including courses in the 3400--3499 or the 3802 or 3832 range

Note: The major in biological anthropology may not be pursued in conjunction with the major in anthropology.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors in anthropology, archaeology, or biological anthropology, a major have a grade-point average of 3.5 or better in courses required for the major, register for 3 credit hours of ANTH 3995 Undergraduate Research, and write a paper of special distinction arising out of a program of directed reading or research. Students must confer with an advisor before beginning the work.

COMBINED PROGRAMS, ANTHROPOLOGY

REQUIREMENTS

The Department of Anthropology offers three options for a combined bachelor's/master's degree:

- Bachelor of Arts with a major in anthropology and Master of Arts in the field of anthropology
- Bachelor of Arts with a major in archaeology and Master of Arts in the field of anthropology
- Bachelor of Science with a major in biological anthropology and Master of Arts in the field of anthropology

These programs allow students to take a specified number of graduate credits as part of their undergraduate degree, thereby decreasing the number of credits normally required for the master's degree.

Students interested in the combined degree program should plan well in advance and confer with their major advisor about the details of their course of study. For more information visit the program website (http://anthropology.columbian.gwu.edu/combined-bama-program).

MINOR IN ANTHROPOLOGY

REQUIREMENTS

21 credits are required including:

ANTH 1001	Biological Anthropology
ANTH 1002	Sociocultural Anthropology
ANTH 1003	Archaeology
ANTH 1004	Language in Culture and Society
Three additional courses in anthropology, which must be taken in different subdisciplines	

For the purposes of this minor, the department's courses may be divided into subdisciplines as follows:

- biological anthropology—courses in the 3400s and ANTH 1005;
- archaeology—courses in the 3800s;
- anthropological linguistics—courses in the 2600s and 3600s;
- sociocultural anthropology—all other upper-division courses, with the exception of ANTH 3995.

MINOR IN ARCHAEOLOGY

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
ANTH 1003	Archaeology	
ANTH 3838	Theory and Practice in Archaeology	
Four courses from the following: (An independent study course in archaeology or an approved art history course may be substituted for one of the four courses)		
ANTH 3801	African Roots from Australopithecus to Zimbabwe	
ANTH 3801W	African Roots from Australopithecus to Zimbabwe	
ANTH 3802	Human Cultural Beginnings	
ANTH 3802W	Human Cultural Beginnings	
ANTH 3803	Old World Prehistory: First Farmers to First Cities	
ANTH 3803W	Old World Prehistory: First Farmers to First Cities	
ANTH 3804	Origins of the State and Urban Society	
ANTH 3805	Archaeology of Israel and Neighboring Lands	
ANTH 3806	Art and Archaeology of the Aegean Bronze Age	
ANTH 3808	Archaeology and the Celts	
ANTH 3811	Historical Archaeology	

ANTH 3812	The Aztec Empire
ANTH 3813	Archaeology of North America
ANTH 3814	Ancient Mexican Civilizations
ANTH 3821	Myths and Mysteries in Archaeology
ANTH 3822	Archaeology in Film and Television
ANTH 3823	Archaeology of Ritual and Religion
ANTH 3832	Paleoanthropological Field Program
ANTH 3833	Field Research: New World
ANTH 3834	Field Research: Old World
ANTH 3835	Historical Archaeology Field Program
ANTH 3838W	Theory and Practice in Archaeology
ANTH 3839	Lab Research Methods in Archaeology
ANTH 3891	Special Topics in Archaeology

MINOR IN BIOLOGICAL ANTHROPOLOGY

REQUIREMENTS

The following requirements must be fulfilled: 16 credits in required courses.

Code	Title	Credits
Required		
ANTH 1001	Biological Anthropology	
12-13 credits from the following:		
ANTH 1005	The Biological Bases of Human Behavior	
ANTH 2406	Human Evolutionary Genetics	
ANTH 3401	Human Functional Anatomy	
ANTH 3402	Human Evolutionary Anatomy	
ANTH 3403	Forensic Anthropology Laboratory	
ANTH 3404	Human Variation	
ANTH 3406	Advanced Human Osteology	
ANTH 3407	Conservation in a Changing World: Human and Animal Behavior	
ANTH 3408	The Evolution of Human Families	
ANTH 3411	Primatology	
ANTH 3412	Hominin Evolution	
ANTH 3412W	Hominin Evolution	
ANTH 3413	Evolution of the Human Brain	
ANTH 3491	Topics in Biological Anthropology	
One of the following:		
ANTH 3802	Human Cultural Beginnings	
ANTH 3802W	Human Cultural Beginnings	
ANTH 3839	Lab Research Methods in Archaeology	
ANTH 3832	Paleoanthropological Field Program	
PSYC 2014	Cognitive Psychology	
PSYC 2015	Biological Psychology	
PSYC 3112	Psychology of Adolescence	
PSYC 3118	Neuropsychology	
BISC 1005	The Biology of Nutrition and Health	
BISC 1006	The Ecology and Evolution of Organisms	
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
GEOL 1001	Physical Geology	
GEOL 1002	Historical Geology	
GEOL 1005	Environmental Geology	
STAT 1127	Statistics for the Biological Sciences	

MINOR IN CROSS-CULTURAL COMMUNICATION

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Required courses (6 credits):

ANTH 1002	Sociocultural Anthropology
ANTH 1004	Language in Culture and Society

Two courses (6 credits) from the following, at least one of which must be ANTH 3601 or ANTH 3602/ANTH 3602W.	
ANTH 3601	Language, Culture, and Cognition
ANTH 3602	Ethnographic Analysis of Speech
or ANTH 3602W	Ethnographic Analysis of Speech
ANTH 3603	Psycholinguistics
ANTH 3691	Special Topics in Linguistic Anthropology
One course (3 credits) from the following:	
ANTH 2501	The Anthropology of Gender: Cross-Cultural Perspectives
ANTH 2505	Introduction to Ethnomusicology
ANTH 2506	Religion, Myth, and Magic
or REL 2506	Religion, Myth, and Magic
ANTH 2533	Material Culture in America
or AMST 2533	Material Culture in America
ANTH 3501	Anthropology of Development
ANTH 3502	Cultural Ecology
ANTH 3503	Psychological Anthropology
ANTH 3504	Illness, Healing, and Culture
ANTH 3506	Politics, Ethnicity, and Nationalism
ANTH 3507	Kinship, Family, and Community
ANTH 3508	Art and Culture
ANTH 3513	Anthropology of Human Rights
ANTH 3521	Ethnographic Film
ANTH 3531	Methods in Sociocultural Anthropology
ANTH 3991	Special Topics
One course (3 credits) from the following:	
ANTH 3701	Native Peoples - North America
ANTH 3702	Anthropology of Latin America
ANTH 3703	Cultures of the Pacific
ANTH 3704	Cultures of Southeast Asia
ANTH 3705	Anthropology of East Asia
ANTH 3707	Anthropology of the Middle East
ANTH 3708	Anthropology of Africa
ANTH 3709	Japanese Culture Through Film
or JAPN 3162	Japanese Culture Through Film

MINOR IN SOCIOCULTURAL ANTHROPOLOGY

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 3 credits in one required course and 15 credits in elective courses.

Required introductory course (3 credits):	
ANTH 1002	Sociocultural Anthropology
Five courses (15 credits) from the following:	
ANTH 2008	Foundations of Anthropological Thought
or ANTH 2008W	Foundations of Anthropology
ANTH 2501	The Anthropology of Gender: Cross-Cultural Perspectives
or WSTU 2121	The Anthropology of Gender: Cross-Cultural Perspectives
ANTH 2505	Introduction to Ethnomusicology
or MUS 2105	Introduction to Ethnomusicology
or MUS 2105W	Introduction to Ethnomusicology
ANTH 2506	Religion, Myth, and Magic
or REL 2506	Religion, Myth, and Magic
ANTH 2533	Material Culture in America
or AMST 2533	Material Culture in America
ANTH 2750	Latinos in the United States
or ANTH 2750W	Latinos in the United States
ANTH 3501	Anthropology of Development
ANTH 3502	Cultural Ecology
ANTH 3503	Psychological Anthropology
ANTH 3504	Illness, Healing, and Culture
ANTH 3506	Politics, Ethnicity, and Nationalism
ANTH 3507	Kinship, Family, and Community

ANTH 3508	Art and Culture
ANTH 3513	Anthropology of Human Rights
or ANTH 3513W	Anthropology of Human Rights
ANTH 3521	Ethnographic Film
ANTH 3531	Methods in Sociocultural Anthropology
ANTH 3701	Native Peoples - North America
ANTH 3702	Anthropology of Latin America
ANTH 3703	Cultures of the Pacific
ANTH 3704	Cultures of Southeast Asia
ANTH 3705	Anthropology of East Asia
ANTH 3707	Anthropology of the Middle East
ANTH 3708	Anthropology of Africa
ANTH 3709	Japanese Culture Through Film
or JAPN 3162	Japanese Culture Through Film
ANTH 3991	Special Topics

MASTER OF ARTS IN THE FIELD OF ANTHROPOLOGY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The minimum requirement consists of:

36 credits of approved graduate course work including the following:
At least three of the following four proseminars:

ANTH 6101	Proseminar in Biological Anthropology
ANTH 6102	Proseminar in Sociocultural Anthropology
ANTH 6103	Proseminar in Archaeology
ANTH 6104	Proseminar in Linguistic Anthropology

Those with significant background in a field, as determined by evaluation of a student petition to the proseminar instructor, may waive one proseminar. Those who are permitted to waive a proseminar must, however, take two courses from the following:

ANTH 6101	Proseminar in Biological Anthropology
or ANTH 6103	Proseminar in Archaeology
ANTH 6102	Proseminar in Sociocultural Anthropology
or ANTH 6104	Proseminar in Linguistic Anthropology

An approved methods course
In addition to the 36 credits of approved graduate course work, a thesis, integrating essay, or journal paper.
Students with fewer than four undergraduate semesters of a major foreign language must demonstrate a reading knowledge of an approved language before beginning the third semester of graduate work.

Concentration in museum training

The program of study is the same as that described above for the general degree, but must include from 12 to 15 credits of work in museum-related courses, 6 credits of which may be in an internship. In lieu of a thesis, an integrating essay or journal paper is required. Students whose primary interest is in museum techniques, rather than anthropology, are advised to apply to the master's program in museum studies (see Museum Studies). Note that a program in museum education is also available through the Graduate School of Education and Human Development.

Concentration in international development

The program of study is the same as that described above for the general degree, but must include:

ANTH 6301	The Anthropology of Development
ANTH 6331	Research Methods in Development Anthropology
Two of the following:	
ANTH 6302	Issues in Development
ANTH 6330	Internship in Development Anthropology
ANTH 6391	Anthropology and Contemporary Problems
ANTH 6501	Gender and Sexuality

ANTH 6507	Nationalism and Ethnicity
An approved graduate-level course in quantitative analysis	

The program is designed to improve the student's understanding of development problems, such as economic change, population, health, education, migration, and ecology, within an anthropological framework. Note that the Elliott School of International Affairs offers a program in international development studies with a disciplinary specialization in anthropology.

Concentration in medical anthropology

The program of study is the same as that described for the general degree, but must include:

ANTH 6505	Medical Anthropology
Two of the following:	
ANTH 6302	Issues in Development
ANTH 6391	Anthropology and Contemporary Problems
ANTH 6501	Gender and Sexuality
ANTH 6506	Topics in Medical Anthropology
One of the following research methods options:	
Option A:	
ANTH 6331	Research Methods in Development Anthropology
PUBH 6003	Principles and Practices of Epidemiology
Option B:	
Two of the following:	
PUBH 6410	Global Health Study Design
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6412	Global Health Quantitative Research Methods

DOCTOR OF PHILOSOPHY IN THE FIELD OF ANTHROPOLOGY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy Program (p. 82).

72 credits.

Requirements for the first phase of the program

Code	Title	Credits
Required		
Core proseminars		
Students are expected to take three of the four offered proseminars; however, students with significant background in a field, as determined through petition to the instructor, may waive one proseminar.		
ANTH 6101	Proseminar in Biological Anthropology	
ANTH 6102	Proseminar in Sociocultural Anthropology	
ANTH 6103	Proseminar in Archaeology	
ANTH 6104	Proseminar in Linguistic Anthropology	
One research methods seminar		
One professional skills and ethics seminar		
Elective courses		

All students must demonstrate proficiency in one foreign language; an additional language may be required if it is needed for fieldwork or archival research. An internship in anthropology and public life at an institution responsible for communicating anthropological knowledge to diverse audiences is recommended.

Requirements for the second phase of the program

In the second phase, students prepare a research proposal that meets funding agency guidelines and take the general examination in at least three major areas (e.g., a general field in anthropological theory, a geographic area, and a thematically defined field). Following successful completion of the general examination, an oral defense of the student's research proposal is held. Those who pass advance to candidacy for the Ph.D. and engage in completion and defense of the dissertation.

ART THERAPY

The graduate program in art therapy trains highly skilled therapists whose professional practice is grounded in a broad

understanding of current clinical art therapy, counseling, and trauma theories. Students are taught the application of effective research and evaluation methodologies, clinical skills, and studio expertise, within a diverse, integrative, and culturally-responsive format. The program's student-focused approach allows each student to cultivate a unique identity as an art therapist.

GRADUATE

Master's programs

- Master of Arts in the field of art therapy (p. 128)
- Master of Arts in the field of art therapy practice (p. 128)

FACULTY

Assistant Professors H. Bardot (*Director*), D. Betts, L. Garlock, J. Potash, T. Tripp (*Teaching*).

Professorial Lecturers R. Albert, K. Baasch, J. Baldwin, D. Brancheau, D. Bunkley, T. Councill, A. Di Maria, A. Herrera, P. Howie, C. Knebel, L. Milofsky, L. Mowry-Hesler, S. Nelson, D. Preston-Dillon, M.E. Ruff, D. Sabados, A. VanBrunt, J. Wager, A. Zurayk.

Lecturer C. Cox

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: The following courses are open to non-art therapy students with permission of the instructor or program director:
ARTH 6201 Survey of Art Therapy
ARTH 6206 Human Development and Art Therapy
ARTH 6231 Child Art Therapy
ARTH 6232 Art Therapy with Adolescents
ARTH 6233 Marital and Family Art Therapy/Counseling
ARTH 6261 Ethics and Professionalism.

ARTH 6201. Survey of Art Therapy. 3 Credits.
The use of the visual arts to enhance personal development and growth; illustrated lectures, readings, discussion, and studio work presented by experts in the field. Instruction is delivered online via Blackboard. No previous art experience is necessary.

ARTH 6205. History and Theory of Art Therapy. 2 Credits.
Art therapy history and theory, milestones and practitioners. The development of art therapy as a distinct therapeutic practice. Overview of psychotherapy theories relevant to art therapy. Open only to art therapy students.

ARTH 6206. Human Development and Art Therapy. 3 Credits.
Psychological and artistic development across the life span. Theories of personality development; cultural and environmental influences; and human behavior, including developmental crises, disability, exceptional behavior, and addictive behavior. Restricted to art therapy students.

ARTH 6210. Counseling/Art Therapy Process. 3 Credits.
Theoretical and clinical dimensions of counseling and art therapy explored through study of current research concerning the diverse elements affecting the therapeutic process. The goals of each phase of treatment; development of the therapeutic alliance; assessment of client readiness; therapeutic techniques and interventions as practiced in short- and long-term treatment.

ARTH 6211. Process of Counseling and Art Therapy: Theory. 3 Credits.
Major theories in counseling and art psychotherapy through the lens of the creative process and other aspects of clinical practice; the influence of multicultural issues, contemporary and evidence-based practices, and various settings on art-making and the therapeutic encounter. Restricted to students in an art therapy program; permission of the instructor may be substituted. Prerequisite: ARTH 6210.

ARTH 6221. Studio/Technique of Art Therapy. 3 Credits.
Direct experience of the therapeutic utility and psychological influence of art processes and materials. Identifying the effect of art-making leading to assessment and intervention strategies. Open only to art therapy students.

ARTH 6231. Child Art Therapy. 2 Credits.
Practical, theoretical, and ethical considerations involved in treating children in clinical and educational settings. Application of art therapy and counseling principles and practice for diverse child populations. Development of interventions for varied DSM–IV diagnoses.

ARTH 6232. Art Therapy with Adolescents. 2 Credits.
Practical, theoretical, and ethical considerations in treating adolescents in clinical and educational settings. Assessment and treatment issues integrating the use of art techniques specifically designed for this population. Application of art therapy and counseling principles and practice for diverse adolescent populations. Development of interventions for varied DSM–V diagnoses. Restricted to students in an art therapy program.

ARTH 6233. Marital and Family Art Therapy/Counseling. 3 Credits.
Principles of working with families and couples, including an overview of systems theories and stages of family life cycle development; art techniques for evaluating of family dynamics; intervention strategies and cultural and ethical considerations. Restricted to students in an art therapy program.

ARTH 6234. Group Process. 3 Credits.
Theoretical and experiential understanding of group art therapy and counseling methods and skills. Principles of group dynamics, therapeutic factors, member roles and behaviors, leadership styles and approaches, selection criteria, and short- and long-term group process.

ARTH 6235. Social and Cultural Diversity. 3 Credits.
Exploration of the therapist's heritage, expectations, worldview and values; racial/cultural identity development; skills for multicultural counseling. Stereotypes and biases that interfere with effective treatment of culturally different clients. The role of the art therapist or counselor in conflict resolution, advocacy, and social justice. May be repeated for credit if taken through the study abroad course option. Restricted to art therapy students.

ARTH 6241. Assessment Procedures. 3 Credits.
Instruments and procedures used in assessment of psychological health and psychopathology; diagnostic and developmental criteria as manifested in artwork and art-making; statistical concepts, including reliability and validity; selection and administration of assessment tools; treatment planning; report writing. Restricted to students in an art therapy program.

ARTH 6242. Psychopathology: Art and Diagnosis. 3 Credits.
Criteria of psychiatric diagnoses, such as the Diagnostic and Statistical Manual multiaxial system, theories of psychopathology, and relevant literature evaluation of potential indicators of functional and organic disorders in behavior and artwork of clients; ethical issues; cultural and environmental influences on diagnostic categorization; basic introduction to psychopharmacology. Restricted to students in an art therapy program; permission of the instructor may be substituted.

ARTH 6243. Substance Abuse and Addictions. 3 Credits.
Overview of substance abuse and addictions for art therapy and counseling, including theory and treatment applications. Screening and assessment tools; treatment models specific to the field of addictions. Art therapy techniques in the treatment of substance abuse for adolescents and adults in a variety of treatment settings. Restricted to ARTH majors only.

ARTH 6251. Research Methods. 3 Credits.
Planning, conducting, and evaluating relevant methodologies, including qualitative and quantitative approaches and basic statistics. The importance of research in the psychotherapy professions; ethical and legal considerations; and the use of research to assess effectiveness of mental health and art therapy services.

ARTH 6261. Ethics and Professionalism. 3 Credits.
Professional identity and the role of the therapist; the ethical practice of counseling and art therapy, including familiarity with ethical standards of various professional organizations; credentialing and licensure; public policy and advocacy for patients and for the profession.

ARTH 6262. Career Counseling and Art Therapy. 3 Credits.
The theoretical foundation and practical experience necessary to understand and support career development needs for diverse individual clients and groups. Career development over the lifespan; assessments, tools, and resources; occupational and labor market trends and resources. Specific art therapy techniques applicable to career counseling in educational and work settings. Restricted to ARTH majors only.

ARTH 6265. Advanced Issues in Psychotherapy and Art Therapy. 1-3 Credits.
Overview and application of one or more treatment models or theories to various mental and emotional disorders. Connections between the practice of art therapy and the techniques of other disciplines.

ARTH 6271. Art Psychotherapy and Trauma I: Theory and Approaches to Treatment. 0-3 Credits.
Introduction and overview of theory, practice, and treatment related to complex, trauma-related problems; psychobiology of traumatic stress, impact of traumatic stress on individuals, and specific treatment modalities in clinical setting; somatic (body-based) and nonverbal (art and image-based) treatment modalities. Supervised treatment or observation of treatment of clients with trauma histories. Restricted to students in an art therapy program.

ARTH 6272. Art Psychotherapy and Trauma II: Loss, Countertransference, and Resiliency. 3 Credits.
Multi-modal treatment of acute, serial, or complex trauma; theoretical, practical, moral, cross cultural, and personal aspects as seen through an art therapy and counseling lens. Supervised treatment or observation of treatment of clients with trauma histories. Restricted to students in an art therapy program. Prerequisite: ARTH 6271.

ARTH 6281. Practicum in Art Therapy. 1-2 Credits.
A total of 900 hours of clinical fieldwork in a professional setting. Supervised clinical experience with clients or patients in psychiatric, rehabilitation, and education settings with children, adolescents, and adults. On-site individual supervision by clinical instructors; on-campus group supervision by faculty. Open only to art therapy students.

ARTH 6292. Special Projects in Art Therapy. 1-12 Credits.
Individual work based on research. Empirical, clinical, and library research may be undertaken, as well as the development of new procedures. Details to be worked out with each student. May be repeated for credit with advisor's approval. Open only to art therapy students.

ARTH 6998. Thesis Research. 3 Credits.

ARTH 6999. Thesis Research. 3 Credits.

MASTER OF ARTS IN THE FIELD OF ART THERAPY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

Required: 61 credits of graduate course work including:

ARTH 6205	History and Theory of Art Therapy
ARTH 6206	Human Development and Art Therapy
ARTH 6210	Counseling/Art Therapy Process
ARTH 6211	Counseling/Art Therapy Theory
ARTH 6221	Studio/Technique of Art Therapy
ARTH 6231	Child Art Therapy
ARTH 6232	Art Therapy with Adolescents
ARTH 6233	Marital and Family Art Therapy/ Counseling
ARTH 6234	Group Process
ARTH 6235	Social and Cultural Diversity
ARTH 6241	Assessment Procedures
ARTH 6242	Psychopathology/Art and Diagnosis
ARTH 6251	Research Methods
ARTH 6261	Ethics and Professionalism
ARTH 6265	Advanced Issues in Psychotherapy and Art Therapy
ARTH 6281	Practicum in Art Therapy
CNSL 6155	Career Counseling
CNSL 6169	Counseling Substance Abusers
ARTH 6292	Special Projects in Art Therapy

Electives

MASTER OF ARTS IN THE FIELD OF ART THERAPY PRACTICE

REQUIREMENTS

The master of arts in the field of art therapy practice degree program is intended for those who hold a master's degree in an approved related field (such as counseling or social work) that included designated graduate course work.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

30 credits, including:

Requirements include:

ARTH 6205	History and Theory of Art Therapy
ARTH 6221	Studio/Technique of Art Therapy
ARTH 6234	Group Process
ARTH 6235	Social and Cultural Diversity
ARTH 6241	Assessment Procedures
ARTH 6261	Ethics and Professionalism
ARTH 6281	Practicum in Art Therapy

Two of the following (with approval):

ARTH 6210	Counseling/Art Therapy Process
ARTH 6211	Counseling/Art Therapy Theory
ARTH 6271	Art Psychotherapy and Trauma I: Theory and Approaches to Treatment

3 credits of ARTH electives

BIOCHEMISTRY AND MOLECULAR MEDICINE

GRADUATE

Master's program

- Master of Science in the field of molecular biochemistry and bioinformatics (p. 130)

FACULTY

University Professor F. Murad

Professors P. Berg, V. Hu, A. Kumar, R. Kumar *(Chair)*, Z. Lu *(Research),* W. Nierman, M. Sharma *(Research),* J. Vanderhoek (*Director of M.S. program),* G. Walker, W. Weglicki

Associate Professors K. Bian *(Research),* G. Dimri, M. Elliott, Z. Han, J. Kramer *(Research),* I.T. Mak *(Research),* R. Mazumder

Assistant Professors J. Chmielinska *(Research),* M. Dimri *(Research),* J.-H. Kim, A. Kots *(Research)*, K. Ohshiro *(Research),*M.-Y. Wu *(Research),*R.-C. Wu, J. Zhou *(Research),*W. Zhu

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BIOC 3261. Introductory Medical Biochemistry. 4 Credits.
Introduction to structures of biological macromolecules, enzyme catalysis, cellular bioenergetics, and metabolism. Same as BISC 3261. Prerequisite CHEM 2151– CHEM 21 52. Credit toward the degree cannot be earned for this course and for CHEM 3165.

BIOC 3262. Biochemistry Laboratory. 2 Credits.
Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Same as BISC 3262/ CHEM 3262. Prerequisite: BIOC 3261/ BISC 3261 . Laboratory fee.

BIOC 3263. Special Topics in Biochemistry. 2 Credits.
In-depth discussion of current biochemically relevant topics, including cancer and HIV chemotherapy, immune response, photosynthesis, signal transduction, hormone regulation and nutrition. Same as BISC 3263. Prerequisite: BIOC 3261/ BISC 3261 . Credit toward the degree cannot be earned for this course and for CHEM 3166.

BIOC 3263W. Special Topics in Biochemistry. 2 Credits.

BIOC 3560. Diet, Health, and Longevity. 3 Credits.
Biochemical and molecular explanations of how calorie intake affects health; scientific principles of dieting. Prerequisite: BIOC 3261 or BISC 1005 or EXSC 2114 or EXSC 2119.

BIOC 3564. Lipid Biotechnology. 0-2 Credits.
Same as BISC 3564/ CHEM 3564. Prerequisite: BIOC 3261/ BISC 3261 . Laboratory fee.

BIOC 3820. Bioinformatics and Computational Biochemistry. 2 Credits.
How biomedical researchers integrate information from molecular biology resources for analysis and testing of hypotheses. Prerequisite: BISC 1111; STAT 1127.

BIOC 3821. Projects in Biomed Informatics. 1-2 Credits.

BIOC 4195. Undergraduate Research. 1 Credit.
Research conducted under a mentor who is a member of the department. May be repeated for credit (only 1 credit may count toward the minor). Prerequisites: permission of the faculty member concerned.

BIOC 4701. Science and Medicine. 0-4 Credits.
A broad overview of several biomedical discoveries made in the 20th century and the often profound influence they have had on medical technology and on new directions in science and medicine, science administration, politics, ethics, and philosophy. (Same as HONR 2175).

BIOC 6201. Medical Biochemistry. 7 Credits.
Required for medical students. Lecture and laboratory; emphasis on basic principles and their relation to medicine.

BIOC 6209. Resch Elective in Medical BioC. 1-12 Credits.

BIOC 6211. Biochem-Health Sci Students. 3,4 Credits.
Basic concepts of biochemistry and their relation to health sciences.

BIOC 6221. Proteins, Pathways, and Human Health. 4 Credits.
A comprehensive course in general biochemistry for graduate students in biomedical sciences. Prerequisite: CHEM 2152, CHEM 2154.

BIOC 6222. Biochemical Genetics and Medicine. 3 Credits.
Continuation of BIOC 6221. A comprehensive course in general biochemistry for graduate students in biomedical sciences. Prerequisite: CHEM 2152, CHEM 2154.

BIOC 6223. Bioinformatics. 2 Credits.
The application of bioinformatics concepts and methods through the use of molecular biology databases and tools, covering molecular evolution, and protein sequence, structural, functional analysis. Recommended background: One undergraduate biochemistry course.

BIOC 6224. Molec biol and protein methods. 3 Credits.
Common laboratory techniques used in life science laboratories to separate and characterize proteins, including chromatography, gel electrophoresis, immunoassays, spectroscopy, and centrifugation. Corequisite: BIOC 6221. Laboratory fee.

BIOC 6227. Biochemistry Seminar. 1 Credit.
Current literature in biochemistry. Limited to graduate students in the department. May be repeated for credit.

BIOC 6234. Biochemical and Bioinformatic Approaches to Protein Structure and Function. 3 Credits.
Molecular biological, biophysical, chemical, and bioinformatic approaches to understanding protein structure and function. Protein folding, interactions, and ligand binding.

BIOC 6235. Seminar in Genomics, Proteomics, and Bioinformatics. 1 Credit.

BIOC 6236. Medical Genomics. 2 Credits.
The structure and function of genes and genomes. Genomic theories, methods, and data analysis including bioinformatics and database mining. Prerequisite or corequisite: BIOC 6221–BIOC 6222.

BIOC 6237. Proteomics and biomarkers. 2 Credits.
Experimental proteomics, protein/proteome analysis, bioinformatics of proteomics, systems biology and structural genomics. Prerequisite: BIOC 6236.

BIOC 6238. Experimental Genomics Lab. 3 Credits.
Research applications of knowledge in genomics and proteomics. Prerequisite: BIOC 6236. Laboratory fee.

BIOC 6240. Next Generation Sequencing. 2 Credits.

BIOC 6250. Molecular Biology. 3 Credits.
Content includes the organization and replication of genetic material, transcriptional and translational machinery, regulation of eukaryotic gene expression, and other special topics. Prerequisite: BIOC 6221–BIOC 6222.

BIOC 6252. Current Laboratory Methods in Molecular Biology. 3 Credits.
Corequisite: BIOC 6221. Laboratory fee.

BIOC 6254. Fundamentals of Molecular Biology. 3 Credits.
An intermediate-level molecular biology survey course. Prerequisite: BIOC 6221.

BIOC 6260. Analytic Methods for Lipids and Carbohydrates. 3 Credits.
Basic techniques in the biotechnology of lipids and carbohydrates. Prerequisite: BIOC 6221.

BIOC 6262. Genes, diets and aging. 3 Credits.

BIOC 6264. Membrane-Assoc Complex Lipids. 1 Credit.

BIOC 6281. Topics. 1,2 Credit.
Directed readings in biochemistry, molecular biology, and genetics. May be repeated for credit. Enrollment limited to graduate students in the department.

BIOC 6290. Extramural BioChem Elective. 1-12 Credits.

BIOC 6291. Extramural BioChem Elective. 1-12 Credits.

BIOC 6295. Research. 1-12 Credits.
Participation in a project under investigation or in a field suggested by the student and approved by the staff. May be repeated for credit. Laboratory fee.

BIOC 6298. Advanced Reading. 1-6 Credits.
Limited to master's degree candidates. May be repeated for credit to a maximum of 6 hours.

BIOC 6998. Thesis Research. 3 Credits.

BIOC 6999. Thesis Research. 3 Credits.

BIOC 8225. Metabolism. 4 Credits.
Metabolic pathways and integration of metabolic processes. Limited to Ph.D. students in the Institute for Biomedical Sciences.

BIOC 8231. Bioc Basis of Human Diseases. 3 Credits.
Biochemical perspectives on disorders involving metabolic alterations, immunological dysregulation, problems of environmental/toxicological etiology, genetic/epigenetic dysfunction, neglected tropical diseases. Prerequisite: BmSc 8210, 8212.

BIOC 8232. Mol Cell Signaling. 3 Credits.

BIOC 8501. Issues in Clinical Nutrition. 3 Credits.

BIOC 8502. Molecular Biology of Oncogenes. 1-12 Credits.

BIOC 8503. Readings in Immunology. 3 Credits.

BIOC 8800. Summer Remedial Biochemistry. 8 Credits.

MASTER OF SCIENCE IN THE FIELD OF MOLECULAR BIOCHEMISTRY AND BIOINFORMATICS

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

Thesis and non-thesis options are available. See the department for details.

Code	Title	Credits
Required		
BIOC 6221	Proteins, Pathways, and Human Health	
BIOC 6222	Biochemical Genetics and Medicine	
BIOC 6223	Bioinformatics	
BIOC 6227	Biochemistry Seminar	
Biochemistry track		
BIOC 6224	Molec biol and protein methods	
BIOC 6260	Analytic Methods for Lipids and Carbohydrates	
Bioinformatics track		

BIOC 6236	Medical Genomics
BIOC 6237	Proteomics and biomarkers
BIOC 6240	Next Generation Sequencing

Thesis/non-thesis option

Consult the department for details concerning requirements for each option.

BIOLOGICAL SCIENCES

As one of the natural science departments in the Columbian College of Arts and Sciences, Biological Sciences explores the science of life, from biomolecules to ecosystems. Courses and ongoing research programs are focused in three general areas: cell and molecular biology, ecology, and evolution and systematics. In research laboratories, students and faculty members work together on projects that range from dinosaur evolution through an investigation of how misfolded proteins interfere with insulin production. Many departmental faculty members have working relationships with scientists in surrounding education and federal institutions, and the program has a collaboration of more than 100 years standing with the Smithsonian Institution National Museum of Natural History.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in biology (p. 137)
- Bachelor of Science with a major in biology (p. 139)

Combined Program

- Bachelor of Science with a major in biology and Master of Science in the field of biological sciences (p. 141)

Minor

- Minor in biology (p. 141)

GRADUATE

Master's program

- Master of Science in the field of biological sciences (p. 141)

Doctoral program

- Doctor of Philosophy in the field of biological sciences (p. 142)

FACULTY

Professors J.M. Clark, K.A. Crandall, R. Donaldson, G. Hormiga, D.L. Lipscomb, G. Ortí, R.K. Packer (*Chair*), L.C. Smith, R.P. Tollo

Associate Professors P. Hernandez, C.A. Forster, A. Jeremic, J.T. Lill

Assistant Professors H.G. Döebel, I. Eleftherianos, L. Grayfer, L. Hammond, M. Joe *(Research),* K. Jordan, M. Manier, D.W. Morris, D. O'Halloran, S. Powell, R.A. Pyron, T. Scully (Teaching), A. Smith, A. Zanne

Adjunct Professors C. Brown

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Departmental prerequisite: BISC 1111 Introductory Biology: Cells and Molecules–BISC 1112 Introductory Biology: The Biology of Organisms or equivalent is prerequisite to all upper-division courses except by permission of the instructor.

BISC 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details. Restricted to First-year students in CCAS.

BISC 1001. Departmental Seminar. 0 Credits.

BISC 1005. The Biology of Nutrition and Health. 3 Credits.
A study of the human body and its disorders and diseases through examination of the essential molecules of life, nutrition, digestion, genetics, and reproduction. For non-majors. Same as BISC 1007.

BISC 1006. The Ecology and Evolution of Organisms. 3 Credits.
Introduction to ecology and evolution, including man's impact on other plants and animals, and an overview of Earth's biodiversity. For non-majors.

BISC 1007. Food, Nutrition, and Service. 3 Credits.
A study of biology and nutrition that uses service learning to reinforce course concepts. Topics include the need for humans to consume other organisms, processing of consumed nutrients, unexpected effects of nutritional consumption, and measures to improve nutrition.

BISC 1008. Understanding Organisms through Service Learning. 3 Credits.
The evolution of life on earth; the value of other organisms, their role in our world, and how humans can cause harm to this infrastructure. Students work with a community partner to perform activities that assist the partner while reinforcing course concepts.

BISC 1111. Introductory Biology: Cells and Molecules. 4 Credits.
Nutrition and metabolism, cellular and developmental biology, genetics, and molecular biology of plants and animals. Laboratory fee.

BISC 1112. Introductory Biology: The Biology of Organisms. 4 Credits.
Concepts and methods in the study of whole organisms. Evolutionary theory; population biology; diversity of plants, animals, fungi, and microorganisms; ecology and behavior; and animal structure and function. Laboratory fee.

BISC 1116. Introductory Biology: The Biology of Organisms. 3 Credits.
Concepts and methods in the study of whole organisms; evolutionary theory; population biology; diversity of plants, animals, fungi, and microorganisms; ecology and behavior; and animal structure and function.

BISC 1120. Laboratory Introduction to Biomolecular Research. 2 Credits.
Research methods in the study of proteins and DNA; focus on preparation for working with faculty members on their research. Faculty approval is required prior to registration. Laboratory fee. Prerequisites: BISC1111 or BISC 1115. (Same as BISC 1125, HONR 1120).

BISC 1125. Introduction to Cells and Molecules Laboratory. 1 Credit.
Laboratory associated with BISC 1115. Experimental methods in the study of cells and molecules, proteins, enzymes, DNA, and molecular genetics. Prerequisites: BISC1115.

BISC 1126. Introduction to Organisms Laboratory. 1 Credit.
Laboratory associated with BISC 1116. Experimental methods in the study of whole organisms; population biology; diversity of plants, animals, fungi, and microorganisms; ecology and behavior; and animal structure and function. Laboratory fee. Prerequisites: BISC 1116.

BISC 2000. Sophomore Colloquium. 3 Credits.
Topics on biological diversity from the perspective of species and within the conceptual framework of evolutionary biology. The explanatory power, simplicity, and grandeur of evolution and its products. Consideration of how questions and hypotheses are empirically addressed. Restricted to sophomores, registration by department approval. Prerequisites: Bisc 1111 and Bisc 1112.

BISC 2202. Cell Biology. 3 Credits.
Structure and function of biological molecules and cellular organelles; cellular interactions. Prerequisite: BISC 1111– BISC 1112 except by permission of the instructor and one semester of organic chemistry.

BISC 2207. Genetics. 3 Credits.
Introduction to genetics, with emphasis on the integration of transmission of genetic traits and the molecular basis of gene action. Also includes cytogenetics, gene regulation, and examples of current applications of genetic technology. Prerequisites: BISC 1111, BISC 1112 or permission of the instructor.

BISC 2208. Genetics Laboratory. 1 Credit.
Study of genetic principles and genetic and molecular techniques in Drosophila and E. coli. Benchwork and comparative genomics using bioinformatics. Prerequisites: BISC 1111, BISC 1112, prior or concurrent enrollment in GEN 2207, or permission of instructor.

BISC 2213. Biology of Cancer. 3 Credits.

BISC 2214. Developmental Biology. 3 Credits.
The molecular processes and cellular phenomena that result in the formation of organized tissues and functional organisms; formation of early body plan, cell type determination, organogenesis, morphogenesis, stem cells, cloning, and issues in human development. Prerequisites: BISC 1111 and BISC 1112.

BISC 2215. Genome Editing Laboratory. 1 Credit.
Genome Editing Laboratory. Practical training in genome editing in, from sequence design to molecular biology, generation of edited animals, and phenotypic analysis. Each student is assigned a personal research project involving CRISPR, a technique that is changing the landscape of biological research and medicine. Meets once a week for 3-4hours. Requires BISC 1111, BISC 1112, prior or concurrent enrollment in BISC 2214, or permission of instructor. Prerequisites: BISC 1111 and BISC 1112.

BISC 2220. Developmental Neurobiology. 3 Credits.
The molecular mechanisms that guide neural development: events surrounding the birth of neurons, how specific neurons are determined, how neurons find the correct targets, how cell death guides proper neural development, and how synapses are formed and maintained. Prerequisites: BISC 1111, BISC 1112 or permission of the instructor.

BISC 2305. Plant Biology. 3 Credits.
Plant metabolism and molecular biology: photosynthesis, nitrogen metabolism, membrane transport, mechanisms of hormone action, protein targeting, biotechnology, and current research topics. Prerequisites: BISC 1111, BISC 1112, CHEM 1111 and CHEM 1112; or permission of the instructor.

BISC 2318. Histology. 4 Credits.
Lecture (2 hours), laboratory (4 hours). Introduction to microscopical anatomy of normal tissues and organs with emphasis on the interrelationship of structure and function. Prerequisite: BISC 1111, BISC 1112 or permission of the instructor.

BISC 2320. Neural Circuits and Behavior. 3 Credits.
The cellular and molecular properties of neural circuits that form the basis of behavior. Circuit properties and behaviors across a variety of invertebrate and vertebrate taxa. Individual neuronal units, the organizational principles and emergent properties of neural circuits, and how these neuronal ensembles influence behavior.

BISC 2322. Human Physiology. 3 Credits.
Introduction to the function of organ systems of the human body. Prerequisites: CHEM 1111, CHEM 1112, BISC 1111, BISC 1112 or permission of the instructor.

BISC 2330. Invertebrate Zoology. 4 Credits.
Lecture (2 hours), laboratory (4 hours). General survey of invertebrate animals, including classification, morphology, physiology, embryology, and evolutionary relationships among phyla. Prerequisites: BISC 1111, BISC 1112 or permission of the instructor.

BISC 2331. Insect Biology. 3 Credits.
Overview of the class Insecta, focusing on insect external and internal morphology, classification, ecology/behavior, collection, and specimen preparation. Prerequisites: BISC 1111 and BISC 1112.

BISC 2332. Comparative Vertebrate Anatomy. 4 Credits.
Evolution and comparative morphology of phylum Chordata, stressing recent forms. Laboratory fee. Prerequisites: BISC 1111 and BISC 1112 or permission of the instructor.

BISC 2333. Evolution and Extinction of Dinosaurs. 3 Credits.
The 165-million-year history of dinosaurs; different groups and their evolution, end-Cretaceous extinction event, the origin of birds, and the biology of the group. Prerequisites: BISC 1111 and BISC 1112; or GEOL 1001 and GEOL 1002 or GEOL 1002 and GEOL 1005. Same as GEOL 2333.

BISC 2334W. Integrative Biology of Fishes. 3 Credits.
An introduction to concepts in anatomy, biomechanics, physiology, developmental biology, biomechanics and hydrodynamics, adaptive radiation, evolutionary biology, and ecology using fish as model organisms. Significant fish groups are covered, but emphasis is on exploring broader topics in which fish have figured prominently in research.

BISC 2335. Insect Biology Lab. 1 Credit.
An overview of insects, with an emphasis on ecology, behavior, economic importance, and the key adaptations that characterize the evolution of this diverse group. This lab will teach basic internal and external anatomy, field collection methods, insect identification, and discussion of the primary literature. Laboratory fee. Prerequisite: BISC 2331.

BISC 2337. Introductory Microbiology. 4 Credits.
Lecture (2 hours), laboratory (4 hours). Survey of the major groups of microorganisms with emphasis on structure, physiology, ecology, pathogenesis, and biotechnology. Antibiotic resistance and emerging diseases. Prerequisites: CHEM 1111, CHEM 1112, BISC 1111, BISC 1112, or permission of instructor.

BISC 2337W. Introductory Microbiology. 4 Credits.
Lecture (2 hours), laboratory (4 hours). Survey of the major groups of microorganisms with emphasis on structure, physiology, ecology, pathogenesis, and biotechnology. Antibiotic resistance and emerging diseases. Prerequisites: BISC 1111 and BISC 1112 and CHEM 1111 and CHEM 1112 or permission of the instructor.

BISC 2339. Parasitology. 4 Credits.
Introduction to animal parasitology; survey of parasitic types from protozoa through arthropods. Laboratory fee. Prerequisite: BISC 1111 and BISC 1112 or permission of the instructor.

BISC 2450. Organic Evolution. 3 Credits.
Synthetic theory of organic evolution, including population biology, speciation, adaptation, macroevolution, systematics, biogeography, and the geologic record. Prerequisites: BISC 1111, BISC 1112, or permission of instructor.

BISC 2451. History of Life. 3 Credits.
Overview of life through time; the origin of life, evolution of major groups of organisms, and important methodologies used in paleontology. Prerequisites: BISC 1111 and BISC 1112 or permission of the instructor. Same as GEOL 2151.

BISC 2452. Animal Behavior. 4 Credits.
An evolutionary approach to the study of animal behavior, emphasizing behavioral ecology and sociobiology. Prerequisite: BISC 1111 and BISC 1112 or permission of the instructor.

BISC 2453. Animal Behavior Lab. 1 Credit.
Methods used in the study of animal behavior; observation, basic statistical analysis, and experimental design; review and evaluation research materials. Prerequisites: BISC 1111 and BISC 1112. Recommended background: Prior or concurrent enrollment in BISC 2452.

BISC 2454. General Ecology. 4 Credits.
The core concepts of the field of ecology across different hierarchical scales of ecological systems. Prerequisites: BISC 1111 and BISC 1112 or permission of the instructor.

BISC 2456. General Ecology Laboratory. 1 Credit.
Practical exercises and field-trips are used to explore the core concepts of the field of ecology across different hierarchical scales of ecological systems. Laboratory fee. Prerequisites: BISC 1111 and BISC 1112.

BISC 2467. Marine Biology. 3 Credits.
Study of relationships between organisms and physical, chemical, and biological factors of the marine environment. Consideration of the open ocean and coastal ecosystems and human influences on them. Prerequisite: BISC 1111 and BISC 1112 or permission of the instructor.

BISC 2580. Biotechnology. 3 Credits.
Genetic engineering of bacteria, plants, and animals, including humans. Applications of modern biotechnology, especially in the field of medical biotechnology, such as gene therapy, xenotransplantation, and the Human Genome Project. Regulation, prospects, and social impact of biotechnology. Prerequisites: CHEM 2151, CHEM 2152, CHEM 2153, CHEM 2154, BISC 1111 and BISC 1112. Recommended background: BISC 2202 or BISC 2207.

BISC 2580W. Biotechnology. 3 Credits.
Genetic engineering of bacteria, plants, and animals, including humans. Applications of modern biotechnology, especially in the field of medical biotechnology, such as gene therapy, xenotransplantation, and the Human Genome Project. Regulation, prospects, and social impact of biotechnology. Prerequisites: BISC 1111, BISC 1112, CHEM 2151, CHEM 2152, CHEM 2153, and CHEM 2154. Recommended background: BISC 2202 or BISC 2207. Same as BISC 2580.

BISC 2581. Human Gross Anatomy. 3 Credits.
The structural organization of the human body and how it relates to regional and systems-based functions. Emphasis on the macroscopic structure of the body. Prerequisite: BISC 1111– BISC 1112 except by permission of the instructor. Same as ANAT 2181.

BISC 2583. Biology of Proteins. 3 Credits.
About half of the proteins in the human genome have unknown functions. Are some related to cancers, muscle degeneration, infectious disease? How can evolutionary relationships among proteins from other organisms help us discover functions of unknown proteins? Laboratory fee. Prerequisite: AP or IB Biology or Chemistry.

BISC 2584. Introduction to Bioinformatics. 3 Credits.
The use of computational techniques in molecular biology, genetics, and evolution; techniques and software for database searching, sequence alignment, gene finding, phylogenetics, genomics, and proteomics. Prerequisites: BISC 1111 and BISC 1112. (Same as CSCI 3571).

BISC 3122. Human Physiology. 3 Credits.
Introduction to the function of organ systems of the body. Prerequisites: BISC 1111, BISC 1112, CHEM 1111, CHEM 1112, and BISC 2207 or BISC 2202 or permission of instructor.

BISC 3123. Human Physiology Lab. 1 Credit.
Basic physiology laboratory techniques; emphasis on the experimental study of homeostatic mechanisms in humans. Laboratory fee. Prerequisites: BISC 1111, BISC 1112 and BISC 2322.

BISC 3165. Biochemistry I. 3 Credits.
Introduction to the chemistry of living cells; structure and function of proteins, lipids, carbohydrates, and nucleic acids; enzyme structure, mechanism, and regulation. Prerequisites: BISC 1111, BISC 1112, CHEM 2151 and CHEM 2152; course equivalents may be substituted for BISC 1111 and BISC 1112 at the discretion of the instructor. Same as CHEM 3165.

BISC 3166. Biochemistry II. 3 Credits.

BISC 3209. Molecular Biology. 4 Credits.
Overview of theories, techniques, and procedures associated with molecular biology. The biosynthesis of DNA, RNA, and proteins; relationships among structure, function, and expression; and traditional and modern methods of gene and protein characterization and monitoring. Prerequisites: BISC 1111, BISC 1112, CHEM 1111, and CHEM 1112.

BISC 3210. Nanobiotechnology. 3 Credits.
Theory and application of nanotechnologies in biology and medicine. Strategies for studying the organization, function, and complexity of biological systems at nanometer scale. Several areas of research are covered, including high-resolution cellular and molecular imaging, spectroscopy, and optical tweezers. Prerequisites: BISC 2202 or BISC 3261 or permission of instructor and BISC 1111 and BISC 1112 or permission of the instructor.

BISC 3211. Nanobiotechnology Laboratory. 1 Credit.
Modern instrumental techniques for analyzing biological structures and processes at the nanometer level; combining nano- and conventional techniques to answer scientific questions. Students formulate, design, and implement a research project. Prerequisites: BISC 1111, BISC 1112 and BISC 3210.

BISC 3212. Immunology. 3 Credits.
Introduction to mammalian immunology covering the progression of immune responses from initial pathogen contact to immune memory. Applied topics include autoimmunity, transplantation, and the effects of HIV on the immune system. Prerequisites: BISC 1111, BISC 1112, BISC 2202, CHEM 2151, CHEM 2153. Recommended background: BISC 2207 or BISC 2322.

BISC 3261. Introductory Medical Biochemistry. 4 Credits.
Introduction to structures of biological macromolecules, enzyme catalysis, cellular bioenergetics, and metabolism. Same as BIOC 3261. Prerequisite: CHEM 2151–CHEM 2152. Credit toward the degree cannot be earned for this course and for CHEM 3165.

BISC 3262. Biochemistry Laboratory. 2 Credits.
Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Laboratory fee. Prerequisites: BISC 3261, BISC 1111 and BISC 1112.

BISC 3263. Special Topics in Biochemistry. 2 Credits.
In-depth discussion of current biochemically relevant topics, including cancer and HIV chemotherapy, immune response, photosynthesis, signal transduction, hormone regulation, and nutrition. Topics vary by semester. May be repeated for credits provided topic differs. Consult the Schedule of Classes for more details. Prerequisites: BISC 1111, BISC 1112 and BISC 3261 or permission of the instructor. Same as BIOC 3263.

BISC 3320. Human Neurobiology. 3 Credits.
Introduction to the function of the human nervous system, gross and microscopic structure, and neurophysiology of the brain, spinal cord, and nerves; alterations caused by disease or injury. Prerequisite: BISC 1111 and BISC 1112; and BISC 2202 or BISC 3261.

BISC 3450. Evolutionary Medicine. 3 Credits.
The application of evolutionary principles, including natural selection, adaptation, phylogenetics, and evolutionary constraints, to understanding health, disease, and the biology of disease-causing organisms (viruses, bacteria, and parasites). How natural selection and phylogeny influence pathogen-host interactions, human genetics, immunology, development, cancer, and diseases of senescence. Prerequisites: BISC 1111 and BISC 1112. Recommended background: BISC 2207 and BISC 2450.

BISC 3450W. Evolutionary Medicine. 3 Credits.
The application of evolutionary principles, including natural selection, adaptation, phylogenetics, and evolutionary constraints, to understanding health, disease, and the biology of disease-causing organisms (viruses, bacteria, and parasites). How natural selection and phylogeny influence pathogen-host interactions, human genetics, immunology, development, cancer, and diseases of senescence. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: BISC 1111 and BISC 1112. Recommended background: BISC 2207 and BISC 2450. Same as BISC 3450.

BISC 3458. Plant Comparative Structure and Function. 3 Credits.
Fundamental principles of how organisms are built, investigating trade-offs and coordination in design, how variation in structure influences physiological function in different ecological settings, and how relations among plants shape structure and function and responses to ecological gradients. Prerequisite: BISC 1111 and BISC 1112 or permission of instructor.

BISC 3459. Field Biology. 4 Credits.
Overview of the approaches and techniques used by contemporary field biologists for cataloging, quantifying, and comparing patterns of biodiversity across plants, animals, and fungi at multiple spatial and temporal scales. Prerequisites: BISC 1111 and BISC 1112. Recommended background: BISC 2454.

BISC 3460. Conservation Biology. 3 Credits.
Theory and practice of conserving biological diversity. Ecological patterns of biodiversity, biology of small populations, and conservation case studies. Use of ecological modeling software to explore various topics. Prerequisites: BISC 1111, BISC 1112 and BISC 2454; or permission of the instructor.

BISC 3461. Plant-Animal Interactions. 3 Credits.
Review of the major ecological and evolutionary interactions that occur between plants and animals in natural and managed ecosystems. Prerequisites: BISC 1111 and BISC 1112 or permission of the instructor. Recommended background: BISC 2450 or BISC 2454.

BISC 3462. Plant¾Animal Interactions Laboratory. 1 Credit.
Field and laboratory study of temperate interactions between plants and animals. Group projects focus on original data collection, analysis, and interpretation. Prerequisite or concurrent registration: BISC 3461 and BISC 1111– BISC 1112 except by permission of the instructor. Laboratory fee.

BISC 3463. Ecological and Evolutionary Genetics. 3 Credits.
An analysis of the ecological and genetic basis of evolutionary change. Topics include the organization and maintenance of genetic variation within and among natural populations, the genetic basis of complex traits, molecular ecology analyses, and genotype by environment interactions. Prerequisite: BISC 2450 or permission of instructor and BISC 1111– BISC 1112 except by permission of the instructor.

BISC 3464. Ecology and Evolution of Societies. 3 Credits.
Study of broadly important ecological and evolutionary patterns and processes exemplified by organisms that have undergone the major evolutionary transition to living in societies. Prerequisites: BISC 1111, BISC 1112. Recommended background: BISC 2454 or BISC 2454W.

BISC 4132. Advanced Cellular-Molecular Biology. 3 Credits.
An advanced cell biology course with emphasis on biochemistry and molecular biology; illustrations are drawn from different organisms and human biology. Oral and written analysis of research literature. For upper-level undergraduates and beginning graduate students. Restricted to Instructor approval required. Recommended background: Six credits in the Cellular and Molecular category.

BISC 4171. Undergraduate Research. 1-12 Credits.
Admission by permission of the staff member concerned. May be repeated for credit. Prerequisite: CHEM 2152 and BISC 1111– BISC 1112 except by permission of the instructor; 16 credit hours in biological science courses. Laboratory fee.

BISC 4171W. Undergraduate Research. 1-12 Credits.
Admission by permission of the staff member concerned. May be repeated for credit. Prerequisite: Chem 2152 and BISC 1111– BISC 1112 except by permission of the instructor; 16 credit hours in biological science courses. Laboratory fee.

BISC 4172. Independent Study. 1-3 Credits.
Prescribed reading list and consultations with staff advisor culminating in a written report and/or examination. Prerequisite: BISC 1111– BISC 1112 and permission of the instructor.

BISC 4173. Independent Study-Developmental Biology. 2 Credits.

BISC 4174. Independent Study-Organismic Biology. 2 Credits.

BISC 4175. Independent Study-Genetic/Evolutionary Biology. 2 Credits.

BISC 4176. Independent Study-Environmental Bio. 2 Credits.

BISC 4180. Undergraduate Research Seminar. 1 Credit.

BISC 6101. Responsible Research. 1 Credit.
This course provides an introduction to the ethical, social, and legal foundations of scientific practice. It is intended to provide a forum for graduate students and postdocs to discuss almost every aspect of the academic life of a scientist, except specific disciplinary topics that are treated in regular courses. Ensuring ethical conduct is an essential part of basic, applied, and clinical research, especially in the context of competitive, collaborative, and international settings so common nowadays. Students will be exposed to case studies typifying complex social, ethical, and legal dilemmas that may arise in the conduct of research.

BISC 6102. Scientific Presentation. 1 Credit.
This course allows students to perfect their Scientific Presentation skills. In this course, students will present, in front of peers and faculty, their current research projects and plans for future work leading towards a complete thesis or dissertation. Student presentations will be designed to address a general audience of biologists, containing sufficient background information to provide perspective insights into the fundamental questions being asked, and at the same time providing enough detail on technical issues and analytical procedures to allow evaluation of potential outcomes. The Class will provide a friendly forum for students to collect feedback and comments, to discuss project design, content, and general significance of their research.

BISC 6132. Advanced Cellular-Molecular Biology. 3 Credits.
Advanced cellular biology for upper-level undergraduates and beginning graduate students; emphasis on biochemistry and molecular biology; organisms and human biology with emphasis on oral and written analysis of research literature. Permission of the instructor is required. Restricted to students who have completed 16 credits of 2000-4000 level biology courses, including 6 credits in the cell and molecular category. Prerequisites: Graduate standing or undergraduates with 16 credits of 2000-4000 level biology courses, including 6 credits in the Cell and Molecular category and permission of instructor. Recommended background: 4-6 upper level biology courses, including 2 courses in the Cell and Molecular area.

BISC 6205. Current Topics in Cell Smith, Donaldson, Eleftherianos, Jeremic. 1-2 Credits.
May be repeated for credit. Prerequisite: BISC 2202 or BISC 3209.

BISC 6206. Current Topics in Evolutionary Ecology. 1-2 Credits.
May be repeated for credit.

BISC 6207. Seminar: Current Topics in Systematic Biology. 1-2 Credits.
Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs. Prerequisite: BISC 6210.

BISC 6210. Methods of Study of Evolution. 4 Credits.
A rigorous and up-to-date treatment of the theory and methods of systematics, including phylogenetic inference and its applications in evolutionary biology. Laboratory fee. Prerequisite: BISC 2450 .

BISC 6211. Biogeography/Coevolution. 4 Credits.
Survey of methods, techniques, and theory in biogeography. Geological and paleontological aspects of biogeography; large-scale biogeographic patterns; speciation and phylogeography. Prerequisite: BISC 2451 or BISC 2452 or permission of the instructor.

BISC 6213. Descriptive Systematics: Documenting Biodiversity. 3 Credits.
Study of those aspects of systematic biology concerned with description and inventory of biodiversity. Prerequisite: BISC 6210.

BISC 6214. The Phylogenetic Basis of Comparative Biology. 3 Credits.
The use of phylogenetic hypotheses to study questions in evolutionary biology and ecology. Prerequisite: BISC 6210; STAT 1127 .

BISC 6215. Vertebrate Phylogeny. 4 Credits.
A survey of vertebrate diversity, emphasizing evolutionary relationships and adaptations of the major groups. Prerequisite: BISC 2450 ; BISC 2332 recommended.

BISC 6216. Morphological Systematics. 4 Credits.
Methods of studying organismal morphology as a means of inferring phylogeny, emphasizing the concept of homology. Laboratory includes techniques of observing, measuring, and imaging morphology in systematic biology, including morphometric methods. Laboratory fee. Prerequisite: BISC 6210 .

BISC 6218. Innate Immunity. 3 Credits.
Discussion of innate immune systems in a wide variety of organisms; from sponges to vertebrates plus higher plants. Prerequisite: BISC 3212; recommended BISC 2202, BISC 2207, BISC 3209, BISC 2330.

BISC 6219. Host-Microbe Interactions. 3 Credits.
Overview of the molecular, genetic, cellular, and physiological basis of symbiotic and pathogenic interactions between plants and invertebrate and vertebrate animals and various microbial organisms, including bacteria, fungi, and viruses. Prerequisites: Microbiology (BISC 2337). Recommended background: Intro to Immunology (BISC 3212); Cell Biology (BISC 2202); Invertebrate Zoology (BISC 2330); Parasitology (BISC 2339), or permission of instructor.

BISC 6224. Molecular Evolution. 3 Credits.

BISC 6225. Molecular Phylogenetics. 4 Credits.
Review of molecular phylogenetic methods including data recovery, alignment, weighting, character optimization, and phylogenetic inference methods. Prerequisite: BISC 2207, BISC 2450, and BISC 6210.

BISC 6227. Seminar: Genetics. 3 Credits.
Review of selected topics in genetics, with emphasis on current literature; topics of special interest to participants encouraged. May be repeated for credit. Prerequisite: BISC 2207.

BISC 6228. Population Genetics. 3 Credits.
Origin, maintenance, and possible significance of genetic variation in populations. Selection, genetic drift, and population structure are emphasized. Both theoretical and applied aspects of population genetics are discussed. Same as FORS 6247. Prerequisite: BISC 2207.

BISC 6230. Human Genetics. 3 Credits.
Genetic mechanisms of transmission and expression of human traits, with emphasis on biochemical and cytogenetic aspects. Prerequisite: BISC 2207; previous course work in cell biology or cell biochemistry strongly recommended.

BISC 6243. Seminar: Ecology. 3 Credits.
In-depth study of selected topics, including reports on original publications. May be repeated for credit. Prerequisite: BISC 2454.

BISC 6249. Seminar: Developmental Biology. 3 Credits.
Discussion and reports on recent research on the endocrinological, genetic, and biochemical aspects of animal development. Prerequisite: a course in developmental biology or cell biology.

BISC 6251. Evolutionary Developmental Biology. 3 Credits.
Developmental mechanisms involved in the morphological changes that occur during the course of evolution.

BISC 6252. Seminar: Neurobiology. 3 Credits.
Study of current publications in functional neurobiology. May be repeated for credit with instructor's permission.

BISC 6274. Gene Regulation and Genetic Engineering. 3 Credits.
The control of gene expression as illustrated by several prokaryotic and eukaryotic model systems: discussions of recombinant DNA techniques. Prerequisite: BISC 2207.

BISC 6275. Introduction to Recombinant DNA Techniques. 3 Credits.
Lecture, 1 hour; laboratory, 4 hours. Basic techniques of genetic manipulation: cloning of genes, transformation of bacteria, PCR procedures, DNA sequencing, and other techniques. Prerequisite: BISC 2202 or BISC 2207 or BISC 2337 and permission of instructor. Laboratory fee.

BISC 6295. Research. 1-12 Credits.
Investigation of special problems. May be repeated for credit.

BISC 6998. Thesis Research. 3 Credits.

BISC 6999. Thesis Research. 3 Credits.

BISC 8998. Advanced Reading & Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

BISC 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

BACHELOR OF ARTS WITH A MAJOR IN BIOLOGY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Required		
BISC 1111	Introductory Biology: Cells and Molecules *	
BISC 1112	Introductory Biology: The Biology of Organisms *	
BISC 2202	Cell Biology	
BISC 2207	Genetics	
BISC 2450	Organic Evolution	
BISC 2454	General Ecology	
or BISC 2452	Animal Behavior	
or BISC 3460	Conservation Biology	
CHEM 1111	General Chemistry I	
CHEM 1112	General Chemistry II	
CHEM 2151	Organic Chemistry I	
CHEM 2152	Organic Chemistry II	

CHEM 2153	Organic Chemistry Laboratory I
CHEM 2154	Organic Chemistry Laboratory II
CHEM 3165	Biochemistry I
or BISC 3261	Introductory Medical Biochemistry

Electives

A minimum of 15 credits in elective courses. At least three courses must be a laboratory or have a laboratory component; these laboratory courses must numbered at the 2000 level or above.

Students who complete 3 credits of BISC 4171 or BISC 4171W, Undergraduate Research, may count this experience towards one of their laboratory requirements.

At least one 3 credit course from each of the four elective categories below

Biology Electives

Code	Title	Credits
Systems category		
BISC 2208	Genetics Laboratory *	
BISC 2213	Biology of Cancer	
BISC 2214	Developmental Biology *	
BISC 2220	Developmental Neurobiology	
BISC 2318	Histology *	
BISC 2320	Neural Circuits and Behavior	
BISC 2580	Biotechnology	
BISC 2580W	Biotechnology	
BISC 2583	Biology of Proteins	
BISC 3122	Human Physiology	
BISC 3123	Human Physiology Lab *	
BISC 3165	Biochemistry I	
BISC 3209	Molecular Biology *	
BISC 3210	Nanobiotechnology	
BISC 3211	Nanobiotechnology Laboratory *	
BISC 3212	Immunology	
BISC 3262	Biochemistry Laboratory *	
BISC 3263	Special Topics in Biochemistry	
BISC 3320	Human Neurobiology	
BISC 4132	Advanced Cellular-Molecular Biology	
BISC 6205	Current Topics in Cell Smith, Donaldson, Eleftherianos, Jeremic	
BISC 6218	Innate Immunity	
BISC 6219	Host-Microbe Interactions	
Organisms category		
BISC 2000	Sophomore Colloquium	
BISC 2305	Plant Biology	
BISC 2330	Invertebrate Zoology *	
BISC 2331	Insect Biology	
BISC 2335	Insect Biology Lab *	
BISC 2332	Comparative Vertebrate Anatomy *	
BISC 2333	Evolution and Extinction of Dinosaurs	
BISC 2334W	Integrative Biology of Fishes	
BISC 2337	Introductory Microbiology *	
BISC 2337W	Introductory Microbiology *	
BISC 2339	Parasitology *	
BISC 6215	Vertebrate Phylogeny *	
BISC 6249	Seminar: Developmental Biology	
Evolution, Ecology, and Environment category		
BISC 2451	History of Life	
BISC 3450	Evolutionary Medicine	
BISC 3450W	Evolutionary Medicine	
BISC 2452	Animal Behavior	
BISC 2453	Animal Behavior Lab *	
BISC 2454	General Ecology *	
BISC 3458	Plant Comparative Structure and Function	
BISC 3459	Field Biology *	
BISC 3460	Conservation Biology	
BISC 3461	Plant-Animal Interactions	
BISC 3462	Plant¾Animal Interactions Laboratory *	

BISC 3464	Ecology and Evolution of Societies
BISC 2467	Marine Biology *
BISC 6210	Methods of Study of Evolution
BISC 6211	Biogeography/Coevolution
BISC 6243	Seminar: Ecology
Quantitative category	
MATH 1231	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
STAT 1091	Principles-Statistical Methods
STAT 1127	Statistics for the Biological Sciences
BISC 2584	Introduction to Bioinformatics

*Indicates laboratory course

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must maintain a cumulative 3.5 grade-point average in biological sciences courses and at least a 3.0 cumulative overall grade-point average. Students who meet these criteria and wish to pursue special honors must complete an approved research project under faculty direction.

BACHELOR OF SCIENCE WITH A MAJOR IN BIOLOGY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Required of all students:

Code	Title	Credits
Course requirements		
BISC 1111	Introductory Biology: Cells and Molecules *	
BISC 1112	Introductory Biology: The Biology of Organisms *	
BISC 2202	Cell Biology	
BISC 2207	Genetics	
BISC 2450	Organic Evolution	
BISC 2454	General Ecology *	
or BISC 2452	Animal Behavior	
or BISC 3460	Conservation Biology	
CHEM 1111	General Chemistry I	
CHEM 1112	General Chemistry II	
PHYS 1011	General Physics I	
or PHYS 1021	University Physics I	
or PHYS 1025	University Physics I with Biological Applications	
Concentration requirements		
Students must fulfill the requirements of one of the three concentrations shown below. All concentrations require a minimum of 18 credits in upper-level biology (BISC) courses.		
Elective and laboratory course requirements		
Students must take a minimum of 15 credits in elective courses (see lists below). At least three BISC courses numbered 2000 or above must have a laboratory component, either built into the course or as a separate course number. Students who complete 3 credits of BISC 4171 or BISC 4171W, Undergraduate Research, may count this experience towards one of their laboratory requirements.		
Honors thesis		
Students who qualify based on academic performance are strongly encouraged to develop an honors thesis based on their research experience.		

Concentrations

General Biology Concentration

Code	Title	Credits
Required		
CHEM 2151	Organic Chemistry I	
CHEM 2152	Organic Chemistry II	
CHEM 2153	Organic Chemistry Laboratory I	
CHEM 2154	Organic Chemistry Laboratory II	
CHEM 3165	Biochemistry I	
or BISC 3261	Introductory Medical Biochemistry	
Electives		

At least one 3-credit course from each elective category listed below for a total of 12 credits.

Cellular and Molecular Biology Concentration

Code	Title	Credits
Required		
BISC 3209	Molecular Biology	
CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II	
BISC 3261	Introductory Medical Biochemistry	
or CHEM 3165	Biochemistry I	
Electives		

At least one 3-credit course from each elective category listed below for a total of 12 credits.

Ecology, Evolution, and Environment Concentration

Code	Title	Credits
Required		

At least one 3-credit course from the systems electives and organism electives lists; at least 6 credits from the evolution, ecology and environment electives list, including one course with a field component; and 6 credits from the quantitative electives list, including at least one statistics course.

Biology Electives

Code	Title	Credits
Systems category		
BISC 2208	Genetics Laboratory *	
BISC 2213	Biology of Cancer	
BISC 2214	Developmental Biology *	
BISC 2220	Developmental Neurobiology	
BISC 2318	Histology *	
BISC 2320	Neural Circuits and Behavior	
BISC 2580	Biotechnology	
BISC 2580W	Biotechnology	
BISC 2583	Biology of Proteins	
BISC 3122	Human Physiology	
BISC 3123	Human Physiology Lab *	
BISC 3165	Biochemistry I	
BISC 3209	Molecular Biology *	
BISC 3210	Nanobiotechnology	
BISC 3211	Nanobiotechnology Laboratory *	
BISC 3212	Immunology	
BISC 3262	Biochemistry Laboratory *	
BISC 3263	Special Topics in Biochemistry	
BISC 3320	Human Neurobiology	
BISC 4132	Advanced Cellular-Molecular Biology	
BISC 6205	Current Topics in Cell Smith, Donaldson, Eleftherianos, Jeremic	
BISC 6218	Innate Immunity	
BISC 6219	Host-Microbe Interactions	
Organisms category		
BISC 2000	Sophomore Colloquium	
BISC 2305	Plant Biology	
BISC 2330	Invertebrate Zoology *	
BISC 2331	Insect Biology	
BISC 2335	Insect Biology Lab *	
BISC 2332	Comparative Vertebrate Anatomy *	
BISC 2333	Evolution and Extinction of Dinosaurs	
BISC 2334W	Integrative Biology of Fishes	
BISC 2337	Introductory Microbiology *	
BISC 2337W	Introductory Microbiology *	
BISC 2339	Parasitology *	
BISC 6215	Vertebrate Phylogeny *	
BISC 6249	Seminar: Developmental Biology	
Evolution, Ecology, and Environment category		
BISC 2451	History of Life	
BISC 3450	Evolutionary Medicine	
BISC 3450W	Evolutionary Medicine	

BISC 2452	Animal Behavior
BISC 2453	Animal Behavior Lab *
BISC 2454	General Ecology *
BISC 3458	Plant Comparative Structure and Function
BISC 3459	Field Biology *
BISC 3460	Conservation Biology
BISC 3461	Plant-Animal Interactions
BISC 3462	Plant¾Animal Interactions Laboratory *
BISC 3464	Ecology and Evolution of Societies
BISC 2467	Marine Biology *
BISC 6210	Methods of Study of Evolution
BISC 6211	Biogeography/Coevolution
BISC 6243	Seminar: Ecology
Quantitative category	
MATH 1231	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
STAT 1091	Principles-Statistical Methods
STAT 1127	Statistics for the Biological Sciences
BISC 2584	Introduction to Bioinformatics

*Indicates laboratory course

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with special honors, a student must maintain a cumulative 3.5 grade-point average in biological sciences courses and at least a 3.0 cumulative overall grade-point average. Students who meet these criteria and wish to pursue special honors must complete an approved research project under faculty direction.

BACHELOR OF SCIENCE WITH A MAJOR IN BIOLOGY AND MASTER OF SCIENCE IN THE FIELD OF BIOLOGICAL SCIENCES

The Department of Biological Sciences offers a bachelor of science with a major in biology and master of science in the field of biological sciences degree program. The program allows students to take a specified number of graduate credits as part of their undergraduate degree, thereby decreasing the number of credits normally required for the master's degree.

Students interested in the combined degree program should confer with the department's graduate advisor early in their junior year. Visit the program website (http://biology.columbian.gwu.edu/undergraduate-degree-programs-syllabi) for additional information.

MINOR IN BIOLOGY

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in prerequisite courses and 12 credits in elective courses.

The following requirements must be fulfilled: 20 credits, including 8 credits in prerequisite courses and 12 credits in elective courses.

Code	Title	Credits
Prerequisites		
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
Electives		
12 credits in biological sciences (BISC) courses at the 2000-3000 level.		

MASTER OF SCIENCE IN THE FIELD OF BIOLOGICAL SCIENCES

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

30 credits: Thesis option—24 credits in approved elective courses and 6 credits in thesis; non-thesis option—with departmental approval, 36 credits in approved elective courses; for all students—successful completion of a master's comprehensive examination.

DOCTOR OF PHILOSOPHY IN THE FIELD OF BIOLOGICAL SCIENCES

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy Program (p. 82).

The required curriculum and program requirements as outlined below:

Code	Title	Credits
Requirements for students entering with a bachelor's degree:		
72 credits prior to graduation.		
48 credits of approved graduate-level course work to be advanced to candidacy.		
At least 12 credits of dissertation research (BISC 8999).		
Successful completion of a general examination, comprising both written and oral examinations, to be advanced to candidacy.		
Requirements for students entering with a master's degree:		
72 credits prior to graduation.		
48 credits of approved graduate-level course work to be advanced to candidacy (includes up to 30 credits transferred from the M.S. degree).		
At least 12 credits of dissertation research (BISC 8999).		
Successful completion of a general examination, comprising both written and oral examinations, to be advanced to candidacy.		

The program of study and fields of study are determined in consultation with an advisory committee appointed for each candidate.

Major research fields

- Cell and molecular biology
- Systematics
- Evolution
- Ecology

BIOMEDICAL SCIENCES

The interdisciplinary doctoral programs in the biomedical sciences are organized within the Institute for Biomedical Sciences. The first full year of study toward the Ph.D. programs in biochemistry and systems biology, microbiology and immunology, and molecular medicine is offered through the Institute. All programs are taken on a full-time basis. Faculty are drawn from the Columbian College of Arts and Sciences and the School of Medicine and Health Sciences, including scientists from the Children's Research Institute of Children's National Health System.

Students are admitted directly into the Institute for Biomedical Sciences through the Columbian College of Arts and Sciences. At the end of the first year of study, a student selects one of the three Ph.D. fields (i.e., biochemistry and systems biology, microbiology and immunology, or molecular medicine) and completes remaining degree requirements in the selected program.

GRADUATE

Doctoral programs

- Doctor of Philosophy in the field of biochemistry and systems biology (p. 143)
- Doctor of Philosophy in the field of microbiology and immunology (p. 143)
- Doctor of Philosophy in the field of molecular medicine (p. 144)

FACULTY

Committee on Biomedical Sciences L. Werling *(Director)*, A. Chiaramello, A. Colberg-Poley, R.P. Donaldson, V. Gallo, E. Hoffman, A. Jeremic, D. Mendelowitz, N. Lee, D. Leitenberg, M. Rose

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

- Biomedical Sciences (BMSC) (p. 1056)
- Microbiology (MICR) (p. 1353)
- Molecular Medicine (MMED) (p. 1353)
- Pharmacology (PHAR) (p. 1370)

DOCTOR OF PHILOSOPHY IN THE FIELD OF BIOCHEMISTRY AND SYSTEMS BIOLOGY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Prerequisite: A bachelor's degree in biological sciences, chemistry, or a related field.

The following requirements must be fulfilled: 72 credits.

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy Program (p. 82).

Code	Title	Credits
Required		
ANAT 6160	Clinically Oriented Human Functional Neuroanatomy	
or MICR 8210	Infection and Immunity	
or PHAR 6116	Pharmacogenomics and Personalized Medicine	
BMSC 8210	Genes to Cells	
BMSC 8212	Developmental Cell Biology and Systems Physiology	
BMSC 8215	Lab Rotations	
BMSC 8216	Career Skills for the Biomedical Sciences	
BMSC 8217	Career Skills for the Biomedical Sciences	
BMSC 8218	Career Skills for the Biomedical Sciences	
BMSC 8230	Molecular Basis of Human Disease	
BMSC 8231	Advanced Proteomics Methods and Applications	
BMSC 8234	Seminar in Systems Biology	
BMSC 8235	Applied Biostatistics for Basic Research	
BMSC 8999	Dissertation Research (taken for 12 - 24 credits)	
CSCI 3571	Introduction to Bioinformatics	
Electives		
20-32 credits in elective courses. Recommended electives include:		
BMSC 8237	Muscle: Heath and Disease	
BMSC 8998	Readings and Research	
MMED 8214	Molecular Medicine Seminar	
MMED 8282	Neural Development and Neurodevelopmental Disorders	
MMED 8283	Current Topics in Neuroscience	
PHAR 6205	Pharmacology	

Research fields

- Molecular basis of inherited muscle and CNS disease utilizing DNA gene chip technology
- Genomic, epigenetic, metabolomic, and bioinformatic analyses
- Biomarkers
- Mechanistic pathways, genomics, proteomics, clinical medicine
- Autoimmune and inflammatory responses in disease
- Co-regulator biology
- Cancer

DOCTOR OF PHILOSOPHY IN THE FIELD OF MICROBIOLOGY AND IMMUNOLOGY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy Program (p. 82).

Code	Title	Credits
Core curriculum		
BMSC 8210	Genes to Cells	
BMSC 8212	Developmental Cell Biology and Systems Physiology	
BMSC 8216	Career Skills for the Biomedical Sciences	

BMSC 8217	Career Skills for the Biomedical Sciences
BMSC 8218	Career Skills for the Biomedical Sciences
3 credits in	
BMSC 8215	Lab Rotations

Code	Title	Credits
Microbiology and immunology courses		
MICR 8210	Infection and Immunity	
MICR 8230	Molecular and Cellular Immunology	
One approved statistics course		
One of the following courses		
ANAT 6160	Clinically Oriented Human Functional Neuroanatomy	
BMSC 8230	Molecular Basis of Human Disease	
PHAR 6116	Pharmacogenomics and Personalized Medicine	
Minimum 24 credits in elective courses		
Recommended electives include:		
BIOC 6234	Biochemical and Bioinformatic Approaches to Protein Structure and Function	
BMSC 8231	Advanced Proteomics Methods and Applications	
BMSC 8233	Integrative Bioinformatics	
MICR 6212	Pathogenic Bacteriology	
MICR 6233	Virology	
MICR 6236	Fdmntls/Geonomics&Proteomics I	
MICR 8270	Advanced Topics in Immunology	
MICR 8998	Advanced Reading and Research	
MMED 8221	The Basic Science of Oncology	
MMED 8222	Molecular Oncology	
Minimum 12 credits in		
MICR 8999	Dissertation Research	

Research fields

- Inflammatory responses
- Tumor immunology
- Vaccines
- Host– pathogen interaction
- Asthma
- Allergy
- Molecular virology
- Parasitology
- HIV

DOCTOR OF PHILOSOPHY IN THE FIELD OF MOLECULAR MEDICINE

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy Program (p. 82).

Prerequisite: a bachelor's degree in chemistry, biological sciences, or an approved related field.

Code	Title	Credits
The biomedical sciences core curriculum:		
BMSC 8210	Genes to Cells	
BMSC 8212	Developmental Cell Biology and Systems Physiology	
BMSC 8216	Career Skills for the Biomedical Sciences	
BMSC 8217	Career Skills for the Biomedical Sciences	
BMSC 8218	Career Skills for the Biomedical Sciences	
3 credits of the following:		
BMSC 8215	Lab Rotations	

Code	Title	Credits
Neuroscience specialization:		
First-year required courses		

ANAT 6160	Clinically Oriented Human Functional Neuroanatomy
and one of the following:	
BMSC 8230	Molecular Basis of Human Disease
PHAR 6116	Pharmacogenomics and Personalized Medicine
MICR 8210	Infection and Immunity
Second-year required courses	
MMED 8214	Molecular Medicine Seminar (taken twice)
MMED 8281	Molecular Pharmacology and Neurobiology of Excitable Tissues
MMED 8282	Neural Development and Neurodevelopmental Disorders
MMED 8283	Current Topics in Neuroscience
Elective courses	
MMED 8221	The Basic Science of Oncology
MMED 8222	Molecular Oncology
PHAR 6205	Pharmacology
MMED 8998	Advanced Reading and Research
Oncology specialization:	
First-year required courses	
Two of the following	
BMSC 8230	Molecular Basis of Human Disease
PHAR 6116	Pharmacogenomics and Personalized Medicine
MICR 8210	Infection and Immunity
ANAT 6160	Clinically Oriented Human Functional Neuroanatomy
Second-year required courses	
MMED 8214	Molecular Medicine Seminar (taken twice)
MMED 8221	The Basic Science of Oncology
MMED 8222	Molecular Oncology
Elective courses	
MMED 8281	Molecular Pharmacology and Neurobiology of Excitable Tissues
MMED 8282	Neural Development and Neurodevelopmental Disorders
MMED 8283	Current Topics in Neuroscience
MMED 8999	Dissertation Research
PHAR 6205	Pharmacology
Pharmacology specialization:	
First-year required courses	
PHAR 6116	Pharmacogenomics and Personalized Medicine
One of the following	
BMSC 8230	Molecular Basis of Human Disease
MICR 8210	Infection and Immunity
ANAT 6160	Clinically Oriented Human Functional Neuroanatomy
Second-year required courses	
MMED 8214	Molecular Medicine Seminar (taken twice)
PHAR 6205	Pharmacology
PHAR 6206	Advanced Pharmacology
Elective courses	
MMED 8281	Molecular Pharmacology and Neurobiology of Excitable Tissues
MMED 8282	Neural Development and Neurodevelopmental Disorders
MMED 8283	Current Topics in Neuroscience
MMED 8221	The Basic Science of Oncology
MMED 8222	Molecular Oncology
MMED 8998	Advanced Reading and Research
Electives for all specializations	
BMSC 8231	Advanced Proteomics Methods and Applications
BMSC 8233	Integrative Bioinformatics
BMSC 8234	Seminar in Systems Biology
BMSC 8235	Applied Biostatistics for Basic Research

BMSC 8237	Muscle: Heath and Disease
MICR 6212	Pathogenic Bacteriology
MICR 6230	Molecular & Cellular Immunolog
MICR 6233	Virology
MICR 6236	Fdmntls/Geonomics&Proteomics I
MICR 8270	Advanced Topics in Immunology
HSCI 6263	Biostatistics Transl Research
PHAR 6206	Advanced Pharmacology

Research fields

- Neuroscience—developmental neurobiology, neurodevelopmental disorders, white matter diseases, neurobehavioral disorders of childhood, brain injury and recovery, sensory processing, neurotransmitter systems, neurological channelopathies
- Oncology— cancer chemotherapy and mechanisms of resistance, tumor cell biology and metabolism, gene regulation, oncogenes and tumor suppressor genes, growth factors, immunotherapy, development of immunological and molecular markers for diagnosis and detection, tumor immunology, epidemiology and prevention, cancer and AIDS, mechanisms of metastasis, transgenic models of cancer, genomics and proteomics
- Pharmacology—neuropharmacology, cardiovascular physiology and pharmacology, biochemical and molecular pharmacology, molecular, genomic, and computational approaches for elucidating genetic networks underlying disease processes, such as cancer progression (i.e., metastatic potential, epithelial-mesenchymal transition)

BIOSTATISTICS

The Columbian College of Arts and Sciences offers the degrees of master of science and doctor of philosophy in the field of biostatistics. These degree programs are a collaboration between the Milken Institute School of Public Health and the Department of Statistics and Biostatistics Center.

GRADUATE

Programs are administered jointly by the Department of Statistics in the Columbian College of Arts and Sciences and the Department of Epidemiology and Biostatistics in the Milken Institute School of Public Health.

Master's program

- Master of Science in the field of biostatistics (p. 146)

Doctoral program

- Doctor of Philosophy in the field of biostatistics (p. 148)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BIOS 6295. Reading and Research. 1-12 Credits.
May be repeated for credit.

BIOS 6998. Thesis Research. 3 Credits.

BIOS 6999. Thesis Research. 3 Credits.

BIOS 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

BIOS 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

MASTER OF SCIENCE IN THE FIELD OF BIOSTATISTICS

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

33 credits, including 27 credits in required courses and 6 credits in elective courses, and successful completion of a master's comprehensive examination.

Admission Considerations

The courses listed below (or course equivalents) are prerequisites for admission consideration and must appear on the student's transcript. Students may apply to the program only after they have fulfilled this requirement:

Code	Title	Credits
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
STAT 2118	Regression Analysis	

Applicants lacking the courses listed below (or course equivalents) will be considered for admission; however, if admitted, the student is required to complete these courses within two semesters of matriculation in the program. Credit earned in these courses does not count toward the 33 credits required for the degree and grades earned are not reflected in the overall grade point average.

Code	Title	Credits
MATH 2184	Linear Algebra I	
MATH 2233	Multivariable Calculus	
One of the following:		
STAT 1129	Introduction to Computing	
STAT 2183	Intermediate Stat Lab/Packages	
PUBH 6249	StatPackages/DataMgt&DataAnlys	

Degree Requirements

Code	Title	Credits
Required		
PUBH 6001	Biological Concepts in Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6265	Design of Medical Studies	
PUBH 6266	Biostatistical Methods (Basis for Master's Comprehensive Examination)	
PUBH 6299	Topics in Epi/Bio	
STAT 6201	Mathematical Statistics I	
STAT 6202	Mathematical Statistics II	
STAT 6210	Data Analysis	
STAT 6227	Survival Analysis	
Electives		
6 credits from the following:		
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6242	ClinicalEpid&Decision Analysis	
PUBH 6244	Cancer Epidemiology	
PUBH 6245	InfectiousDisease Epidemiology	
PUBH 6246	InjuryEpidemiology&Prevention	
PUBH 6248	EpidMethods/OlderPopulations	
PUBH 6250	Epidemiology of HIV/AIDS	
STAT 3187	Introduction to Sampling	
STAT 4181	Applied Time Series Analysis	
STAT 4188	Nonparametric Stat Inference	
STAT 6215	Applied Multivariate Analysis I	
STAT 6216	Applied Multivariate Analysis II	
STAT 6217	Design of Experiments	
STAT 6223	Bayesian Statistics: Theory and Applications	
STAT 6231	Contingency Table Analysis	
STAT 6242	Regression Graphics/Nonparametric Regression	
STAT 6287	Modern Theory of Sample Surveys	
STAT 8226	Advanced Biostatistical Methods	
STAT 8265	Multivariate Analysis	
STAT 8273	Stochastic Processes I	
STAT 8281	Advanced Time Series Analysis	
STAT 8288	Modern Theory/Sample Surveys	
Consulting		
PUBH 6258	Adv Topics/Biostat Consulting	
PUBH 6283	Biostatistics Consulting Practicum	

The Master's Comprehensive Examination

The master's comprehensive examination is a written exam in the field of biostatistics and is based on the content covered in PUBH 6266 Biostatistical Methods. It is administered by the faculty of the Department of Epidemiology and Biostatistics in the Milken Institute School of Public Health.

DOCTOR OF PHILOSOPHY IN THE FIELD OF BIOSTATISTICS

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy Program (p. 82).

Undergraduate course requirements (or equivalents to these GW courses) for admission consideration:

MATH 1231	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
STAT 2118	Regression Analysis
MATH 2233	Multivariable Calculus

Additional course requirements* (or equivalents to these GW courses):

MATH 2184	Linear Algebra I
One of the following:	
STAT 1129	Introduction to Computing
STAT 2183	Intermediate Stat Lab/Packages
PUBH 6249	StatPackages/DataMgt&DataAnlys

* Applicants lacking these courses (or equivalents to these GW courses) will be considered for admission, but, if admissible, will be admitted conditionally with the expectation that these courses will be satisfactorily completed within two semesters following matriculation in the program. These credits do not count as credit toward the 72-credit graduation requirement nor are grades earned in additional courses reflected in the overall grade-point average.

Ph.D. in the field of biostatistics degree requirements: 72 credits of coursework and research, with a minimum of 51 credits of courses and a minimum of 12 credits of dissertation research.

Required statistics and public health core courses:

Required statistics core courses: 27 credits	
STAT 6201	Mathematical Statistics I
STAT 6202	Mathematical Statistics II (* Comprehensive Exam)
STAT 6210	Data Analysis
STAT 6213	Intermediate Probability and Stochastic Processes (* Comprehensive Exam)
PUBH 8365	Design of Medical Studies
PUBH 8366	Biostatistical Methods (* Comprehensive Exam)
STAT 8226	Advanced Biostatistical Methods
STAT 6227	Survival Analysis
STAT 8263	Advanced Statistical Theory I
Required public health core courses: 12 credits	
PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6121	Environmental and Occupational Epidemiology
One of the following:	
PUBH 6299	Topics in Epi/Bio
PUBH 6007	Social&BehaviorAppr-Pub.Hlth
or PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6006	Mgt & Policy Approaches to PH
9 credits from the following approved elective courses:	
Approved statistics elective courses (at least 3 credits must be taken from among the first 3 courses noted below):	
STAT 6214	Applied Linear Models
STAT 6231	Contingency Table Analysis
STAT 8262	Nonparametric Inference
STAT 6207	Methods of Statistical Computing I
STAT 6208	Methods of Statistical Computing II
STAT 6215	Applied Multivariate Analysis I
STAT 6216	Applied Multivariate Analysis II
STAT 6217	Design of Experiments
STAT 6218	Linear Models
STAT 6223	Bayesian Statistics: Theory and Applications

STAT 6242	Regression Graphics/Nonparametric Regression
STAT 6287	Modern Theory of Sample Surveys
STAT 6289	Topics in Statistics
STAT 8257	Probability
STAT 8258	Distribution Theory
STAT 8263	Advanced Statistical Theory I
STAT 8264	Advanced Statistical Theory II
STAT 8265	Multivariate Analysis
STAT 8273	Stochastic Processes I
STAT 8274	Stochastic Processes II
STAT 8281	Advanced Time Series Analysis
STAT 8288	Modern Theory/Sample Surveys
BIOS 8998	Advanced Reading and Research (see advisor)
Approved public health elective courses:	
PUBH 6242	ClinicalEpid&Decision Analysis (recommended)
PUBH 6245	InfectiousDisease Epidemiology
PUBH 8419	Measurement in Public Health & Health Services
Consulting:	
Note: May be waived by the Biostatistics Program Director, based on written documentation of prior equivalent coursework or relevant work experience. Waiver of the consulting course increases the total number of electives by the number of consulting credits waived.	
PUBH 6258	Adv Topics/Biostat Consulting
PUBH 6283	Biostatistics Consulting Practicum
Dissertation research:	
12-24 credits of the following:	
BIOS 8999	Dissertation Research

General and final examinations

The General Examination is given in two parts:

- Part I is a written comprehensive examination based on the course content of STAT 6202 Mathematical Statistics II, STAT 6213 Intermediate Probability and Stochastic Processes (administered by faculty of the Department of Statistics), and PUBH 6266 Biostatistical Methods (administered by the faculty of the Department of Epidemiology and Biostatistics). Students are expected to take the comprehensive examination within 24 months from the date of enrollment in the program. In addition, students are required to make up any deficiencies prior to taking the examination, e.g., by enrolling in appropriate master's-level courses as needed. A student who fails to pass the comprehensive examination may, with the approval of the faculty, repeat the examination the following year. Failure on the second attempt will result in termination from the Ph.D. program.
- Part II, the research proposal, consists of an oral examination based on a written dissertation research proposal. As soon as feasible after successful completion of the comprehensive exam, students are encouraged to identify a dissertation advisor and a topic of research. The written dissertation proposal is then submitted to the student's Dissertation Research Committee, and the student will make an oral presentation of his or her proposal to the Committee. The Committee will determine the student's readiness to pursue and successfully complete the proposed research, in addition to the appropriateness of the specific problem for dissertation-level research.

Upon successful completion of the required coursework and both parts of the General Examination, the candidate will generally be recommended to the Associate Dean for Graduate Affairs of The Columbian College of Arts and Sciences (CCAS) for promotion to Ph.D. Candidacy: the dissertation research. A candidate must file an approved dissertation research plan with the CCAS before being admitted to Ph.D. Candidacy. Prior to completion of the General Examination, a student may register for at most 6 credits of BIOS 8999 Dissertation Research.

Consult with the biostatistics program director or academic advisor for the dissertation guidelines.

Professional enhancement requirement: 8 hours

Professional enhancement activities supplement the academic curriculum and help prepare students to participate actively in the professional community. They enhance practical knowledge and awareness of public health issues – either in general or in a student's specific area of study.

Students can fulfill this requirement by attending workshops, seminars, or other relevant professional meetings, which are often held at SPH and in the metropolitan Washington, DC area. Examples of conference sponsors include the National Academy for State Health Policy, the Pan American Health Organization, the American Public Health Association, the American College of Healthcare Executives, the Area Health Education Center, the American College of Sports Medicine, and the National Athletic Trainer's Association. Opportunities for professional enhancement are regularly publicized via the

SPH Listserv and through the department or the biostatistics academic advisor.

Students must submit documentation of professional enhancement activities to the biostatistics academic advisor, which includes a ***prior*** approval, a description of the program agenda, and proof of attendance before applying for graduation.

CHEMISTRY

Part of the Columbian College of Arts and Sciences, the Chemistry Department has a history that traces back to the very founding of the University. Bridging the sciences of biology, geology, and physics, chemistry is the central science that studies the composition, structure, properties, and behavior of matter at a molecular level. Students and faculty engage in a collaborative setting to address research problems of contemporary importance, focusing on biomolecular chemistry, energy and the environment, and materials chemistry.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in chemistry (p. 154)
- Bachelor of Science with a major in chemistry (p. 156)
- Combined Bachelor of Science with a major in chemistry/ Master of Forensic Sciences with a concentration in forensic chemistry (p. 160)

Minor

- Minor in chemistry (p. 160)

GRADUATE

Master's programs

- Master of Science in the field of chemistry (p. 161)
- Master of Science in the field of environmental and green chemistry (p. 161) (p. 161)

Doctoral program

- Doctor of Philosophy in the field of chemistry (p. 162)

FACULTY

Professors C.L. Cahill, M. King (Chair), S. Licht, J.H. Miller, D.E. Ramaker (Research), A. Vertes

Associate Professors C.S. Dowd, M.A. Massiah, V. Sadtchenko, H.H. Teng, M.J. Wagner, M.G. Zysmilich

Assistant Professors C. Besson, H. Chen, S. Gillmor, L.M. McClary, P. Nemes, A.M. Voutchkova

Professorial Lecturers E. Libelo, C. Woytowicz

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CHEM 1000. Dean's Seminar. 3 Credits.
Contemporary topics in chemistry.

CHEM 1003. Contemporary Science for Nonscience Majors. 3 Credits.
Contemporary topics in physical, biological, and medical science. Chem 1003 is not prerequisite to Chem 1004. Laboratory fee.

CHEM 1004. Contemporary Science for Nonscience Majors. 3 Credits.
Continuation of CHEM 1003. Contemporary topics in physical, biological, and medical science. Chem 1003 is not prerequisite to Chem 1004. Laboratory fee.

CHEM 1111. General Chemistry I. 4 Credits.
Atomic structure and properties; stoichiometry; gas, liquid, and solid state; chemical bonding; solutions; chemical kinetics and equilibria; thermodynamics; acids and bases; electrochemistry; descriptive chemistry. Prerequisite: one year of high school algebra. Laboratory fee.

CHEM 1112. General Chemistry II. 0-4 Credits.
Continuation of CHEM 1111. Atomic structure and properties; stoichiometry; gas, liquid, and solid state; chemical bonding; solutions; chemical kinetics and equilibria; thermodynamics; acids and bases; electrochemistry; descriptive chemistry. Prerequisite: CHEM 1111. Laboratory fee.

CHEM 2010. History of Chemistry. 2,3 Credits.

CHEM 2085. Environmental Chemistry. 3 Credits.
Chemistry and physics of the environment, with emphasis on water and air pollution; environmental analysis and modeling and their limitations.

CHEM 2122. Introductory Quantitative Analysis. 3 Credits.
Theory and practice of quantitative analysis by modern methods; evaluation of analytical data emphasizing detection and correction of experimental errors. Correlated with CHEM 2123. Prerequisite: CHEM 1112.

CHEM 2123. Introductory Quantitative Analysis Laboratory. 1 Credit.
Laboratory complement to CHEM 2122. Prerequisite or concurrent registration: CHEM 2122. Laboratory fee.

CHEM 2123W. Introductory Quantitative Analysis Laboratory. 1 Credit.
Laboratory complement to CHEM 2122. Prerequisite or concurrent registration: CHEM 2122. Laboratory fee.

CHEM 2151. Organic Chemistry I. 3 Credits.
Systematic treatment of the structure, preparation, properties, and reactions of the principal classes of organic compounds. Fundamental principles of stereochemistry, reaction mechanisms, and spectroscopic methods of analysis. Prerequisite to CHEM 2151: CHEM 1112.

CHEM 2152. Organic Chemistry II. 3 Credits.
Continuation of CHEM 2151. Systematic treatment of the structure, preparation, properties, and reactions of the principal classes of organic compounds. Fundamental principles of stereochemistry, reaction mechanisms, and spectroscopic methods of analysis. Prerequisite to CHEM 2152: CHEM 2151.

CHEM 2153. Organic Chemistry Laboratory I. 1 Credit.
Laboratory complement of CHEM 2151. Introduction to and practice in basic skills of synthesis, separation, purification, and identification of organic compounds. Prerequisite or concurrent registration: CHEM 2151. Laboratory fee.

CHEM 2154. Organic Chemistry Laboratory II. 1 Credit.
Continuation of CHEM 2153. Laboratory complement of CHEM 2152. Introduction to and practice in basic skills of synthesis, separation, purification, and identification of organic compounds. Prerequisite or concurrent registration: CHEM 2152. Prerequisite: CHEM 2153. Laboratory fee.

CHEM 3140. Geochemistry. 3 Credits.
Chemical systems and processes on the planet Earth; origins and interactions among and within the Earth's lithosphere, oceans, and atmosphere; origin, distribution, and behavior of the elements; radioactive and stable isotope systems. Aqueous geochemistry; geochemical cycles. Same as GEOL 3140. Prerequisite: GEOL 1001 or GEOL 1005; CHEM 1111–CHEM 1112.

CHEM 3143. Aqueous Geochemistry. 3 Credits.
Same as Geol 143.

CHEM 3165. Biochemistry I. 3 Credits.
Introduction to the chemistry of living cells; structure and function of proteins, lipids, carbohydrates, and nucleic acids; enzyme structure, mechanism, and regulation. Prerequisite: CHEM 2151; credit toward the degree cannot be earned for CHEM 3165 and for BIOC 3261/ BISC 3261.

CHEM 3166. Biochemistry II. 3 Credits.
Continuation of CHEM 3165. Introduction to the chemistry of living cells; structure and function of proteins, lipids, carbohydrates, and nucleic acids; enzyme structure, mechanism, and regulation. CHEM 3165 is prerequisite to CHEM 3166. Credit toward the degree cannot be earned for CHEM 3166 and for BIOC 3263/ BISC 3263.

CHEM 3166W. Biochemistry II. 3 Credits.
Continuation of CHEM 3165. Introduction to the chemistry of living cells; structure and function of proteins, lipids, carbohydrates, and nucleic acids; enzyme structure, mechanism, and regulation. CHEM 3165 is prerequisite to CHEM 3166. Credit toward the degree cannot be earned for CHEM 3166 and for BIOC 3263/ BISC 3263.

CHEM 3170. Introduction to Physical Chemistry. 3 Credits.
Thermodynamics, chemical and physical equilibria, kinetics, and spectroscopy. Examples taken from biological systems. Not open to chemistry majors. May not be taken for credit by students who have received credit for CHEM 3171– CHEM 3172 or an equivalent course. Prerequisites: CHEM 1111– CHEM 1112; MATH 1231; PHYS 1012 or PHYS 1022 or PHYS 1026; or permission of instructor.

CHEM 3171. Physical Chemistry I. 3 Credits.
Gas laws, chemical thermodynamics, chemical equilibrium, kinetics, quantum chemistry, atomic and molecular spectra, structure of solids, liquids, and macromolecules. Prerequisite: CHEM 1112; MATH 1231; PHYS 1022; or permission of instructor.

CHEM 3172. Physical Chemistry II. 3 Credits.
Continuation of CHEM 3171. Gas laws, chemical thermodynamics, chemical equilibrium, kinetics, quantum chemistry, atomic and molecular spectra, structure of solids, liquids, and macromolecules. Prerequisite: CHEM 3171.

CHEM 3173. Physical Chemistry Laboratory. 2 Credits.
Laboratory complement to CHEM 3171 and CHEM 3172. Exploration of molecular structure and bonding as revealed through observation. Laboratory fee. Prerequisites: CHEM 2123 and CHEM 3171; or corequisite: CHEM 2123 and CHEM 3171.

CHEM 3262. Biochemistry Laboratory. 2 Credits.
Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Same as BIOC 3261/ BISC 3261. Prerequisite: CHEM 3165 or BIOC 3261/ BISC 3261. Laboratory fee.

CHEM 3263W. Special Topics in Biochemistry. 2 Credits.

CHEM 3564. Lipid Biotechnology. 0-2 Credits.
Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Laboratory fee. Prerequisites: CHEM 3165 or BIOC 3261 or BISC 3261. (Same as BISC 3564 and BIOC 3564).

CHEM 4113. Chemical Instrumentation. 3 Credits.
Electronic analog measurements and control of electrical quantities in chemical instrumentation; digital and analog data conversion and optimization of electronic measurements in chemical instrumentation; computer interfacing and programming using PC-based systems. Prerequisite: CHEM 3172 and CHEM 4122. Laboratory fee.

CHEM 4122. Instrumental Analytical Chemistry. 3 Credits.
Theory of instrumental methods in qualitative and quantitative analysis, determination of structure, with emphasis on atomic and molecular spectrophotometry, infrared spectroscopy, nuclear magnetic resonance, mass spectrometry, chromatography, and electroanalysis. Prerequisite or concurrent registration: CHEM 3171 or permission of instructor. Correlated with CHEM 4123.

CHEM 4123. Instrumental Analytical Chemistry Laboratory. 2 Credits.
Laboratory complement to CHEM 4122. Prerequisite or concurrent registration: CHEM 3171 and CHEM 4122. Laboratory fee.

CHEM 4134. Descriptive Inorganic Chemistry. 3 Credits.
Emphasis on periodic trends and structure and reactivity of transitional metal complexes. Prerequisite: CHEM 2122.

CHEM 4195. Undergraduate Research. 1-3 Credits.
Research on problems approved by the staff. Approval must be obtained prior to registration. A final written report on the work is required. For students requesting Special Honors in chemistry, a poster or oral presentation is also required. May be repeated for credit. Majors are encouraged to take the course for two semesters. Laboratory fee.

CHEM 4195W. Undergraduate Research. 1-3 Credits.
Research on problems approved by the staff. Approval must be obtained prior to registration. A final written report on the work is required. For students requesting Special Honors in chemistry, a poster or oral presentation is also required. May be repeated for credit. Majors are encouraged to take the course for two semesters. Laboratory fee.

CHEM 6221. Spectrochemical Analysis. 3 Credits.
Theory and application of recent spectrometric methods of analysis, including advances in optimization techniques, optical instrumentation, atomic spectrometry, laser-based analytical techniques, X-ray methods, and surface analysis techniques. Prerequisite: CHEM 4122.

CHEM 6222. Biomedical Mass Spectrometry. 3 Credits.
Principles, instrumentation, methods, and applications of mass spectrometry; selected state-of-the-art methods demonstrate basic principles to show how new methods of analysis are developed; typical applications highlight solutions of biomedical problems, including proteomics and metabolomics. Prerequisite: CHEM 4122.

CHEM 6235. Advanced Inorganic Chemistry I. 3 Credits.
Application of modern chemical theories to inorganic substances and reactions; detailed study, developed from the periodic table, of the chemistry of the more common elements; electronic spectra and reaction mechanisms of complexes; organometallic chemistry; homogeneous and heterogeneous catalysis; bioinorganic chemistry. Prerequisite: CHEM 3172, CHEM 4134.

CHEM 6236. Advanced Inorganic Chemistry II. 3 Credits.
Continuation of CHEM 6235. Application of modern chemical theories to inorganic substances and reactions; detailed study, developed from the periodic table, of the chemistry of the more common elements; electronic spectra and reaction mechanisms of complexes; organometallic chemistry; homogeneous and heterogeneous catalysis; bioinorganic chemistry. Prerequisite: CHEM 3172, CHEM 4134.

CHEM 6238. Chem of Inorganic Materials. 3 Credits.
Synthesis, structure, and properties of materials such as ceramics, superconductors, ionic conductors, nanomaterials, and magnetic, optical, and electronic materials. Emphasis on traditional and low-temperature routes. Prerequisite: CHEM 3171– CHEM 3172.

CHEM 6251. Advanced Organic Chemistry I. 3 Credits.
Synthesis, reactions, and properties of organic compounds; fundamental theories of organic chemistry, emphasis on reaction mechanisms. Prerequisite: CHEM 2152.

CHEM 6252. Advanced Organic Chemistry II. 3 Credits.
Continuation of CHEM 6251. Synthesis, reactions, and properties of organic compounds; fundamental theories of organic chemistry, emphasis on reaction mechanisms. Prerequisite: CHEM 6251.

CHEM 6257. Physical-Organic Chemistry. 3 Credits.
The transition state theory of chemical kinetics, applications to reaction mechanisms; kinetic isotope effects, linear-free energy relationships, concentrated and "super" acids, Woodward–Hoffman rules, free radical reactions. Prerequisite: CHEM 6251 or permission of instructor.

CHEM 6259. Polymer Chemistry. 3 Credits.
A study of the preparation, properties, and structure of macromolecules. Prerequisite: CHEM 2152 and CHEM 3170 or CHEM 3171 or permission of instructor.

CHEM 6273. Chemical Thermodynamics. 3 Credits.
Application of thermodynamics to chemical problems. Emphasis on statistical calculation of thermodynamic properties. Prerequisite: CHEM 3172 or CHEM 6372.

CHEM 6277. Chemical Bonding. 3 Credits.
Quantum mechanics, approximate methods, electron spin, Pauli principle, atomic and molecular structure. Prerequisite: CHEM 3172 or CHEM 6372.

CHEM 6278. Molecular Spectroscopy. 3 Credits.
Applications of quantum mechanics and group theory to the interpretation of electronic, vibrational, rotational, and magnetic resonance spectroscopy. Prerequisite: CHEM 6277.

CHEM 6280. Energy and the Environment. 3 Credits.
Fundamentals of energy conversion in thermomechanical, thermochemical, electrochemical, and photoelectric processes in existing and future power and transportation systems, with emphasis on efficiency, environmental impact, and performance.

CHEM 6281. Environmental Chemistry: Air, Water, and Soil. 3 Credits.
Survey of the behavior, movement and impact of natural and man-made chemicals in all layers of the environment in the context of the atmosphere, hydrosphere, and lithosphere; the effects of acid rain, sewage treatment, ozone destruction, anthropogenic climate change, air pollution, and eutrophication.

CHEM 6282. Green Industrial Chemistry. 3 Credits.
Introduction to the basic design principles for greener chemical technologies; widely used practices, including catalysis, use of renewable starting materials, minimization of energy inputs, and use of greener solvents.

CHEM 6283. Chemical Toxicology and Rational Design of Safer Chemicals. 3 Credits.
Introduction to the basic tools and paradigms of toxicology in the context of chemical design for minimizing potential toxicity of commercial chemicals; computational methods for prediction of bioavailability, reactivity, bioaccumulation and different types of toxicity; application of in silico methods to the rational re-design of functional and safer chemicals.

CHEM 6284. Environmental Analytical Chemistry. 3 Credits.
Advanced analytical methodology for environmental assessment; analytical instrumentation, techniques for remote measurements, determination of trace atmospheric constituents of anthropogenic and natural origin, measurement uncertainty analysis, detection and identification of organic and inorganic pollutants in air, water, soil and biota, and the determination of heavy metals and radionuclides in the environment.

CHEM 6298. Capstone Seminar in Environmental and Green Chemistry. 3 Credits.
Group projects carried out with an external partner or client—such as a government agency, nonprofit group, or chemistry laboratory research project—that identify and solve real world scientific problems related to environmental and green chemistry.

CHEM 6314. Fundamental-Computational Chem. 3 Credits.

CHEM 6315. Computational Chem-Biomolecule. 3 Credits.

CHEM 6320. Selected Topics in Analytical Chemistry. 1-3 Credits.
Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field of analytical chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6330. Selected Topics in Inorganic Chemistry. 1-3 Credits.
Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field of inorganic chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6350. Selected Topics in Organic Chemistry. 1-3 Credits.
Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field in organic chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6358. Synthesis and Structure Determination in Organic Chemistry. 3 Credits.
The design of syntheses for complex organic molecules; survey of modern synthetic methods, including asymmetric induction; spectroscopic methods of structure determination. Prerequisite: CHEM 6251 or permission of instructor.

CHEM 6370. Selected Topics in Physical Chemistry. 1-3 Credits.
Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field of physical chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6371. Physical Chemistry I. 1-3 Credits.
Same as CHEM 3171. Admission only by departmental permission. Credit assigned upon satisfactory completion of CHEM 6372.

CHEM 6372. Physical Chemistry II. 1-3 Credits.
Continuation of CHEM 6371. Same as CHEM 3172. Admission only by departmental permission. Credit for CHEM 6371 assigned upon satisfactory completion of this course.

CHEM 6390. Selected Topics in Chemistry. 0-3 Credits.
Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field in chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6395. Research. 1-12 Credits.
Limited to master's degree candidates. Survey of a topic approved by departmental staff and resulting in a written report and presentation of a seminar. Open to qualified students with advanced training. May be repeated for credit.

CHEM 6998. Thesis Research. 1-9 Credits.
graduate degree students.

CHEM 6999. Thesis Research. 3 Credits.
Limited to students in the Master's Degree program.

CHEM 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

CHEM 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

BACHELOR OF ARTS WITH A MAJOR IN CHEMISTRY

OPTION 1

The Department of Chemistry offers two options for the bachelor of arts degree, each designed to give students a broad background in the basic divisions of chemistry: analytical, biochemistry, inorganic, organic, and physical.

Option 1 provides considerable concentration in chemistry while permitting a wider selection of electives. It should meet the needs of students preparing to enter the fields of medicine, law, dentistry, and business, among others.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73) and the required curriculum, below:

Code	Title	Credits
Prerequisite courses for the Bachelor of Arts degree:		
CHEM 1111 & CHEM 1112	General Chemistry I and General Chemistry II	
CHEM 2122 & CHEM 2123W	Introductory Quantitative Analysis and Introductory Quantitative Analysis Laboratory	
MATH 1231 & MATH 1232	Single-Variable Calculus I and Single-Variable Calculus II	
PHYS 1021 & PHYS 1022	University Physics I and University Physics II	
or PHYS 1025	University Physics I with Biological Applications	

Code	Title	Credits
Required courses:		
CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II	
CHEM 3171 & CHEM 3172	Physical Chemistry I and Physical Chemistry II	
CHEM 3173	Physical Chemistry Laboratory	
CHEM 3165	Biochemistry I	
CHEM 4122	Instrumental Analytical Chemistry	
CHEM 4134	Descriptive Inorganic Chemistry	

Suggested Program of Study:

Students should follow this sequence in general and are urged to consult with the chemistry and premedical advisors concerning their academic program.

First Year

CHEM 1111 & CHEM 1112	General Chemistry I
Select one of the following:	
MATH 1231 & MATH 1232*	Single-Variable Calculus I
MATH 1220 & MATH 1221	Calculus with Precalculus I

Second Year

CHEM 2122	Introductory Quantitative Analysis
CHEM 2151 & CHEM 2153	Organic Chemistry I
CHEM 2152 & CHEM 2154	Organic Chemistry II
PHYS 1021 or 1025	University Physics I
PHYS 1022 or 1026	University Physics II
MATH 1232 (if not taken in the first year)	Single-Variable Calculus II

Third Year

CHEM 2123	Introductory Quantitative Analysis Laboratory
CHEM 3171 & CHEM 3172	Physical Chemistry I
CHEM 3173	Physical Chemistry Laboratory

Fourth Year

CHEM 3165 (if not taken in the junior year)	Biochemistry I
CHEM 4122	Instrumental Analytical Chemistry
CHEM 4134 (if not taken in the junior year)	Descriptive Inorganic Chemistry

* Or MATH 1220 Calculus with Precalculus I-MATH 1221 Calculus with Precalculus II (if necessary);

OPTION 2

The Department of Chemistry offers two options for the bachelor of arts degree, each designed to give students a broad background in the basic divisions of chemistry: analytical, biochemistry, inorganic, organic, and physical.

Option 2 is intended primarily for students preparing for graduate study in chemistry or those students planning to enter the chemical profession and wishing certification by

the American Chemical Society (ACS) as having met the minimum requirements for professional training.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73) and the required curriculum, below:

Code	Title	Credits
Prerequisite courses for the Bachelor of Arts degree:		
CHEM 1111 & CHEM 1112	General Chemistry I and General Chemistry II	
CHEM 2122 & CHEM 2123W	Introductory Quantitative Analysis and Introductory Quantitative Analysis Laboratory	
MATH 1231 & MATH 1232	Single-Variable Calculus I and Single-Variable Calculus II	
PHYS 1021 & PHYS 1022	University Physics I and University Physics II	
or PHYS 1025	University Physics I with Biological Applications	

Code	Title	Credits
Required courses:		
CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II	
CHEM 3171 & CHEM 3172	Physical Chemistry I and Physical Chemistry II	
CHEM 3173	Physical Chemistry Laboratory	
CHEM 3165	Biochemistry I	
CHEM 4122	Instrumental Analytical Chemistry	
CHEM 4123	Instrumental Analytical Chemistry Laboratory	
CHEM 4134	Descriptive Inorganic Chemistry	
CHEM 4195	Undergraduate Research	
or CHEM 4195W	Undergraduate Research	

A course in a structured computer programming language, such as one of the following courses, is recommended:

STAT 1129	Introduction to Computing
CSCI 1011	Introduction to Programming with Java
CSCI 1041	Introduction to FORTRAN Programming
CSCI 1121	Introduction to C Programming
CSCI 1131	Introduction to Programming with C

Suggested Program of Study:

Students should follow this sequence in general and are urged to consult with the chemistry and premedical advisors concerning their academic program.

First Year

CHEM 1111 & CHEM 1112	General Chemistry I
MATH 1231 & MATH 1232*	Single-Variable Calculus I
MATH 1220 & MATH 1221	Calculus with Precalculus I
One of the following:	

Second Year

CHEM 2122	Introductory Quantitative Analysis
CHEM 2151 & CHEM 2153	Organic Chemistry I
CHEM 2152 & CHEM 2154	Organic Chemistry II
PHYS 1021 or 1025	University Physics I
PHYS 1022 or 1026	University Physics II
MATH 1232 (if not taken in the first year)	Single-Variable Calculus II

Third Year

CHEM 2123	Introductory Quantitative Analysis Laboratory
CHEM 3171 & CHEM 3172	Physical Chemistry I
CHEM 3173	Physical Chemistry Laboratory

Fourth Year

CHEM 3165	Biochemistry I
CHEM 4122	Instrumental Analytical Chemistry
CHEM 4123	Instrumental Analytical Chemistry Laboratory
CHEM 4134 (if not taken in the junior year)	Descriptive Inorganic Chemistry

* Or MATH 1220 Calculus with Precalculus I–MATH 1221 Calculus with Precalculus II (if necessary);

SPECIAL HONORS

In addition to meeting the general requirements stated under University Regulations (http://bulletin.gwu.edu/arts-sciences/chemistry/ba/bulletin.gwu.edu/about-university),

a candidate for graduation with Special Honors in chemistry must maintain a cumulative 3.0 grade-point average in chemistry courses and take CHEM 4195 Undergraduate Research or CHEM 4195W Undergraduate Research for at least 3 credits over two semesters. In addition to the final report for CHEM 4195 or CHEM 4195W, a poster or oral presentation is required.

BACHELOR OF SCIENCE WITH A MAJOR IN CHEMISTRY

OPTION 1

The Department of Chemistry offers four options for Bachelor of Science degree, all designed to give students a broad background in the basic divisions of chemistry: analytical, biochemistry, inorganic, organic, and physical.

Option 1 provides considerable concentration in chemistry while permitting a wider selection of electives. It should meet the needs of students preparing to enter the fields of medicine, law, dentistry, and business, among others.

The following requirements must be fulfilled:The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73) and the required curriculum.

Code	Title	Credits
Prerequisite courses for the Bachelor of Science degree:		
CHEM 1111 & CHEM 1112	General Chemistry I and General Chemistry II	
CHEM 2122 & CHEM 2123W	Introductory Quantitative Analysis and Introductory Quantitative Analysis Laboratory	
MATH 1231 & MATH 1232	Single-Variable Calculus I and Single-Variable Calculus II	
PHYS 1021 & PHYS 1022	University Physics I and University Physics II	
or PHYS 1025	University Physics I with Biological Applications	
Two additional semesters of approved course work in the natural sciences or mathematics, such as one of the following:		
BISC 1111 & BISC 1112	Introductory Biology: Cells and Molecules and Introductory Biology: The Biology of Organisms	
GEOL 1001	Physical Geology	
or GEOL 1005	Environmental Geology	
GEOL 1002	Historical Geology	

Note: GEOL 1001 and GEOL 1005 cannot both be taken towards the undergraduate degree for credit.

Code	Title	Credits
Required courses:		
CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II	
CHEM 3171 & CHEM 3172	Physical Chemistry I and Physical Chemistry II	
CHEM 3173	Physical Chemistry Laboratory	
CHEM 3165	Biochemistry I	
CHEM 4122	Instrumental Analytical Chemistry	
CHEM 4134	Descriptive Inorganic Chemistry	

Suggested Program of Study:

Students should follow this sequence in general and are urged to consult with the chemistry and premedical advisors concerning their academic program.

First Year

CHEM 1111 & CHEM 1112	General Chemistry I
Select one of the following:	
MATH 1231 & MATH 1232*	Single-Variable Calculus I
MATH 1220 & MATH 1221	Calculus with Precalculus I

Second Year

CHEM 2122	Introductory Quantitative Analysis
CHEM 2151 & CHEM 2153	Organic Chemistry I
CHEM 2152 & CHEM 2154	Organic Chemistry II
PHYS 1021 or 1025	University Physics I
PHYS 1022 or 1026	University Physics II
MATH 1232 (if not taken in the first year)	Single-Variable Calculus II

Third Year

CHEM 2123	Introductory Quantitative Analysis Laboratory
CHEM 3171 & CHEM 3172	Physical Chemistry I
CHEM 3173	Physical Chemistry Laboratory

Fourth Year

CHEM 3165 (if not taken in the junior year)	Biochemistry I
CHEM 4122	Instrumental Analytical Chemistry
CHEM 4134 (if not taken in the junior year)	Descriptive Inorganic Chemistry

* Or MATH 1220 Calculus with Precalculus I–MATH 1221 Calculus with Precalculus II (if necessary);

OPTION 2

The Department of Chemistry offers four options for Bachelor of Science degree, all designed to give students a broad background in the basic divisions of chemistry: analytical, biochemistry, inorganic, organic, and physical.

Option 2 is for students preparing for graduate study in chemistry or those planning to enter the chemical profession and wishing to be certified by the American Chemical Society as having met the minimum requirements for professional training.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73) and the required curriculum.

Code	Title	Credits
Prerequisite courses for the Bachelor of Science degree:		
CHEM 1111 & CHEM 1112	General Chemistry I and General Chemistry II	
CHEM 2122 & CHEM 2123W	Introductory Quantitative Analysis and Introductory Quantitative Analysis Laboratory	
MATH 1231 & MATH 1232	Single-Variable Calculus I and Single-Variable Calculus II	
PHYS 1021 & PHYS 1022	University Physics I and University Physics II	
or PHYS 1025	University Physics I with Biological Applications	
Two additional semesters of approved course work in the natural sciences or mathematics, such as one of the following:		
BISC 1111 & BISC 1112	Introductory Biology: Cells and Molecules and Introductory Biology: The Biology of Organisms	
GEOL 1001	Physical Geology	
or GEOL 1005	Environmental Geology	
GEOL 1002	Historical Geology	
Note: GEOL 1001 and GEOL 1005 cannot both be taken towards the undergraduate degree for credit.		

Code	Title	Credits
Required courses:		
CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II	
CHEM 3171 & CHEM 3172	Physical Chemistry I and Physical Chemistry II	
CHEM 3173	Physical Chemistry Laboratory	
CHEM 3165	Biochemistry I	
CHEM 4122	Instrumental Analytical Chemistry	
CHEM 4123	Instrumental Analytical Chemistry Laboratory	
CHEM 4134	Descriptive Inorganic Chemistry	
CHEM 4195	Undergraduate Research	
or CHEM 4195W	Undergraduate Research	
A course in a structured computer programming language, such as one of the following courses, is recommended:		
STAT 1129	Introduction to Computing	
CSCI 1011	Introduction to Programming with Java	
CSCI 1041	Introduction to FORTRAN Programming	
CSCI 1121	Introduction to C Programming	
CSCI 1131	Introduction to Programming with C	

Suggested Program of Study:

Students should follow this sequence in general and are urged to consult with the chemistry and premedical advisors concerning their academic program.

First Year

CHEM 1111 & CHEM 1112	General Chemistry I
MATH 1231 & MATH 1232*	Single-Variable Calculus I
MATH 1220 & MATH 1221	Calculus with Precalculus I
One of the following:	

Second Year

CHEM 2122	Introductory Quantitative Analysis
CHEM 2151 & CHEM 2153	Organic Chemistry I
CHEM 2152 & CHEM 2154	Organic Chemistry II
PHYS 1021 or 1025	University Physics I
PHYS 1022 or 1026	University Physics II
MATH 1232 (if not taken in the first year)	Single-Variable Calculus II

Third Year

CHEM 2123	Introductory Quantitative Analysis Laboratory
CHEM 3171 & CHEM 3172	Physical Chemistry I
CHEM 3173	Physical Chemistry Laboratory

Fourth Year

CHEM 3165	Biochemistry I
CHEM 4122	Instrumental Analytical Chemistry
CHEM 4123	Instrumental Analytical Chemistry Laboratory
CHEM 4134 (if not taken in the junior year)	Descriptive Inorganic Chemistry

* Or MATH 1220 Calculus with Precalculus I–MATH 1221 Calculus with Precalculus II (if necessary);

OPTION 3

The Department of Chemistry offers four options for Bachelor of Science degree, all designed to give students a broad background in the basic divisions of chemistry: analytical, biochemistry, inorganic, organic, and physical.

Option 3 prepares students to meet the needs of federal and state forensic sciences laboratories.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73) and the required curriculum.

Code	Title	Credits
Prerequisite courses for the Bachelor of Science degree:		
CHEM 1111 & CHEM 1112	General Chemistry I and General Chemistry II	
CHEM 2122 & CHEM 2123W	Introductory Quantitative Analysis and Introductory Quantitative Analysis Laboratory	
MATH 1231 & MATH 1232	Single-Variable Calculus I and Single-Variable Calculus II	
PHYS 1021 & PHYS 1022	University Physics I and University Physics II	
or PHYS 1025	University Physics I with Biological Applications	
Two additional semesters of approved course work in the natural sciences or mathematics, such as one of the following:		
BISC 1111 & BISC 1112	Introductory Biology: Cells and Molecules and Introductory Biology: The Biology of Organisms	
GEOL 1001	Physical Geology	
or GEOL 1005	Environmental Geology	
GEOL 1002	Historical Geology	
Note: GEOL 1001 and GEOL 1005 cannot both be taken towards the undergraduate degree for credit.		

Code	Title	Credits
Required courses:		
CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II	
CHEM 3171 & CHEM 3172	Physical Chemistry I and Physical Chemistry II	
CHEM 3173	Physical Chemistry Laboratory	
CHEM 3165	Biochemistry I	
CHEM 4122	Instrumental Analytical Chemistry	
CHEM 4134	Descriptive Inorganic Chemistry	
BISC 1111 & BISC 1112	Introductory Biology: Cells and Molecules and Introductory Biology: The Biology of Organisms	
FORS 6213	Elements of of Forensic Sciences	
FORS 6221	Criminal Law I	
Three of the following:		
FORS 6206	Trace Evidence Analysis	
FORS 6234	Medicinal Chemistry I	
FORS 6235	Medicinal Chemistry II	

FORS 6238	Forensic Chemistry I
FORS 6239	Forensic Chemistry II
FORS 6240	Forensic Drug Analysis

Suggested Program of Study:

Students should follow this sequence in general and are urged to consult with the chemistry and premedical advisors concerning their academic program.

First Year

CHEM 1111 & CHEM 1112	General Chemistry I
Select one of the following:	
MATH 1231 & MATH 1232*	Single-Variable Calculus I
MATH 1220 & MATH 1221	Calculus with Precalculus I

Second Year

CHEM 2122	Introductory Quantitative Analysis
CHEM 2151 & CHEM 2153	Organic Chemistry I
CHEM 2152 & CHEM 2154	Organic Chemistry II
PHYS 1021 or 1025	University Physics I
PHYS 1022 or 1026	University Physics II
MATH 1232 (if not taken in the first year)	Single-Variable Calculus II

Third Year

CHEM 2123	Introductory Quantitative Analysis Laboratory
CHEM 3171 & CHEM 3172	Physical Chemistry I
CHEM 3173	Physical Chemistry Laboratory

Fourth Year

CHEM 3165	Biochemistry I
CHEM 4122	Instrumental Analytical Chemistry
CHEM 4123	Instrumental Analytical Chemistry Laboratory
CHEM 4134 (if not taken in the junior year)	Descriptive Inorganic Chemistry

* Or MATH 1220 Calculus with Precalculus I–MATH 1221 Calculus with Precalculus II (if necessary);

OPTION 4

The Department of Chemistry offers four options for Bachelor of Science degree, all designed to give students a broad background in the basic divisions of chemistry: analytical, biochemistry, inorganic, organic, and physical.

Option 4 includes additional courses in biochemistry and fulfills the American Chemical Society requirement for a certified degree program in chemistry with a biochemistry option.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73) and the required curriculum.

Code	Title	Credits
Prerequisite courses for the Bachelor of Science degree:		
CHEM 1111	General Chemistry I	
CHEM 1112	General Chemistry II	
CHEM 2122	Introductory Quantitative Analysis	
CHEM 2123W	Introductory Quantitative Analysis Laboratory	
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
PHYS 1021	University Physics I	
or PHYS 1025	University Physics I with Biological Applications	
PHYS 1022	University Physics II	
or PHYS 1026	University Physics II with Biological Applications	
BISC 1111 & BISC 1112	Introductory Biology: Cells and Molecules and Introductory Biology: The Biology of Organisms	

Code	Title	Credits
Required courses:		
CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II	
CHEM 3171 & CHEM 3172	Physical Chemistry I and Physical Chemistry II	
CHEM 3173	Physical Chemistry Laboratory	

CHEM 3165 & CHEM 3166	Biochemistry I and Biochemistry II (BIOC/BISC equivalents may be substituted)
CHEM 3262	Biochemistry Laboratory (BIOC/BISC equivalent may be substituted)
CHEM 4122	Instrumental Analytical Chemistry
CHEM 4123	Instrumental Analytical Chemistry Laboratory
CHEM 4134	Descriptive Inorganic Chemistry
CHEM 4195	Undergraduate Research
or CHEM 4195W	Undergraduate Research
The following are recommended:	
BISC 2202	Cell Biology
BISC 2207	Genetics
BISC 2322	Human Physiology

Suggested Program of Study:

Students should follow this sequence in general and are urged to consult with the chemistry and premedical advisors concerning their academic program.

First Year

CHEM 1111 & CHEM 1112	General Chemistry I
Select one of the following:	
MATH 1231 & MATH 1232*	Single-Variable Calculus I
MATH 1220 & MATH 1221	Calculus with Precalculus I

Second Year

CHEM 2122	Introductory Quantitative Analysis
CHEM 2151 & CHEM 2153	Organic Chemistry I
CHEM 2152 & CHEM 2154	Organic Chemistry II
PHYS 1021 or 1025	University Physics I
PHYS 1022 or 1026	University Physics II
MATH 1232 (if not taken in the first year)	Single-Variable Calculus II

Third Year

CHEM 3171 & CHEM 3172	Physical Chemistry I
CHEM 2123W	Introductory Quantitative Analysis Laboratory
CHEM 3173	Physical Chemistry Laboratory
CHEM 3165	Biochemistry I
CHEM 3166W	Biochemistry II

Fourth Year

CHEM 4122	Instrumental Analytical Chemistry
CHEM 4123	Instrumental Analytical Chemistry Laboratory
CHEM 4134 (if not taken in the junior year)	Descriptive Inorganic Chemistry
CHEM 3262	Biochemistry Laboratory

* Or MATH 1220 Calculus with Precalculus I–MATH 1221 Calculus with Precalculus II if necessary

SPECIAL HONORS

In addition to meeting the general requirements stated under University Regulations, a candidate for graduation with Special Honors in chemistry must maintain a cumulative 3.0 grade-point average in chemistry courses and take CHEM 4195 or CHEM 4195W for at least 3 credits over two semesters. In addition to the final report required for CHEM 4195 or CHEM 4195W, a poster or oral presentation is required.

COMBINED BACHELOR OF SCIENCE WITH A MAJOR IN CHEMISTRY / MASTER OF FORENSIC SCIENCES WITH A CONCENTRATION IN FORENSIC CHEMISTRY

REQUIREMENTS

The B.S. in chemistry/M.F.S. with a concentration in forensic chemistry is a combined degree program that allows students to complete a bachelor's degree in chemistry and a master's degree with a concentration in forensic chemistry by counting a specified number of credits toward both programs. The combined degrees are typically granted in a shorter time and at lower cost than if both programs were pursued separately. Interested students should consult the Department of Chemistry (http://chemistry.columbian.gwu.edu) in their sophomore year.

MINOR IN CHEMISTRY

REQUIREMENTS

Required

CHEM 1111	General Chemistry I

CHEM 1112	General Chemistry II
CHEM 2122	Introductory Quantitative Analysis
CHEM 2123	Introductory Quantitative Analysis Laboratory
CHEM 2151	Organic Chemstry I
CHEM 2152	Organic Chemistry II
CHEM 2153	Organic Chemistry Laboratory I
CHEM 2154	Organic Chemistry Laboratory II
One of the following:	
CHEM 3170	Introduction to Physical Chemistry
CHEM 3171	Physical Chemistry I
CHEM 3165	Biochemistry I
CHEM 4134	Descriptive Inorganic Chemistry

MASTER OF SCIENCE IN THE FIELD OF CHEMISTRY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (http://bulletin.gwu.edu/arts-sciences/#degreeregulationstext).

Thesis option—30 credit hours of approved courses are required, including CHEM 6998 Thesis Research–CHEM 6999 Thesis Research, which may be in analytical, inorganic, organic, or physical chemistry.

Nonthesis option—36 credit hours of approved courses are required, including CHEM 6395 Research. Up to 9 credit hours in other departments related to the student's area of interest (e.g., Forensic Sciences) may be included in the program, subject to the approval of the Department of Chemistry. Students who are or will be employed in organizations dealing with science and technology policy programs may select from specified courses offered by Information Systems and Technology Management, Political Science, Public Policy and Public Administration, and the Elliott School of International Affairs.

Coursework must include a minimum of five graduate-level courses; at least four of these courses must be core courses as defined in the department's Guide for Graduate Students; at least three must be offered by the Department of Chemistry. At least two graduate-level courses must be taken outside of the student's subdiscipline and in at least two other subdisciplines/disciplines. Candidates are required to pass a master's comprehensive examination as described in the department's Guide for Graduate Students.

Note: All entering students in graduate chemistry programs are required to take the American Chemical Society graduate level placement examinations, given by the Department of Chemistry, prior to matriculation. The four placement examinations (in the disciplines of analytical, organic, inorganic, and physical chemistry) are designed to cover the subject matter in the disciplines generally taught in undergraduate programs preparatory for graduate work in chemistry, and the results are used by the department to advise the individual student in planning a program of courses appropriate to the student's background. All graduate students are required to participate in the seminar and colloquium programs. Upon consultation with course instructors, specific course prerequisites may be waived.

MASTER OF SCIENCE IN THE FIELD OF ENVIRONMENTAL AND GREEN CHEMISTRY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (http://bulletin.gwu.edu/arts-sciences/#degreeregulationstext).

30 credits, including 18 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
CHEM 6280	Energy and the Environment	
CHEM 6281	Environmental Chemistry: Air, Water, and Soil	
CHEM 6282	Green Industrial Chemistry	
CHEM 6283	Chemical Toxicology and Rational Design of Safer Chemicals	
CHEM 6284	Environmental Analytical Chemistry	
CHEM 6298	Capstone Seminar in Environmental and Green Chemistry	
Electives		

12 credits from the following:

CHEM 6350	Selected Topics in Organic Chemistry
CHEM 6251	Advanced Organic Chemistry I
CHEM 6320	Selected Topics in Analytical Chemistry
CHEM 6238	Chem of Inorganic Materials
CHEM 6278	Molecular Spectroscopy
CHEM 6257	Physical-Organic Chemistry
STAT 6202	Mathematical Statistics II
IAFF 6153	Science, Technology, and National Security
IAFF 6141	International Science and Technology Policy Cornerstone
IAFF 6142	Technology Creation/Diffusion
IAFF 6151	Environmental Policy
IAFF 6158	Special Topics in International Science and Technology Policy (Science, Technology and International Development)
IAFF 6158	Special Topics in International Science and Technology Policy (International Issues in Energy)
IAFF 6158	Special Topics in International Science and Technology Policy (Science, Technology and Complexity)
IAFF 6158	Special Topics in International Science and Technology Policy (Environmental Security)
SMPP 6290	Special Topics (Strategy for Sustainable Enterprise)
SMPP 6290	Special Topics (Sustainability Management and Policy)
SMPP 6290	Special Topics (Clean Tech and Competitive Energy Markets)
PUBH 6004	Environmental and Occupational Health in a Sustainable World
PUBH 6126	Assessment&Control/Env Hazards
PUBH 6002	Biostatistical Applications for Public Health
PPPA 6066	Environmental Policy
ECON 6237	Economics of the Environment and Natural Resources
EMSE 6200	Policy Factors in Environmental and Energy Management
ENRP 6101	Environmental Sciences I: Physical Sciences
ENRP 6102	Environmental Sciences II: Life Sciences

Alternate elective courses may be selected subject to program director's approval.

DOCTOR OF PHILOSOPHY IN THE FIELD OF CHEMISTRY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy Program (p. 82).

72 credits in a program of study developed in consultation with the doctoral committee.

Students develop their program of studies in consultation with their doctoral committee, subject to the approval of the department's Graduate Affairs Committee. The program of studies must include coursework in a minimum of five graduate-level courses; at least four of the courses must be core courses as defined in the department's Guide for Graduate Students; at least three must be offered by the Chemistry Department. These course requirements cannot be fulfilled by achievement on placement exams. At least two graduate-level courses must be taken outside the student's subdiscipline and in at least two other subdisciplines/disciplines. Equivalent courses offered by another university may be substituted at the discretion of the Graduate Affairs Committee. Students must pass a cumulative examination system and an oral defense of the doctoral research plan.

Research fields

- Analytical chemistry—analytical neuroscience, analytical spectroscopy, biomedical analysis, chemical imaging, chemical instrumentation, chemical separations, electrochemical analysis, electrospray ionization, lab-on-a-chip devices, high-performance liquid chromatography (LC), laser–material interactions, mass spectrometry, nanophotonic structures, nmr spectroscopy, post-translational modifications, proteomics and metabolomics, single cell analysis;

- Biochemistry—biological sensing via nanoparticles, biomaterials, biomolecular analysis, biophysical topics, enzymology, lipids chemistry, proteomics and metabolomics, enzyme expression and inhibition, structural biology;
- Inorganic (materials) chemistry—battery chemistry, coordination chemistry, f-element chemistry, green chemistry, hydrothermal chemistry, mineral surface geochemistry, magnetochemistry, molecular spintronics, nanoscale and nanostructured materials, organometallic chemistry, small-molecule crystallography, solid-state materials;
- Organic chemistry—biomaterials and lipids, catalysis, computational docking and ligand design, green chemistry, heterocyclic chemistry, molecules of biological interest, synthesis;
- Physical chemistry—CO_2 removal, combustion chemistry, elemental and molecular spectroscopies, fuel cells, laser analytics, renewable energy conversion, solar chemical syntheses, surface chemistry, theoretical chemistry, thermochemical energy cycles.

Ph.D. students in chemistry may substitute up to 12 hours of Dissertation Research in the form of coursework jointly approved by the Chemistry Department and the Forensic Sciences Department, the Environmental Resource Policy Program, or the International Science and Technology Policy program. The 12 hours may be selected from specified courses offered by Forensic Sciences, Information Systems and Technology Management, Political Science, Public Policy and Public Administration, and the Elliott School of International Affairs.

Note: All entering students in graduate chemistry programs are required to take the American Chemical Society Graduate Level Placement Examinations, given by the Department of Chemistry, prior to matriculation. The four placement examinations (in the disciplines of analytical, organic, inorganic, and physical chemistry) are designed to cover the subject matter in the disciplines generally taught in undergraduate programs preparatory for graduate work in chemistry, and the results are used by the department to advise the individual student in planning a program of courses appropriate to the student's background. All graduate students are required to participate in the seminar and colloquium programs. Upon consultation with course instructors, specific course prerequisites may be waived.

With permission, a limited number of upper-level undergraduate courses in the department may be taken for graduate credit; additional coursework is required. See the Undergraduate programs for course listings.

CLASSICAL ACTING

GW's Department of Classical Acting—part of the Columbian College of Arts and Sciences—works in conjunction with the Shakespeare Theatre Company's Academy for Classical Acting (ACA) to offer the master's of fine arts in the field of classical acting degree program. Students in the program are in class full-time, 40 hours or more per week, for approximately 44 weeks. As actors and acting teachers, graduates help transform the way classical theater is performed on Broadway and in regional theaters around the country.

GRADUATE

Master's program

- Master of Fine Arts in the field of classical acting (p. 165)

FACULTY

Director L. Jacobson

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ACA 6201. Acting I. 3 Credits.
The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobeans, and master classes.

ACA 6202. Acting II. 2,3 Credits.
The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobeans, and master classes.

ACA 6203. Acting: Classical Comedy. 2,3 Credits.
The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobeans, and master classes.

ACA 6204. Acting: Master Class. 2,3 Credits.
The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobeans, and master classes.

ACA 6205. Topics in Classical Drama and Culture. 2 Credits.
Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the 18th century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6206. Topics in Classical Drama and Culture. 2 Credits.
Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the 18th century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6207. Topics in Classical Drama and Culture. 2 Credits.
Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the 18th century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6208. Topics in Classical Drama and Culture. 1 Credit.
Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the 18th century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6209. Text I. 2 Credits.
Textual analysis emphasizing development of aesthetic expression. The forms and rules of verse: its meter, scansion, and overall structure in the early, middle, and late Shakespeare plays, as well as the intricacies of the prose.

ACA 6210. Text II. 2 Credits.
Textual analysis emphasizing development of aesthetic expression. The forms and rules of verse: its meter, scansion, and overall structure in the early, middle, and late Shakespeare plays, as well as the intricacies of the prose.

ACA 6211. Voice and Speech I. 3 Credits.
The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6212. Voice and Speech II. 2,3 Credits.
The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6213. Voice and Speech III. 3 Credits.
The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6214. Voice and Speech IV. 2 Credits.
The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6215. Movement I. 1,2 Credit.
The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6216. Movement II. 1,2 Credit.
The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6217. Movement III. 1,2 Credit.
The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6218. Movement IV. 1,2 Credit.
The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6219. Alexander Technique I. 1,2 Credit.
Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6220. Alexander Technique II. 1,2 Credit.
Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6221. Alexander Technique III. 1,2 Credit.
Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6222. Alexander Technique IV. 1,2 Credit.
Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6223. Stage Combat I. 2 Credits.
Skills in stage combat techniques, including unarmed combat and broadsword, buckler, rapier, dagger, and other lighter weapons, toward development of greater physical strength and an awareness of safety issues. The course is designed to lead to certification as an actor/combatant through the Society of American Fight Directors.

ACA 6224. Stage Combat II. 2 Credits.
Skills in stage combat techniques, including unarmed combat and broadsword, buckler, rapier, dagger, and other lighter weapons, toward development of greater physical strength and an awareness of safety issues. The course is designed to lead to certification as an actor/combatant through the Society of American Fight Directors.

ACA 6225. Practicum I. 2 Credits.
This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6226. Practicum II. 1-6 Credits.
This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6227. Practicum III. 1-6 Credits.
This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6228. Practicum IV. 1-6 Credits.
This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6229. Audition Techniques. 3 Credits.
A set of workshops to help students develop strong audition skills. Business aspects of acting, such as selection of agents, Equity status, and taxation issues. The workshop concludes with a showcase performance for casting directors, agents, and theatre directors.

ACA 6595. Selected Topics. 1 Credit.

MASTER OF FINE ARTS IN THE FIELD OF CLASSICAL ACTING

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

59 credits in required courses.

Code	Title	Credits
Required		
ACA 6201	Acting I	
ACA 6202	Acting II	
ACA 6203	Acting: Classical Comedy	
ACA 6204	Acting: Master Class	
ACA 6205	Topics in Classical Drama and Culture	
ACA 6206	Topics in Classical Drama and Culture	
ACA 6207	Topics in Classical Drama and Culture	
ACA 6209	Text I	
ACA 6210	Text II	
ACA 6211	Voice and Speech I	
ACA 6212	Voice and Speech II	
ACA 6213	Voice and Speech III	
ACA 6215	Movement I	
ACA 6216	Movement II	
ACA 6217	Movement III	
ACA 6219	Alexander Technique I	
ACA 6220	Alexander Technique II	
ACA 6221	Alexander Technique III	
ACA 6223	Stage Combat I	
ACA 6224	Stage Combat II	
ACA 6225	Practicum I	
ACA 6227	Practicum III	
ACA 6228	Practicum IV	
ACA 6229	Audition Techniques	
ACA 6595	Selected Topics (taken twice)	

CLASSICAL AND NEAR EASTERN LANGUAGES AND CIVILIZATIONS

The Department of Classical and Near Eastern Languages and Civilizations offers undergraduate instruction in Greek, Latin, Hebrew, Arabic, Persian, and Turkish, as well as courses in ancient history and civilizations and the modern Middle East.

The curriculum is designed to strengthen a student's ability to communicate, reason, and understand the social, cultural, and physical environment of the ancient and modern worlds. The department fosters careful and creative thinking in its students, based in the linguistic, cultural, and historical roots of the rich, varied, and strategically important societies of the Mediterranean basin.

Classroom study is supplemented by the diverse resources of Washington, D.C., through field trips, foreign films, special

lectures, and cultural programs at embassies. Students have opportunities to study abroad, including Greece, Italy, Israel, and Morocco, and to participate in excavations around the world.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in classical studies (p. 167)
- Bachelor of Arts with a major in Arabic studies (p. 166)

Minors

- Minor in Arabic and Hebrew languages and cultures (p. 168)
- Minor in Arabic studies (p. 168)
- Minor in classical studies (p. 168)

FACULTY

Professors E.H. Cline, E.A. Fisher

Associate Professors A. Bonnah *(Teaching),* M. Esseesy *(Chair),* E.A. Friedland, C. Rollston, A.M. Smith II

Assistant Professors C. Jorgensen, P. Minuchehr, K. Wasdin

Teaching Instructors M. Kassab, E. Oraby, N. Taher, J. Tobkin

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

- Arabic (ARAB) (p. 1037)
- Classical Studies (CLAS) (p. 1072)
- Greek (GREK) (p. 1245)
- Hebrew (HEBR) (p. 1254)
- Latin (LATN) (p. 1289)
- Persian (PERS) (p. 1369)
- Turkish (TURK) (p. 1483)
- Yiddish (YDSH) (p. 1489)

BACHELOR OF ARTS WITH A MAJOR IN ARABIC STUDIES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

In addition to course requirements, students must complete 10 credits (one semester) of study abroad in an Arabic-speaking country, including 6 credits in Modern Standard Arabic and 4 credits in a spoken Arabic dialect. Students must attain proficiency in speaking, reading, listening, and writing at the Advanced level on the ACTFL scale as measured by departmentally administered exit examinations.

Code	Title	Credits
Required		
26 credits from the following:		
ARAB 3001	Advanced Arabic	
ARAB 3301	Modern Arabic Literature	
ARAB 3302	Media Arabic	
ARAB 3311	Business Arabic	
ARAB 3501	Arabic and Arab Identity	
ARAB 3502	Arab Film & Culture in English	
ARAB 3503	Fundamentals of Arabic Linguistics	
ARAB 4001	Genres in Modern Arabic Literature	
ARAB 4002	Arabic Narratives Through the Ages	
ARAB 4501	Arabic-English Translation	
ARAB 4502	Arabic-English Advanced Translation and Editing	

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must have attained a 3.7 grade-point average in the major and at least a 3.25 average overall by the end of the junior year. No later than the beginning of the senior year, students must consult a departmental faculty member about a research project to be prepared under the supervision of that faculty member through CLAS 3901 Directed Project–CLAS 4901 Directed Project. Only if a committee of two faculty members approves the completed

project, which must be graded *A* or *A−*, will Special Honors be recommended.

BACHELOR OF ARTS WITH A MAJOR IN CLASSICAL STUDIES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

In addition to course requirements, students must complete the language proficiency requirement, which includes Greek (GREK) or Latin (LATN) language study through the 2002 level, or one classical language through the 1002 level and the other through the 2001 level. Students who have scored 4 or 5 on the Advanced Placement (AP) examination for Latin or who place into the 3001 level or abovemust take at least one LATN or GREK course at the appropriate level at GW or at another approved institution.

Code	Title	Credits
Required		
The following four courses (12 credits):		
AH 3101	Ancient Art of the Bronze Age and Greece	
or AH 3102	Ancient Art of the Roman Empire	
CLAS 2112	History of Ancient Greece	
or HIST 2112	History of Ancient Greece	
CLAS 2113	The Roman World to 337 A.D.	
or HIST 2113	The Roman World to 337 A.D.	
CLAS 4111	Capstone Study	
Electives		
Four courses (12 credits) from the following, including at least one at the 3000 level or above.		
CLAS 2104	Ancient Medicine and Modern Medical Terms	
CLAS 2105	Special Topics	
or CLAS 2105W	Special Topics	
CLAS 2106	Mythology of the Classical World	
CLAS 2107	Greek and Roman Drama	
CLAS 2803	The Ancient Near East and Egypt to 322 B.C.	
or HIST 2803	The Ancient Near East and Egypt to 322 B.C.	
CLAS 2804	History of Ancient Israel	
or HIST 2804	History of Ancient Israel	
CLAS 3105	Topics in Classical Studies	
CLAS 3111	Topics in Ancient History	
or HIST 3111	Topics in Ancient History	
CLAS 3114	Topics in Ancient Literatures and Cultures	
CLAS 3115	Topics in Ancient Art and Archaeology	
CLAS 3901	Directed Project	
or CLAS 3901W	Directed Project	
CLAS 4901	Directed Project	
GREK 3001	Major Greek Authors I	
GREK 3002	Major Greek Authors II	
LATN 3001	Major Latin Authors I	
LATN 3002	Major Latin Authors II	
Three courses (9 credits) from the list above, from the list below, or from a combination of both:		
AH 3101	Ancient Art of the Bronze Age and Greece	
AH 3102	Ancient Art of the Roman Empire	
AH 3111	Early Christian and Byzantine Art and Architecture	
ANTH 3805	Archaeology of Israel and Neighboring Lands	
or AH 3106	Art and Archaeology of Israel and Neighboring Lands	
ANTH 3806	Art and Archaeology of the Aegean Bronze Age	
or AH 3104	Art and Archaeology of the Aegean Bronze Age	
ANTH 3834	Field Research: Old World	
PHIL 2111	History of Ancient Philosophy	
or PHIL 2111W	History of Ancient Philosophy	

PSC 2105	Major Issues of Western Political Thought I
REL 3341	Christianity in the Ancient World

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must have attained a 3.7 grade-point average in the major and at least a 3.25 average overall by the end of the junior year. No later than the beginning of the senior year, students must consult a departmental faculty member about a research project to be prepared under the supervision of that faculty member through CLAS 3901 Directed Project, CLAS 4901 Directed Project, or CLAS 4111 Capstone Study. Only if a committee of two faculty members approves the completed project will Special Honors be recommended; the research project must be graded *A* or *A*−.

MINOR IN ARABIC AND HEBREW LANGUAGES AND CULTURES

REQUIREMENTS

The student selects either an Arabic or Hebrew focus area for the minor.

The following requirements must be fulfilled: 15 credits, including 9 credits in one focus area and 6 credits in elective courses. In addition, the student must complete prerequisite language course work, or otherwise demonstrate competence, through the fourth semester (ARAB 2002 Intermediate Arabic II or HEBR 2002 Intermediate Hebrew II) in their primary focus area and through the second semester (ARAB 1002 Beginning Arabic II or HEBR 1002 Beginning Hebrew II) in the other focus area.

Code	Title	Credits
Required		
All courses (9 credits) in one of the following focus areas:		
Arabic		
ARAB 3001	Advanced Arabic	
ARAB 3301	Modern Arabic Literature	
ARAB 3302	Media Arabic	
Hebrew		
HEBR 3001	Hebrew Conversation and Writing	
HEBR 3301	Modern Hebrew Fiction	
HEBR 3302	The Israeli Media	
Electives		
Two of the following (6 credits) with at least one course in the student's focus area:		
HEBR 3101	Modern Hebrew Literary Classics	
HEBR 3102	Israeli Society and Culture: Literary Perspectives	
ARAB 3501	Arabic and Arab Identity	
ARAB 3502	Arab Film & Culture in English	

MINOR IN ARABIC STUDIES

REQUIREMENTS

The following requirements must be fulfilled: 21 credits, including 15 credits in required courses and 6 credits in elective courses. In addition, the student must meet the language prerequisite of ARAB 1001 Beginning Arabic I and ARAB 1002 Beginning Arabic II or their equivalent.

Code	Title	Credits
Required		
ARAB 2001	Intermediate Arabic I	
ARAB 2002	Intermediate Arabic II	
ARAB 3001	Advanced Arabic	
ARAB 3302	Media Arabic	
Electives		
One specialized language course from the following:		
ARAB 3301	Modern Arabic Literature	
ARAB 3311	Business Arabic	
One culture or linguistics course from the following:		
ARAB 3501	Arabic and Arab Identity	
ARAB 3502	Arab Film & Culture in English	
ARAB 3503	Fundamentals of Arabic Linguistics	

MINOR IN CLASSICAL STUDIES

REQUIREMENTS

The following requirements must be fulfilled: 18 or 19 credits including 3 or 4 credits in a language course at the level appropriate for the student and 15 credits in elective courses.

Code	Title	Credits
Required language proficiency		
Students must demonstrate proficiency in one of the ancient languages by successfully completing one course in Latin or in ancient Greek numbered 1002 or above.		
The same course may not be used to satisfy the language proficiency requirement and also count toward the elective course requirement.		
Electives		
Five courses (15 credits) from the following:		
AH 3101	Ancient Art of the Bronze Age and Greece	
AH 3102	Ancient Art of the Roman Empire	
ANTH 3805	Archaeology of Israel and Neighboring Lands	
ANTH 3806	Art and Archaeology of the Aegean Bronze Age	
ANTH 3834	Field Research: Old World	
CLAS 2104	Ancient Medicine and Modern Medical Terms	
CLAS 2105	Special Topics	
CLAS 2105W	Special Topics	
CLAS 2106	Mythology of the Classical World	
CLAS 2107	Greek and Roman Drama	
CLAS 2112	History of Ancient Greece	
CLAS 2113	The Roman World to 337 A.D.	
CLAS 2803	The Ancient Near East and Egypt to 322 B.C.	
CLAS 2804	History of Ancient Israel	
CLAS 3105	Topics in Classical Studies	
CLAS 3111	Topics in Ancient History	
CLAS 3114	Topics in Ancient Literatures and Cultures	
CLAS 3115	Topics in Ancient Art and Archaeology	
CLAS 3901	Directed Project	
CLAS 3901W	Directed Project	
CLAS 4901	Directed Project	
GREK 2001	Intermediate Classical Greek I	
GREK 2002	Intermediate Classical Greek II	
GREK 3001	Major Greek Authors I	
GREK 3002	Major Greek Authors II	
LATN 2001	Intermediate Latin	
LATN 2002	Vergil's Aeneid	
or LATN 2002W	Vergil's Aeneid	
LATN 3001	Major Latin Authors I	
or LATN 3001W	Major Latin Authors I	
LATN 3002	Major Latin Authors II	
or LATN 3002W	Major Latin Authors II	

In all cases, cross-listed courses may be substituted (e.g., CLAS 2112/HIST 2112)

Please contact the department (https://cnelc.columbian.gwu.edu) for more information.

CORCORAN SCHOOL OF THE ARTS AND DESIGN

The Corcoran School of the Arts and Design bridges the university's academically robust programs in the arts with Corcoran's creative and inspired scholarship. Part of the GW Columbian College of Arts and Sciences, the School functions as an incubator for artists and practitioners in arts-related fields, and serves to enrich students who are taking classes in other areas of the university. As such, it provides a platform for engagement that bridges creative expression and practical application with the breadth and depth of the larger liberal arts education.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Fine Arts with a major in digital media design (p. 170)
- Bachelor of Fine Arts with a major in fine art (p. 171)
- Bachelor of Fine Arts with a major in fine art photography (p. 172)
- Bachelor of Fine Arts with a major in graphic design (p. 173)
- Bachelor of Fine Arts with a major in photojournalism (p. 173)

GRADUATE

Master's programs

- Master of Arts in the field of exhibition design (p. 174)
- Master of Arts in the field of new media photojournalism (p. 175)

FACULTY

Professors G. Deal, F. DiPerna, J.G. Goodman, A. Grundberg, M. Hasburn, D. O'Neil, J. Severtson, C.M. Smigrod, L. Sures, B. Welt

Associate Professors R. Devers, M.F. Guerrero, A. Kharchi, K.M. McAleer-Keeler, S. Sethi *(Chair)*, S. Sterner

Assistant Professors M.H. Adams, C.E. Brown, L. Lipinski, K. Smith

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

- Corcoran Art and the Book (CBK) (p. 1102)
- Corcoran Art Education (CED) (p. 1117)
- Corcoran Art History (CAH) (p. 1088)
- Corcoran Arts & Humanities (CAS) (p. 1096)
- Corcoran Ceramics (CCR) (p. 1111)
- Corcoran Continuing Education (CCE) (p. 1105)
- Corcoran Design (CDE) (p. 1112)
- Corcoran Digital Media Design (CDM) (p. 1113)
- Corcoran Exhibition Design (CEX) (p. 1125)
- Corcoran Fine Art (CFA) (p. 1127)
- Corcoran First Year Foundation (CFN) (p. 1136)
- Corcoran Graphic Design (CGD) (p. 1137)
- Corcoran Interior Design (CID) (p. 1139)
- Corcoran Painting (CPT) (p. 1157)
- Corcoran Photography (CPH) (p. 1145)
- Corcoran Photojournalism (CPJ) (p. 1150)
- Corcoran Printmaking (CPR) (p. 1153)
- Corcoran Sculpture (CSL) (p. 1159)

BACHELOR OF FINE ARTS WITH A MAJOR IN DIGITAL MEDIA DESIGN

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Recommended Program of Study

Code	Title	Credits
First year, fall semester		
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts	
CDE 1090	Design Fundamentals I	
CFN 1090	First Year Studio I	
UW 1020	University Writing	
Studio elective		
First year, spring semester		
CAH 1091	Art History II: Historical Perspectives in the Visual Arts	
CDE 1091	Design Fundamentals II	
CFN 1091	First Year Studio II	
G-PAC: Math, social sciences, or humanities requirement		
Studio elective		
Second year, fall semester		
CDE 2090	Design Studio I	
CGD 2050	Typography I	
G-PAC Social Sciences/Humanities elective		
2 Studio electives		
Second year, spring semester		
CDE 2091	Design Studio II	
CGD 2060	Typography II	
G-PAC Natural or Physical Science requirement		
2 Studio electives		
Third year, fall semester		

CAH 3150	Theories and History of Graphic Design
CDM 3090	Digital Media Design Studio III
CGD 3050	Typography III
G-PAC: Natural or physical science requirement	
Studio elective	
Third year, spring semester	
CDM 3091	Digital Media Design Studio IV
CGD 3060	Typography IV
Art history requirement	
G-PAC: Math, social sciences (+GCC or L/CE), or humanities requirement	
Studio elective	
Fourth year, fall semester	
CDM 4090	Digital Media Design Thesis I
Art history requirement	
G-PAC: Humanities or social sciences requirement	
2 Studio electives	
Fourth year, spring semester	
CDE 4170	Professional Practices for Designers
CDM 4091	Digital Media Design Thesis II
G-PAC: Humanities or social sciences (+GCC or L/CE) requirement	
2 Studio electives	

BACHELOR OF FINE ARTS WITH A MAJOR IN FINE ART

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Recommended Program of Study

Code	Title	Credits
First year, fall semester		
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts	
CFN 1090	First Year Studio I	
UW 1020	University Writing	
Major requirement		
Studio elective		
First year, spring semester		
CAH 1091	Art History II: Historical Perspectives in the Visual Arts	
CFN 1091	First Year Studio II	
G-PAC: Social sciences, humanities, or math requirement		
Major requirement		
Studio elective		
Second year, fall semester		
G-PAC: Social sciences, humanities, or math requirement		
Studio I – Major requirement		
2 Studio electives		
Major requirement		
Second year, spring semester		
G-PAC: Natural or physical science requirement		
G-PAC: Social sciences or humanities requirement		
Studio 2 – Major requirement		
Studio elective		
Major requirement		
Third year, fall semester		
G-PAC: Natural or physical science requirement		
Studio elective		
Studio 3 – Major requirement		
Art history requirement		
Seminar I		
Third year, spring semester		
Seminar II		
G-PAC: Social sciences, humanities, or math requirement		
Studio 4 – major requirement		
1 studio elective		

Major requirement

Fourth year, fall semester

G-PAC: Social sciences or humanities requirement

Thesis I requirement

Art history requirement

2 Studio electives

Fourth year, spring semester

Art history requirement

2 Studio electives

Studio or other elective

Thesis II requirement

BACHELOR OF FINE ARTS WITH A MAJOR IN FINE ART PHOTOGRAPHY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Recommended Program of Study

Code	Title	Credits
First year, fall semester		
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts	
CFN 1090	First Year Studio I	
UW 1020	University Writing	
Major requirement		
Studio elective		
First year, spring semester		
CAH 1091	Art History II: Historical Perspectives in the Visual Arts	
CFN 1091	First Year Studio II	
G-PAC: Math, social sciences, or humanities requirement		
Studio requirement		
Studio elective		

Second year, fall semester

G-PAC: Social sciences, humanities, or math requirement

Studio 1 – Major requirement

2 Studio electives

Major requirement

Second year, spring semester

G-PAC: Natural or physical science requirement

G-PAC: Social sciences or humanities requirement

Studio 2 – Major requirement

Studio elective

Major requirement

Third year, fall semester

G-PAC: Natural or physical science requirement

Studio elective

Studio 3 – Major requirement

Art history requirement

Seminar I

Third year, spring semester

G-PAC: Social sciences, humanities, or math requirement

Studio 4 – Major requirement

Studio elective

Major requirement

Art history requirement

Fourth year, fall semester

G-PAC: Social sciences or humanities requirement

Thesis I requirement

Art history requirement

2 Studio electives

Seminar II

Fourth year, spring semester

2 Studio electives

1 Studio or other elective

Thesis II requirement

Major requirement

BACHELOR OF FINE ARTS WITH A MAJOR IN GRAPHIC DESIGN

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Recommended Program of Study

Code	Title	Credits
First year, fall semester		
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts	
CDE 1090	Design Fundamentals I	
CFN 1090	First Year Studio I	
UW 1020	University Writing	
Studio elective		
First year, spring semester		
CAH 1091	Art History II: Historical Perspectives in the Visual Arts	
CDE 1091	Design Fundamentals II	
CFN 1091	First Year Studio II	
G-PAC: Math, social sciences, or humanities requirement		
Studio elective		
Second year, fall semester		
CDE 2090	Design Studio I	
CGD 2050	Typography I	
G-PAC: Social sciences, humanities, or math requirement		
2 Studio electives		
Second year, spring semester		
CDE 2091	Design Studio II	
CGD 2060	Typography II	
G-PAC: Natural or physical science requirement		
2 Studio electives		
Third year, fall semester		
CAH 3150	Theories and History of Graphic Design	
CGD 3050	Typography III	
CGD 3090	Graphic Design Studio III	
G-PAC: Natural or physical science requirement		
Studio elective		
Third year, spring semester		
CGD 3060	Typography IV	
CGD 3091	Graphic Design Studio IV	
Art history requirement		
G-PAC: Math, social sciences (+GCC or L/CE), or humanities requirement		
Studio elective		
Fourth year, fall semester		
CGD 4090	Graphic Design Thesis I	
Art history requirement		
G-PAC: Humanities or social sciences requirement		
2 Studio electives		
Fourth year, spring semester		
CGD 4091	Graphic Design Thesis II	
CDE 4170	Professional Practices for Designers	
G-PAC: Humanities or social sciences (+GCC or L/CE) requirement		
2 Studio electives		

BACHELOR OF FINE ARTS WITH A MAJOR IN PHOTOJOURNALISM

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Recommended Program of Study

Code	Title	Credits
First year, fall semester		
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts	
CFN 1090	First Year Studio I	
UW 1020	University Writing	
Studio requirement		
Studio elective		
First year, spring semester		
CAH 1091	Art History II: Historical Perspectives in the Visual Arts	
CFN 1091	First Year Studio II	
G-PAC: Math, social sciences, or humanities requirement		
Studio requirement		
Studio elective		
Second year, fall semester		
G-PAC: Social sciences, humanities, or math requirement		
Studio 1 – Major requirement		
2 Studio electives		
Major requirement		
Second year, spring semester		
G-PAC: Natural or physical science requirement		
G-PAC: Social sciences or humanities requirement		
Studio 2 – Major requirement		
Studio elective		
Major requirement		
Third year, fall semester		
G-PAC: Natural or physical science requirement		
Studio elective		
Studio 3 – Major requirement		
Art history requirement		
Seminar I		
Third year, spring semester		
G-PAC: Social sciences, humanities, or math requirement		
Studio 4 – Major requirement		
Studio elective		
Major requirement		
Art history requirement		
Fourth year, fall semester		
G-PAC: Social sciences or humanities requirement		
Thesis I requirement		
Art history requirement		
2 Studio electives		
Seminar II		
Fourth year, spring semester		
2 Studio electives		
Studio or other elective		
Thesis II requirement		
Major requirement		

MASTER OF ARTS IN THE FIELD OF EXHIBITION DESIGN

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

Code	Title	Credits
Required		
CAH 6030	History of Architecture and Interior Design	
CEX 6010	Core Studio: Introduction to Exhibition Planning and Design	
CEX 6020	Core Studio: Advanced Exhibition Design & Planning: Museum Environments	

CEX 6050	Advanced 3D Modeling and Rendering: Vectorworks
or CID 6050	Interior Design Digital Applications I
or CID 6060	Interior Design Digital Applications II
or CID 7060	Interior Design Digital Applications III
CEX 6100	Lighting Exhibitions
CEX 6110	Materials, Finishes and Methods for Exhibition Design
CEX 6120	Core Studio: Advanced Tools & Methods of Visual Representation
CEX 7010	Exhibition Design Studio III: Visual Storytelling
CEX 7100	Museum Management and Operations
CEX 7120	Construction and Detailing for Exhibition Design
CEX 7200	Curatorial Studies for Exhibition Designers
CEX 7220	Conservation and Art Handling: The Art of Exhibition Mount Making
CEX 7800	Exhibition Design Capstone/Thesis Part 1
CEX 7900	Exhibition Design Capstone/Thesis Part 2
Electives	
Six credits from the following:	
Any CAH 6000- or 7000-level course	
CAH 6800	Directed Studies: Art History
CAH 6900	Internship: Art History
CEX 6800	Independent Study: Exhibition Design
CEX 6900	Exhibition Design Internship

MASTER OF ARTS IN THE FIELD OF NEW MEDIA PHOTOJOURNALISM

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

Code	Title	Credits
Required		
CPJ 6010	Photojournalism Graduate Seminar I	
CPJ 6020	Photojournalism Graduate Seminar II: Approaches to Photo Editing	
or CPJ 6024	Photojournalism Seminar II: Danish Embassy	
or CPJ 6025	PJ Sem II: Theories of Change/ New Forms of Radical Photography	
CPJ 6050	Advanced Multimedia Lab I	
CPJ 6060	Advanced Multimedia Lab II: Editing and Production	
CPJ 6100	Research, Reporting, and Writing: Contemporary Journalism Practice	
CPJ 6110	Story and Narrative in Photojournalism	
CPJ 7010	Photojournalism Graduate Seminar III: The Medium and the Message	
CPJ 7800	Thesis Workshop	
CPJ 7900	Photojournalism Graduate Thesis (Directed Study)	
Electives		
12 credits from any graduate level Corcoran School studio course, internship, or directed study		
9 credits from any graduate level Corcoran School course in art history, arts and humanities, directed study, or internship		

Recommended program of study

First semester	
CPJ 6010	Photojournalism Graduate Seminar I
CPJ 6110	Story and Narrative in Photojournalism
CPJ 6100	Research, Reporting, and Writing: Contemporary Journalism Practice
CPJ 6050	Advanced Multimedia Lab I
Second semester	
CPJ 6020	Photojournalism Graduate Seminar II: Approaches to Photo Editing
CPJ 6060	Advanced Multimedia Lab II: Editing and Production

Third semester	
CPJ 7010	Photojournalism Graduate Seminar III: The Medium and the Message
CPJ 7800	Thesis Workshop
Fourth semester	
CPJ 7900	Photojournalism Graduate Thesis (Directed Study)

DATA SCIENCE

Developed through a collaborative effort between the Departments of Statistics (http://statistics.columbian.gwu.edu), Mathematics (http://math.columbian.gwu.edu), Physics (http://physics.columbian.gwu.edu), Economics (http://economics.columbian.gwu.edu), Geography (http://geography.columbian.gwu.edu), and Political Science (http://politicalscience.columbian.gwu.edu), the Data Science program offers the master of science in data science and graduate certificate in data science. The program teaches students to understand data and contribute important insights with the goal of changing the way in which people live, work, and communicate. Through a structured curriculum that provides foundational knowledge as well as application skills, students learn how to confront the most complex problems facing government and private industry

GRADUATE

Master's program

- Master of Science in the field of data science (p. 177)

CERTIFICATES

- Graduate certificate in data science (p. 178)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

DATS 6101. Introduction to Data Science. 3 Credits.
Basic techniques of data science; algorithms for data mining; and basics of statistical modeling. Concepts, abstractions, and practical techniques. Prerequisites: STAT 2118 or permission of the instructor. Recommended background: An undergraduate degree with a strong background in science, mathematics, or statistics. (Same as STAT 6289).

DATS 6102. Data Warehousing. 3 Credits.
Fundamentals and practical applications of data warehousing, including planning requirements, infrastructure, design, and maintenance. Prerequisites: STAT 2118 or permission of the instructor. Recommended background: An undergraduate degree with a strong background in science, mathematics, or statistics.

DATS 6103. Introduction to Data Mining. 3 Credits.
Concepts, principles, and techniques related to data mining; strengths and limitations of various data mining techniques, including classification, association analysis, and cluster analysis. Restricted to candidates for the MS or graduate certificate in data science; permission of the instructor may be substituted. Prerequisites: DATS 6101 or permission of the instructor.

DATS 6201. Numerical Linear Algebra and Optimization. 3 Credits.
This course is a study of linear and quadratic programming, nonlinear equations, global and unconstrained optimization, and general linearly and nonlinearly constrained optimization as used in data science. Restricted to Designed primarily for students in the Data Science program, however other students with appropriate backgrounds can register for the course with permission of the instructor. Prerequisites: MATH 2184 or MATH 2185. Recommended background: An undergraduate degree with a strong background in science, mathematics, or statistics.

DATS 6202. Machine Learning I: Algorithm Analysis. 3 Credits.
This course is a practical approach to fundamentals of algorithm design associated with machine learning. Topics include techniques of statistical and probability theory, combinatorial optimization, and factor graph and graph ensemble as used in machine learning. Restricted to Designed primarily for students in the Data Science program, however other students with appropriate backgrounds can register for the course with permission of the instructor. Recommended background: An undergraduate degree with a strong background in science, mathematics, or statistics. (Same as PHYS 6620).

DATS 6203. Machine Learning II: Data Analysis. 3 Credits.
This course is a practical approach to fundamentals of machine learning with an emphasis on data analysis; i.e., how to extract useful information from different datasets Topics include linear models, error and noise, training and testing methods, and generalization as used in machine learning. Restricted to Designed primarily for students in the Data Science program, however other students with appropriate backgrounds can register for the course with permission of the instructor. Prerequisites: DATS 6101 - Introduction to Data Science. Recommended background: An undergraduate degree with a strong background in science, mathematics, or statistics. (Same as PHYS 6720).

DATS 6401. Visualization of Complex Data. 3 Credits.
This course is a practical approach to fundamentals of data visualization specifically for data science professional. It covers all significant topics, including graphics, discrete and continuous variables, clustering and classification. Restricted to candidates for the MS or graduate certificate in data science; permission of the instructor may be substituted. Prerequisites: DATS 6101, DATS 6102, and DATS 6103.

DATS 6402. High Performance Computing and Parallel Computing. 3 Credits.
This course is a practical approach to high performance computing specifically for the data science professional. It covers topics such as parallel architectures and software systems, and parallel programming. Restricted to candidates for the MS or graduate certificate in data science; permission of the instructor may be substituted. Prerequisites: DATS 6101, DATS 6102, and DATS 6103.

DATS 6450. Topics in Data Science. 3 Credits.
The purpose of DATS 6450 being a topics course is to respond to new ideas and issues in the rapidly evolving fields of Data Science and Big Data. Possible topics may include new application areas in Big Data, emerging new languages and development systems, and policy issues arising from impacts of Big Data on individuals and society. Restricted to Intended primarily for students in the Data Science Master's and Certificate programs. Prerequisites: DATS 6101 Introduction to Data Science or permission of instructor. Recommended background: Enrollment in a Data Science graduate program.

DATS 6499. Data Science Applied Research. 3 Credits.
Students conduct research projects under the supervision of the instructor. Project topics build on the knowledge and skills acquired during the data science program. Permission of instructor required.

DATS 6501. Data Science Capstone. 3 Credits.
The course is a final practical application of the knowledge and skills acquired during the data science curriculum. The topics of the capstone team projects will be chosen in consultation with the Capstone Course instructor and the members of the teams. The course is designed to help students transition into the data science profession. Restricted to Designed for students in their last semester of the Data Science program as their final required core course. Prerequisites: Eight courses in the Data Science program, including the core courses 6101, 6102, and 6103 plus five approved courses from the categories Intermediate Analytics, Advanced Analytics, and Electives. Recommended background: Completion of the required courses in the Data Science Master's program.

MASTER OF SCIENCE IN THE FIELD OF DATA SCIENCE

Data Science, and the associated areas referred to as big data and data analytics, is a rapidly emerging technology field fueled by the dramatic growth in the amount of data being produced in most areas of society. The master of science in data science degree program allows students to study fundamental ideas that underlie the process of using data for problem solving and to apply the knowledge they gain to real-world scenarios. This is accomplished through elective coursework and partnerships with organizations in a variety of market areas, including health sciences, geography, cybersecurity, and public policy, to name a few.

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

30 credits, including 24 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
DATS 6101	Introduction to Data Science	
DATS 6102	Data Warehousing	
DATS 6103	Introduction to Data Mining	
DATS 6501	Data Science Capstone	
At least two of the following:		
DATS 6201	Numerical Linear Algebra and Optimization	

DATS 6202	Machine Learning I: Algorithm Analysis
MATH 6522	Introduction to Numerical Analysis
STAT 6201	Mathematical Statistics I
STAT 6207	Methods of Statistical Computing I
STAT 6210	Data Analysis
STAT 6214	Applied Linear Models
STAT 6216	Applied Multivariate Analysis II
STAT 6242	Regression Graphics/Nonparametric Regression
At least two of the following:	
DATS 6203	Machine Learning II: Data Analysis
STAT 6202	Mathematical Statistics II
STAT 6223	Bayesian Statistics: Theory and Applications
STAT 6289	Topics in Statistics
Electives	
At least two of the following:	
DATS 6401	Visualization of Complex Data
DATS 6402	High Performance Computing and Parallel Computing
DATS 6450	Topics in Data Science
ECON 8375	Econometrics I
ECON 8376	Econometrics II
ECON 8377	Econometrics III
ECON 8378	Economic Forecasting
GEOG 6304	Geographical Information Systems I
GEOG 6307	Digital Image Processing
PSC 8132	Network Analysis
PSC 8185	Topics in Empirical and Formal Political Analysis

GRADUATE CERTIFICATE IN DATA SCIENCE

Data Science, and the associated areas referred to as big data and data analytics, is a rapidly emerging technology field fueled by the dramatic growth in the amount of data involved in most areas of society. The12-credit graduate certificate in data science program allows students to study fundamental ideas that underlie large data systems and document a knowledge base for work in data intensive jobs. Credit earned in the certificate program may be applied to the master of science in the field of data science degree program.

REQUIREMENTS

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and 3 credits in elective courses.

Code	Title	Credits
Required		
DATS 6101	Introduction to Data Science	
DATS 6102	Data Warehousing	
DATS 6103	Introduction to Data Mining	
Elective		
One of the following:		
DATS 6201	Numerical Linear Algebra and Optimization	
DATS 6202	Machine Learning I: Algorithm Analysis	
MATH 6522	Introduction to Numerical Analysis	
STAT 6201	Mathematical Statistics I	
STAT 6207	Methods of Statistical Computing I	
STAT 6210	Data Analysis	
STAT 6214	Applied Linear Models	
STAT 6216	Applied Multivariate Analysis II	
STAT 6242	Regression Graphics/Nonparametric Regression	

EAST ASIAN LANGUAGES AND LITERATURES

OVERVIEW

The Department of East Asian Languages and Literatures offers instruction in the languages and cultures of China, Japan, and Korea. Courses in the fields of language, literature, and cultural studies introduce students to the long and unique civilizations of the East Asian peoples. The curriculum prepares students for careers in academia, business, diplomacy, government,

medicine, and law, among other fields where knowledge of East Asia is critically important.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in Chinese language and literature (p. 179)
- Bachelor of Arts with a major in Japanese language and literature (p. 180)

Minors

- Minor in Chinese language and literature (p. 181)
- Minor in Japanese language and literature (p. 182)
- Minor in Korean language and literature (p. 182)

GRADUATE

Master's program

- Master of Arts in the field of Chinese language and culture (p. 183)

FACULTY

Professors J. Chaves, S. Hamano (Chair), A. Huang

Associate Professor P. N. Zhang

Assistant Professors L. Chen, H. Dong, I.L. Hanami, M.D. Pak *(Teaching),* T. Tsujioka *(Teaching),* A. Yasuda, H. Zhang

Teaching Instructor M. Wei

Professorial Lecturers Y. Kang, C. Yang, X. Zhang

Lecturers W.K. Cavanaugh, J. Miller, R. Seya

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

- Chinese (CHIN) (p. 1063)
- East Asian Languages and Literature (EALL) (p. 1172)
- Japanese (JAPN) (p. 1287)
- Korean (KOR) (p. 1289)
- Vietnamese (VIET) (p. 1485)

BACHELOR OF ARTS WITH A MAJOR IN CHINESE LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Required		
Introductory language sequence (16 credits or the equivalent):		
CHIN 1001 & CHIN 1002	Beginning Chinese I and Beginning Chinese II	
or CHIN 1011	Intensive Beginning Chinese	
CHIN 2003	Intermediate Chinese I	
CHIN 2004	Intermediate Chinese II	
Courses (24 credits)		
CHIN 3105	Intermediate Chinese III	
CHIN 3106	Intermediate Chinese IV	
CHIN 3109	Introduction to Classical Chinese	
CHIN 3110	Introduction to Classical Chinese	
CHIN 3111	Chinese Literature in Translation	
CHIN 3112	Chinese Literature in Translation	
CHIN 4107	Readings in Modern Chinese I	
or CHIN 4108	Readings in Modern Chinese	
CHIN 4121W	Advanced Conversation and Composition I	
or CHIN 4122W	Advanced Conversation and Composition II	
Electives		
Three courses (9 credits) from the following:		
CHIN 3123	Introduction to Chinese Linguistics	
CHIN 3124	Introduction to Chinese Linguistics	
CHIN 3136W	Chinese Women in Myth, Literature, and Film	
or CHIN 3136	Chinese Women in Myth, Literature, and Film	

or WSTU 3136W	Chinese Women in Myth, Literature, and Film
or WSTU 3136	Chinese Women in Myth, Literature, and Film
CHIN 3163	Taiwanese Literature and Film
CHIN 3171	Poetry of the Tang and Song Periods
CHIN 3172	Poetry of the Tang and Song Periods
CHIN 3173	Chinese Drama and Theatre
CHIN 4108	Readings in Modern Chinese
CHIN 4119W	Business Chinese
CHIN 4122W	Advanced Conversation and Composition II
CHIN 4179	20th-Century Chinese Literature
CHIN 4180W	20th-Century Chinese Literature II
CHIN 4185	Directed Reading I
CHIN 4186W	Directed Reading II
CHIN 4198	Proseminar: Readings for the Major in Chinese Language and Literature
CHIN 4199	Proseminar: Readings for the Major in Chinese Language and Literature
Two courses (6 credits) from the following:	
AH 2190	East Asian Art
ANTH 3705	Anthropology of East Asia
EALL 3811	Confucian Literature in East Asia
or REL 2811	Confucian Literature in East Asia
EALL 3814	Religion and Philosophy in East Asia
or EALL 3814W	Religion and Philosophy in East Asia
or REL 2814	Religion and Philosophy in East Asia
ECON 2169	Introduction to the Economy of China
HIST 3610	China to 1800
HIST 3611	History of Modern China
HIST 3614	Writing Modern Chinese History
or HIST 3614W	Writing Modern Chinese History
HIST 3615	History of Chinese Communism
IAFF 2091	East Asia-Past and Present
JAPN 3111	Japanese Literature in Translation
JAPN 3112	Japanese Literature in Translation
JAPN 3162	Japanese Culture Through Film
or ANTH 3709	Japanese Culture Through Film
KOR 3111	Korean Literature in Translation
KOR 3112	Korean Literature in Translation
PSC 2370	Comparative Politics of China and Northeast Asia
PSC 2371	Politics and Foreign Policy of China
PSC 2475	International Relations of East Asia
REL 2601	Buddhism
REL 3831	Daoism in East Asia
or REL 3831W	Daoism in East Asia
or EALL 3831	Daoism in East Asia
or EALL 3831W	Daoism in East Asia

SPECIAL HONORS

EALL faculty will recommend students for EALL departmental special honors based on the following criteria:

In addition to the general requirements stated under University Regulations, candidates for special honors must have attained by the end of the fall semester of the senior year:

- a 3.7 grade-point average in the Chinese major
- at least a 3.4 average overall
- a minimum of C- in every course that they have taken at GW
- qualified students may be invited, by the beginning of the fall semester of the senior year, to write an honors thesis under the supervision of a faculty member through CHIN 4199 Proseminar. Only if a committee of three faculty members approves the completed project will Special Honors be recommended; the research project must be graded A or A-.

BACHELOR OF ARTS WITH A MAJOR IN JAPANESE LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Required		
Introductory language sequence (16 credits or the equivalent)		
JAPN 1001 & JAPN 1002	Beginning Japanese I and Beginning Japanese II	
or JAPN 1005	Intensive Beginning Japanese	
JAPN 2003 & JAPN 2004	Intermediate Japanese I and Intermediate Japanese II	
or JAPN 2006	Intensive Intermediate Japanese	
JAPN 2004	Intermediate Japanese II	
Required courses (15 credits)		
JAPN 3105	Intermediate Japanese III	
JAPN 3106	Intermediate Japanese IV	
JAPN 3111	Japanese Literature in Translation	
JAPN 3112	Japanese Literature in Translation	
JAPN 4109	Introduction to Bungo, Literary Japanese	
Electives		
Six courses (18 credits) of Japanese (JAPN) courses numbered 3000 or above.		
Two courses (6 credits) from the following:		
AH 2190	East Asian Art	
ANTH 3705	Anthropology of East Asia	
CHIN 3111	Chinese Literature in Translation	
CHIN 3112	Chinese Literature in Translation	
EALL 3811	Confucian Literature in East Asia	
or REL 2811	Confucian Literature in East Asia	
EALL 3814	Religion and Philosophy in East Asia	
or REL 2814	Religion and Philosophy in East Asia	
EALL 3831	Daoism in East Asia	
or REL 3831	Daoism in East Asia	
or REL 3831W	Daoism in East Asia	
ECON 2170	Intro to the Economy of Japan	
HIST 3610	China to 1800	
HIST 3611	History of Modern China	
HIST 3621	History of Modern Japan	
IAFF 2091	East Asia-Past and Present	
KOR 3111	Korean Literature in Translation	
KOR 3112	Korean Literature in Translation	
PSC 2370	Comparative Politics of China and Northeast Asia	
PSC 2374	Politics and Foreign Policy of Japan	
PSC 2475	International Relations of East Asia	
REL 2601	Buddhism	
WSTU 3136	Chinese Women in Myth, Literature, and Film	
or WSTU 3136W	Chinese Women in Myth, Literature, and Film	
or CHIN 3136	Chinese Women in Myth, Literature, and Film	
or CHIN 3136W	Chinese Women in Myth, Literature, and Film	

SPECIAL HONORS

EALL faculty will recommend students for EALL departmental special honors based on the following criteria:

In addition to the general requirements stated under University Regulations, candidates for special honors must have attained by the end of the fall semester of the senior year:

- a 3.7 grade-point average in the Japanese major
- at least a 3.4 average overall
- a minimum of C- in every course that they have taken at GW

Japanese program will select two students at the most based on the students' overall performance in the program.

MINOR IN CHINESE LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled: 18 credits and the introductory language sequence.

Introductory language sequence (16 credits or the equivalent):

CHIN 1001 & CHIN 1002	Beginning Chinese I and Beginning Chinese II

or CHIN 1011	Intensive Beginning Chinese
CHIN 2003	Intermediate Chinese I
CHIN 2004	Intermediate Chinese II

Required courses (6 credits):

CHIN 3105	Intermediate Chinese III
CHIN 3106	Intermediate Chinese IV

One course (3 credits) from the following:

CHIN 4107	Readings in Modern Chinese I
CHIN 4108	Readings in Modern Chinese
CHIN 4119W	Business Chinese
CHIN 4121W	Advanced Conversation and Composition I
CHIN 4122W	Advanced Conversation and Composition II

Three courses (9 credits) from the following:

CHIN 3109	Introduction to Classical Chinese
CHIN 3110	Introduction to Classical Chinese
CHIN 3111	Chinese Literature in Translation
CHIN 3112	Chinese Literature in Translation
CHIN 3123	Introduction to Chinese Linguistics
CHIN 3124	Introduction to Chinese Linguistics
CHIN 3136W	Chinese Women in Myth, Literature, and Film
or WSTU 3136W	Chinese Women in Myth, Literature, and Film
CHIN 3163	Taiwanese Literature and Film
CHIN 3171	Poetry of the Tang and Song Periods
CHIN 3172	Poetry of the Tang and Song Periods
CHIN 3173	Chinese Drama and Theatre
CHIN 4179	20th-Century Chinese Literature
CHIN 4180W	20th-Century Chinese Literature II

MINOR IN JAPANESE LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled: 18 credits and the introductory language sequence.

Code	Title	Credits
Introductory language sequence (16 credit hours or the equivalent)		
JAPN 1001 & JAPN 1002	Beginning Japanese I and Beginning Japanese II	
or JAPN 1005	Intensive Beginning Japanese	
JAPN 2003 & JAPN 2004	Intermediate Japanese I and Intermediate Japanese II	
or JAPN 2006	Intensive Intermediate Japanese	
Six courses (18 credits) of JAPN courses selected from JAPN 3105 through JAPN 4122W; at least one of these must be selected from the following:		
JAPN 4107	Readings in Modern Japanese I	
JAPN 4108	Readings in Modern Japanese II	
JAPN 4109	Introduction to Bungo, Literary Japanese	
JAPN 4110	Readings in Classical Japanese	
JAPN 4121W	Advanced Conversation and Composition I	
JAPN 4122W	Advanced Conversation and Composition II	

MINOR IN KOREAN LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled: 18 credits for the minor and completion of the prerequisite.

Prerequisite:

KOR 1001	Beginning Korean I
KOR 1002	Beginning Korean II
KOR 2003	Intermediate Korean I
KOR 2004	Intermediate Korean II

Or equivalent	

The minor consists of:

KOR 3105	Intermediate Korean III
KOR 3106	Intermediate Korean IV
12 additional credits of department-approved Korean courses at the 3000- 4000 level	

MASTER OF ARTS IN THE FIELD OF CHINESE LANGUAGE AND CULTURE

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

30 credits for the thesis option, 33 credits for the non-thesis option.

Code	Title	Credits
Required		
Language Proficiency Courses		
Up to 3 credits, pre-approval required		
All students must achieve advanced proficiency in modern Chinese through the following courses. The student proficiency level is first determined through an entrance exam. Those who pass the exam receive a waiver for the language courses, and are expected to take other courses to fulfill the credit requirement.		
CHIN 4108	Readings in Modern Chinese	
CHIN 4122W	Advanced Conversation and Composition II	
Major Field Courses		
At least 18 credits from the following:		
CHIN 6109	Introduction to Classical Chinese	
CHIN 6110	Introduction to Classical Chinese	
CHIN 6111	Chinese Literature in Translation	
CHIN 6112	Chinese Literature in Translation	
CHIN 6171	Poetry of the Tang and Song Periods	
CHIN 6172	Poetry of the Tang and Song Periods	
CHIN 6173	Traditional Chinese Theatre and Drama	
CHIN 6179	20th Century Chinese Literature I	
CHIN 6180	20th-Century Chinese Literature II	
CHIN 6199	Graduate Seminar	
CHIN 6123	Structure of Chinese	
CHIN 6125	History of the Chinese Language	
CHIN 6126	Chinese Phonology	
CHIN 6128	Chinese Semantics	
CHIN 6201	Second Language Acquisition of Mandarin Chinese	
CHIN 6210	Introduction to Teaching Chinese as a Foreign Language	
CHIN 6310	Practicum in Chinese Language Instruction	
Electives		
At least 6 credits from the following:		
EAP 6111	Academic Writing and Research for International Graduate Students II *	
HIST 6610	Readings Seminar: Late Imperial China	
REL 3832	Myth, Ritual, and Popular Religion in China	
or EALL 3832	Myth, Ritual, and Popular Religion in China	
or EALL 6832	Myth, Ritual and Popular Religion in China	
REL 3841	Religion in Modern China	
or CHIN 3841	Religion in Modern China	
or CHIN 6841	Religion in Modern China	
REL 3881	Women, Gender, and Religion in China	
or EALL 3881	Women, Gender, and Religion in China	
or EALL 6881	Women, Gender, and Religion in China	

*Credit for EAP 6111 does not count toward the degree

ECONOMICS

The study of economics investigates the consequences of scarcity, which forces people, organizations, and governments to choose among competing objectives. Economics looks at these choices and how they affect the production of goods

and services, market prices, national output, unemployment, inflation, economic growth, and the use and distribution of resources within and across nations. Part of the social and behavioral sciences in the Columbian College of Arts and Sciences, the economics program exposes students to macroeconomics, microeconomics, labor economics, the economics of industry, international finance, international trade and development, money and banking, the economics of government and public policy, and econometrics.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in economics (p. 190)
- Bachelor of Science with a major in economics (p. 191)
- Combined programs (p. 192)

Minor

- Minor in economics (p. 193)

GRADUATE

Master's programs

- Master of Arts in the field of economics (p. 193)
- Master of Arts in the field of applied economics (p. 193)
- Master of Science in the field of economics (p. 194)

Doctoral program

- Doctor of Philosophy in the field of economics (p. 194)

FACULTY

Professors S.M. Alkire, M.D. Bradley, B.L. Boulier, B.R. Chiswick, J.J. Cordes, V. Fon, J.E. Foster, S. Joshi (*Chair*), F.L. Joutz, G.L. Kaminsky, P. Labadie, A.S. Malik, M.O. Moore, D.O. Parsons, R.F. Phillips, J. Pelzman, R.M. Samaniego, J.C. Shambaugh, S.C. Smith, A.M. Yezer, , N. Vonortas

Associate Professors P. Carrillo, M.X. Chen, I.R. Foster, W.P. Mullin,T. Sinclair, S.M. Suranovic, C. Wei

Assistant Professors R. Fishman, E.W.K. Hovander, R.C. Jedwab, T. Moore, O. Timoshenko, B.D. Williams

Professorial Lecturers D. Fixler, N. Pham, H. Stekler

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Departmental Prerequisite: ECON 1011 Principles of Economics I–ECON 1012 Principles of Economics II is prerequisite to all other undergraduate courses offered by the Department of Economics.

Courses at the 8000 level are specifically designed for economics graduate students and typically require knowledge of calculus and one or more of the core theory and econometrics courses. Less-well-prepared graduate students in other disciplines may register for 6000-level courses after having completed ECON 6217 Survey of Economics I–ECON 6218 Survey of Economics II, or ECON 6218 Survey of Economics II and ECON 6219 Managerial Economics, or ECON 2101 Intermediate Microeconomic Theory and ECON 2102 Intermediate Macroeconomic Theory, or ECON 2103 Intermediate Microeconomic Theory: A Mathematical Approach and ECON 2104 Intermediate Macroeconomic Theory: A Mathematical Approach, unless the course description indicates that these prerequisites have been waived. Intermediate-level micro and macro courses taken elsewhere usually satisfy this requirement, but introductory or first-year courses do not. Graduate students in economics can take 6000-level courses only with permission of their advisor.

ECON 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details. Restricted to First-year students in CCAS.

ECON 1001. Principles of Mathematics for Economics. 3 Credits.
Prepares students for college instruction in principles of microeconomic and macroeconomic theory and in business, social science, and basic science courses that do not require knowledge of calculus. Restricted to students who have successfully completed high school algebra I and basic geometry prior to matriculation and who also have registered for and attended the first six weeks of instruction in ECON 1011 or ECON 1012 at GW.

ECON 1011. Principles of Economics I. 3 Credits.
Major economic principles, institutions, and problems in contemporary life. Microeconomics—supply and demand, the price system and how it works, competitive and monopolistic markets.

ECON 1012. Principles of Economics II. 3 Credits.
Continuation of ECON 1011. Major economic principles, institutions, and problems in contemporary life. Topics in macroeconomics, including national income concepts, unemployment and inflation, institutions of monetary control. Prerequisite: ECON 1011.

ECON 2101. Intermediate Microeconomic Theory. 3 Credits.
Analysis of household economic behavior, including derivation of demand functions. Analysis of firm behavior, including derivation of supply frameworks. Demand and supply interaction under various market structures and in factor markets. Prerequisites: ECON 1011 and ECON 1012; and MATH 1221 or MATH 1231 or MATH 1252. Same as ECON 2103.

ECON 2102. Intermediate Macroeconomic Theory. 3 Credits.
Investigation of the determinants of national income, inflation, unemployment, and interest rates. Alternative business cycle theories, with emphasis on the role of imperfect information, uncertainty, and expectations. Prerequisites: ECON 1011, ECON 1012; MATH 1221, MATH 1231, or MATH 1252.

ECON 2103. Intermediate Microeconomic Theory: A Mathematical Approach. 3 Credits.
Analysis of household economic behavior, including derivation of demand functions, and of firm behavior, including derivation of supply frameworks. Demand and supply interaction under various market structures and in factor markets. Reliance on constrained and unconstrained optimization techniques when analyzing household and firm behavior. Corequisite: MATH 1232. Recommended for students pursuing the B.S. degree. Prerequisites: ECON 1011, ECON 1012; MATH 1221, MATH 1231, or MATH 1252.

ECON 2104. Intermediate Macroeconomic Theory: A Mathematical Approach. 3 Credits.
Development and application of mathematical models of aggregate economic behavior with a focus on the intertemporal choices made by households, firms, and governments. The use of rigorous economic analysis provides a deeper understanding of the determinants of the economy's performance. Recommended for students pursuing the B.S. degree. Corequisite: MATH 1232 . Prerequisites: ECON 1011, ECON 1012; MATH 1221, MATH 1231, or MATH 1252.

ECON 2121. Financial Economics. 3 Credits.
Economic analysis of key financial institutions, markets, and variables. Investigation of the performance of asset markets and the roles of money, credit, interest rates, and exchange rates. Examination of private sector institutions like equity markets and the banking system and the roles of regulators like the Federal Reserve. Prerequisite: ECON 1011– ECON 1012.

ECON 2122. Monetary Theory and Policy. 3 Credits.
Analysis of classic and modern monetary theories and their application to current economic conditions. The links between theory and policy. The altered role of money over time; the new money technology. Prerequisite: ECON 1011– ECON 1012.

ECON 2123. Introduction to Econometrics. 3 Credits.
Joint offering of the Economics and Statistics Departments. Construction and testing of economic models: regression theory, parameter estimation, and statistical techniques applicable to economic models. Prerequisites: MATH 1221 or MATH 1231 or MATH 1252; STAT 1051 or STAT 1053 or STAT 1111. (Same as STAT 2123).

ECON 2136. Environmental and Natural Resource Economics. 3 Credits.
Analysis of a variety of environmental and natural resource problems. The economic causes of these problems, their consequences, and the relative merits of alternative policies for dealing with them. Prerequisite: ECON 1011– ECON 1012.

ECON 2148. Survey of Health Economics. 3 Credits.
Economic analysis of the determinants of demand, supply, output, and distribution in the health care sector, with special emphasis on current policy issues of access, quality, and cost. Credit may not be earned for both ECON 2148 and ECON 3148. Prerequisites: ECON 1011 - ECON 1012.

ECON 2151. Economic Development. 3 Credits.
Theories and empirical studies of the economic problems of developing countries. Prerequisite: ECON 1011 and ECON 1012.

ECON 2151W. Economic Development. 3 Credits.

ECON 2157. Urban and Regional Economics. 3 Credits.
Analysis of the determinants of urban growth and development; firm location; the functioning of urban land and housing markets. Prerequisite: ECON 1011– ECON 1012.

ECON 2158. Industrial Organization. 3 Credits.
Analysis of market structure, conduct, and performance of firms in a market economy, with emphasis on case studies of U.S. industries. Prerequisite: ECON 1011– ECON 1012.

ECON 2159. Government Regulation of the Economy. 3 Credits.
Economic analysis of antitrust and regulation in the American economy. Prerequisite: ECON 1011– ECON 1012 and ECON 2101 or ECON 2158.

ECON 2160. Surv:Finance&Engineering Econ. 3 Credits.

ECON 2167. Economics of Crime. 3 Credits.
Analysis of crime, both empirical and theoretical, that examines the links between law and economics, the economics of criminal participation, and the economics of law enforcement. Prerequisite: ECON 1011– ECON 1012.

ECON 2169. Introduction to the Economy of China. 3 Credits.
Background, organization, and operation of the economy. Appraisal of performance and analysis of problems of development. Prerequisite: ECON 1011– ECON 1012.

ECON 2170. Intro to the Economy of Japan. 3 Credits.
Analysis of the structure and growth of the Japanese economy. Prerequisite: ECON 1011– ECON 1012.

ECON 2180. Survey of International Economics. 3 Credits.
Basic concepts of international trade and international finance, with emphasis on policy issues. Prerequisites: ECON 1011 and ECON 1012.

ECON 2181. International Trade Theory and Policy. 3 Credits.
The basis for international trade and the effect of trade on consumers, producers, and workers; the causes and effects of the international movement of factors including foreign direct investment, outsourcing, and migration; and the impacts of trade policies and trade agreements. Credit may not be earned for both ECON 2181 and ECON 3181. Prerequisites: ECON 1011– ECON 1012.

ECON 2182. International Macroeconomic Theory and Policy. 3 Credits.
Topics include the balance of payments, the determination of exchange rates and prices in open economies, the interaction of the exchange rate and domestic economic activity, international financial markets, and exchange rate and financial crises. Prerequisites: ECON 1011– ECON 1012.

ECON 2185. Economic History and Problems of Latin America. 3 Credits.
Analysis of present structures and problems of Latin American economies. Prerequisite: ECON 1011– ECON 1012.

ECON 2195W. Special Topics. 3 Credits.

ECON 2198. Special Topics in Economics - Regional. 3 Credits.
Topics cover individual countries or regions of the world and vary depending on current issues of interest and faculty availability. Prerequisites: ECON 1011 - ECON 1012.

ECON 2199. Special Topics in Economics. 3 Credits.
Topics vary depending on current issues of interest and faculty availability. Prerequisites: ECON 1011, ECON 1012.

ECON 3098. Variable Topics-Regional Econ. 1-9 Credits.

ECON 3105. Economic Forecasting. 3 Credits.
Theory and empirical analyses of economic trends and fluctuations; use of economic indicators and simple econometric models. Prerequisites: ECON 1011– ECON 1012; ECON 2102 or ECON 2104; ECON 2123.

ECON 3142. Labor Economics. 3 Credits.
Analysis of labor supply and demand; measurement and theory of unemployment; occupational choice; wage differentials; labor market issues and policies. Prerequisite: ECON 1011– ECON 1012 and ECON 2101 or ECON 2103.

ECON 3148. Health Economics. 3 Credits.
Analysis of economic theories and applications to the demand for and supply of healthcare. Examination of the role of government in health care, public health, and unhealthy behavior (e.g., smoking). Credit may not be earned for both ECON 2148 and ECON 3148. Prerequisites: ECON 2101 or ECON 2103.

ECON 3161. Public Finance: Expenditure Programs. 3 Credits.
Economic analysis of government spending and social regulation programs. Topics include public goods, externalities, income transfer and social insurance programs, and benefit–cost analysis of government programs. Prerequisite: ECON 1011– ECON 1012 and ECON 2101 or ECON 2103.

ECON 3162. Public Finance: Taxation. 3 Credits.
Economic analysis of taxes. Topics include individual and corporate income taxes, payroll taxes, sales and excise taxes, property and wealth taxes, design of tax systems, and effects of taxation on labor and capital markets. Prerequisite: ECON 1011– ECON 1012 and ECON 2101 or ECON 2103.

ECON 3165. Economics of Human Resources. 3 Credits.
Economic analysis of education and training, labor market discrimination, marriage and the family, and social security. Prerequisite: ECON 1011– ECON 1012 and ECON 2101 or ECON 2103.

ECON 3181. International Trade Theory. 3 Credits.
Rigorous examination of theories of international trade that explain why countries trade and their gains from trade. Theories include comparative advantage, the factor-proportions theory of trade, and recent theoretical developments. The course also deals with the theory of trade policies, such as tariffs and quotas. Credit cannot be earned for both ECON 2181 and ECON 3181. Prerequisites: ECON 2101 or ECON 2103; MATH 1221, MATH 1231, or MATH 1252.

ECON 3190. Law and Economics. 3 Credits.
An introduction to the economic analysis of legal systems. How laws alter behavior and how laws might be designed to satisfy efficiency and fairness criteria. Prerequisite: ECON 1011– ECON 1012 and ECON 2101 or ECON 2103.

ECON 3191. Game Theory. 3 Credits.
Introduction to game theory, covering concepts such as Nash equilibrium, evolutionary games, backward induction and subgame perfection, Bayesian–Nash games of imperfect information, adverse selection, and moral hazard. Prerequisites: ECON 1011 and ECON 1012; and ECON 2101 or ECON 2103.

ECON 3198. Advanced Topics in Economics - Regional. 3 Credits.
Topics cover individual countries or regions of the world and vary depending on current issues of interest and faculty availability. Prerequisites: Depending on the topic: ECON 2101 (or ECON 2103) or ECON 2102 (or ECON (2104) or ECON 2123.

ECON 3199. Advanced Topics in Economics. 3 Credits.
Topics vary depending on current issues of interest and faculty availability Prerequisites: Depending on the topic: ECON 2101 (or ECON 2103) or ECON 2102 (or ECON (2104) or ECON 2123.

ECON 4198W. Proseminar in Economics. 3 Credits.
Preparation and presentation of a research paper in any field of economics agreed upon by the student and instructor. Restricted to Economics majors in their senior year. Prerequisites: ECON 2101 or ECON 2103 and ECON 2102 or ECON 2104. Recommended background: Prior or concurrent enrollment in ECON 2123 or STAT 2112 or STAT 2118 is recommended.

ECON 4199. Independent Research-Economics. 3 Credits.
Prerequisite: ECON 1011– ECON 1012 and completion of 12 hours of upper-division economics courses, including ECON 2101 or ECON 2103 and ECON 2102 or ECON 2104, with a minimum grade-point average of 3.4; and approval of an independent research project by a faculty member of the Economics Department.

ECON 6217. Survey of Economics I. 3 Credits.
Intermediate-level microeconomic theory for graduate students in fields other than economics.

ECON 6218. Survey of Economics II. 3 Credits.
Continuation of ECON 6217. Intermediate-level macroeconomic theory for graduate students in fields other than economics. (ECON 6217 and ECON 6218—).

ECON 6219. Managerial Economics. 3 Credits.
Intermediate microeconomic theory, with emphasis on production and costs, market structure and pricing, risk analysis, and investment theory and capital budgeting. Credit can be earned for only one of ECON 6217 or ECON 6219.

ECON 6237. Economics of the Environment and Natural Resources. 3 Credits.
Analysis of public policy problems relating to the environment and natural resources development and management. Prerequisite: ECON 6217.

ECON 6239. Economics of Defense. 3 Credits.
Economic analysis applied to national security planning and objectives. Analysis of defense establishment problems, including manpower, the defense industry base, procurement policy.

ECON 6248. Health Economics. 3 Credits.
Demand for medical care; organization of the health care delivery industry; policy issues on regulation, efficiency, and allocation of health care services.

ECON 6249. Industrial Org-TComm Industry. 3 Credits.

ECON 6250. Survey of Economic Development. 3 Credits.
An introduction to economic problems faced by less developed countries. Emphasis on applications to policymaking and evaluation. Prerequisite: ECON 6217 or ECON 6280 or equivalent.

ECON 6255. Economics of Technological Change. 3 Credits.
Economics of research and development; innovation and growth; the role of government in the development and use of new technology.

ECON 6269. Economy of China I. 3 Credits.
Analysis of organization, operation, policies, and problems. Development of the economy since 1949.

ECON 6270. Economy of China II. 3 Credits.
Continuation of ECON 6269. Examination of critical problems of development. Prerequisite: ECON 6269 or permission of instructor.

ECON 6271. Economy of Japan. 3 Credits.
Analysis of Japanese economic institutions and their contribution to Japan's development.

ECON 6280. Survey of International Economics. 3 Credits.
Introductory international trade and finance, primarily for students in the Elliott School. Topics include the economic effects of trade liberalization and protection, exchange rate determination, and macroeconomic policies in an open economy. Prerequisite: ECON 1011 and ECON 1012.

ECON 6283. Survey of International Trade Theory and Policy. 3 Credits.
For graduate students in fields other than economics. Survey of international economics and policy; application of comparative advantage and other arguments for trade; impact of trade on a domestic economy; new arguments for protectionism; and regional trading blocs.

ECON 6284. Survey of International Macroeconomics and Finance Theory and Policy. 3 Credits.
For graduate students in fields other than economics. Open economy macroeconomics; international finance; balance of payments accounting; exchange markets; alternative models of balance of payments determination and adjustment; behavior of flexible exchange rate systems.

ECON 6285. Economic Development of Latin America. 3 Credits.
Diversity of structures of Latin American economies; import substituting industrialization; inflation; problems of underemployment and income distribution.

ECON 6286. Economic Development of Latin America. 3 Credits.
Continuation of ECON 6285. Structure of trade; protection, exports, and economic development; regional and global economic integration; foreign investment, multinational enterprise, and technology transfer.

ECON 6290. Principles of Demography. 3 Credits.
Introduction to basic demographic perspectives and data; methods for analysis of population size, distribution, and composition; determinants and consequences of population trends. Departmental prerequisite waived. Same as GEOG 6290/ SOC 6290/ STAT 6290.

ECON 6291. Methods of Demographic Analysis. 3 Credits.
Basic methods for analysis of mortality, natality, and migration; population estimates and projections; estimation of demographic measures from incomplete data. Departmental prerequisite waived. Same as GEOG 6291/ SOC 6291/ STAT 6291.

ECON 6292. Topics in International Trade. 3 Credits.
Topics on international trade issues and policy. Primarily for master's students in programs other than economics. May be repeated for credit if topic differs.

ECON 6293. Topics in International Finance. 3 Credits.
Topics on macroeconomic issues and policies in open economies, including exchange rate regimes, determinants of international capital flows, currency crises, financial contagion, current account sustainability and sovereign crises, fiscal problems, and macro-policies in emerging markets and mature economies.

ECON 6294. Topics in Economic Development. 3 Credits.
Topics on economic development issues and policy vary depending on faculty availability and interest. Primarily for master's students in programs other than economics. May be repeated for credit if topic differs.

ECON 6295. Special Topics. 3 Credits.
Topics vary, depending on current issues of interest and faculty availability.

ECON 6298. Reading and Research. 3 Credits.
Limited to master's degree candidates.

ECON 6300. Mathematical Methods for Economics. 3 Credits.
Instruction in the mathematical background required to appreciate and understand the use of mathematics in economic analysis, including multivariable calculus, integral calculus, and linear algebra. Emphasis on techniques for solving systems of equations, unconstrained and constrained optimization, comparative static analysis, difference equations, and analysis of dynamic models and their application to a range of economic problems. Restricted to Graduate applied economics majors only.

ECON 6301. Applied Microeconomic Theory. 3 Credits.
The principal areas of microeconomic theory: consumer demand, decision making under uncertainty, production and costs, game theory, and product markets; both competitive and imperfectly competitive, factor markets, and market failures. Emphasis on the application of theory to microeconomic issues of interest to the private and public sectors, such as product pricing, market entry and deterrence, competition policy, tax policy, and environmental regulation. The level of mathematical rigor is above that in a typical intermediate undergraduate microeconomics course, but below that in a first-year PhD course. Restricted to Graduate applied economics majors only.

ECON 6305. Applied Macroeconomic Theory. 3 Credits.
Development of an integrated framework for analyzing the determination of macroeconomic variables such as total production, unemployment, interest rates and inflation. Interpreting macroeconomic data and macroeconomic policy. A key objective of the course is to provide a link between economic theory and current economic policy. Topics for application may include recent developments in monetary policy and causes of hyperinflation and the national debt. The level of mathematical rigor is above that in a typical intermediate undergraduate macroeconomics course, but below that in a first-year PhD course. Restricted to Graduate applied economics majors only. Prerequisites: ECON 6300 and ECON 6301.

ECON 6374. Probability and Statistics for Economics. 3 Credits.
Focus on specific probability and statistical inference skills required for applied economic problems. Topics include laws of probability, limit laws, random events, independence and dependence, expectations, Bayes theorem, estimation, and hypothesis testing. Discrete and continuous random variables, density, and distribution functions. Various distributional models for observational data. Data manipulation and analysis using both SAS and Stata software. Emphasis on general methods applicable to econometrics. Restricted to graduate applied economics majors only.

ECON 6375. Applied Econometrics. 3 Credits.
An introduction to the skills needed to critically evaluate and conduct econometric analysis. Multiple regression analysis; theoretical underpinnings of the ordinary least squares estimator; interpreting regression results and how to address common issues that arise in regression analysis; econometric methods to estimate and test economic models and to address causal questions using observational data. Students build proficiency in using statistical software to perform basic econometric techniques studied in the course. Restricted to Graduate applied economics majors only. Prerequisites: ECON 6300 and ECON 6374.

ECON 6376. Time Series Analysis. 3 Credits.
The objective of this course is to give students the tools required to understand, implement, and interpret common models used in time series econometrics. Emphasis is placed on intuition and application. The course will both help students understand how to use time series data to test hypotheses and serve as an introduction to the ideas and techniques of forecasting. Topics covered are: time series properties of data (unit roots, near unit roots, stationarity), difference equations, stationary models (autoregressive and moving-average models), models with trends (deterministic and stochastic), multi-equation models (reduced-form and structural VARs), cointegration and error-correction models, models with time-varying coefficients, forecasting models, and basic forecast evaluation. Students will become proficient with performing basic time series analysis and forecasting using time series statistical software. Restricted to applied economics MA students only. Prerequisites: ECON 6374, ECON 6305.

ECON 6997. Independent Research. 1-3 Credits.
This course is limited to master's degree candidates in Economics. Before permission is granted to register for ECON 6997, the student must submit a written plan of study for the approval of the staff member of the department who will be directing the research. The written plan must also be approved by the program director. This course may be repeated once for credit but to no more than a total of 6 credits.

ECON 6998. Thesis Research. 3 Credits.

ECON 6999. Thesis Research. 3 Credits.

ECON 8301. Microeconomic Theory I. 3 Credits.
Theory of unconstrained optimization; optimization subject to equality and inequality constraints, along with applications. Profit maximization, utility maximization and cost minimization, concave and quasi-concave functions, monotone comparative statics, duality theory, the envelope theorem and Le Chatelier principle, and the Kuhn–Tucker conditions.

ECON 8302. Microeconomic Theory II. 3 Credits.
Expected utility theory, general equilibrium in a pure exchange economy and economy with production, welfare theorems and the core theory of the competitive firm in the short run and long run, monopoly and price discrimination, models of oligopoly. Prerequisite: ECON 8301.

ECON 8303. Microeconomic Theory III. 3 Credits.
Theory of games, including Nash equilibrium and its refinements and comparative statics, evolutionary game theory, multistage games and subgame perfection, repeated games and oligopolistic supergames, static and dynamic Bayesian games, auction theory, and bargaining theory. Prerequisite: ECON 8301 and ECON 8302.

ECON 8305. Macroeconomic Theory I. 3 Credits.
Alternative theories of income, employment, and the price level; impact of monetary and fiscal policy; role of expectations in the economy; and microfoundations of macroeconomic models and dynamic analysis.

ECON 8306. Macroeconomic Theory II. 3 Credits.
Extensions of alternative models of income determination, economic growth, and the application of analytical frameworks to the U.S. and international economies. Prerequisite: ECON 8305.

ECON 8307. Macroeconomic Theory III. 3 Credits.
Extensions to stochastic and dynamic general equilibrium frameworks, with emphasis on economic policy. Prerequisite: ECON 8306.

ECON 8323. Monetary Theory and Policy I. 3 Credits.
Theory of monetary policy within the framework of contemporary American central banking.

ECON 8324. Monetary Theory and Policy II. 3 Credits.
Continuation of ECON 8323. Theory of monetary policy within the framework of contemporary American central banking.

ECON 8337. Environmental Economics. 3 Credits.

ECON 8341. Labor Economics I. 3 Credits.
Theory of wages and employment, analysis of labor supply and demand. Analysis of unemployment; unions; wage regulation.

ECON 8342. Labor Economics II. 3 Credits.
Continuation of ECON 8341. Theory of wages and employment, analysis of labor supply and demand. Analysis of unemployment; unions; wage regulation.

ECON 8345. Industrial Organization I. 3 Credits.
Economic theory and evidence regarding industrial market structure, conduct, and economic performance.

ECON 8346. Industrial Organization II. 3 Credits.
Continuation of ECON 8345. Economic issues in antitrust and government regulation of the U.S. economy.

ECON 8351. Development Economics I. 3 Credits.
Major analytic concepts, measures, theoretical models, and empirical methods of development economics.

ECON 8352. Development Economics II. 3 Credits.
Continuation of ECON 8351. In-depth examination of special research topics with emphasis on methods in applied microeconomics.

ECON 8357. Regional Economics. 3 Credits.
Study of regional planning and growth models, including input–output, programming, and econometric models used by planning agencies; analysis of interregional production, trade, migration, firm location, and pricing models.

ECON 8358. Urban Economics. 3 Credits.
Analysis of spatial relationships among economic activities within an urban area including the urban land, labor, and housing markets; urban transportation models; fiscal relationships among jurisdictions.

ECON 8363. Public Finance I. 3 Credits.
Theoretical and empirical analysis of the economic role of the public sector and the effects of public expenditures on resource allocation and income distribution. Topics include public goods, externalities, social insurance, and benefit–cost analysis.

ECON 8364. Public Finance II. 3 Credits.
Theoretical and empirical analysis of the effects of taxes and transfers on the allocation of resources and income distribution. Topics include partial and general equilibrium models of tax incidence, effects of taxes on labor supply, saving, and portfolio choices of households and on investment and financing decisions of firms.

ECON 8375. Econometrics I. 3 Credits.
Statistical foundations for econometrics; standard methods of estimation and inference for classical and generalized regression models. Same as STAT 8375.

ECON 8376. Econometrics II. 3 Credits.
Topics may include asymptotic theory, statistical endogeneity, instrumental variables estimation, discrete and limited dependent variable models, and time-series models.Same as STAT 8376. Prerequisite: ECON 8375.

ECON 8377. Econometrics III. 3 Credits.
Econometric methods for systems of equations and panel data, with additional topics that may vary from year to year. Prerequisite: ECON 8376.

ECON 8378. Economic Forecasting. 3 Credits.
Introduction to the theoretical and applied aspects of economic forecasting. Topics include the role of forecasting, univariate time-series analysis, single equation models, multiple series models, and evaluation of forecasts. Prerequisite: ECON 8375 or permission of instructor.

ECON 8379. Laboratory in Applied Econometrics. 0-3 Credits.
Application of econometric theory and the use of econometric software; students are required to write an empirical research paper. The course usually deals exclusively with either micro or macroeconomic issues. May be repeated for credit provided the topic differs.

ECON 8381. International Trade Theory. 3 Credits.
International trade theory, including alternative models of the gains from trade and evaluations of the new justifications for protectionism, and analysis of commercial policy, factor flows, and trade and investment with multinational corporations. Prerequisite: most sections require calculus or permission of instructor.

ECON 8382. International Finance and Open-Economy Macroeconomics. 3 Credits.
International finance, including alternative models of balance of payments behavior and adjustment, payments accounting, exchange markets, and alternative exchange-rate regimes.

ECON 8383. International Financial Markets. 3 Credits.
Financial economics and international financial markets. Topics include standard asset pricing theory, uncertainty in open economy macroeconomics models, financial market micro-structure, and incomplete markets.

ECON 8395. Advanced Special Topics. 3 Credits.
Topics vary depending upon current interests and faculty availability. Open to graduate students in economics. May be repeated for credit.

ECON 8397. Dissertation Proposal Seminar. 3 Credits.
Limited to Doctor of Philosophy candidates in Unit II. Critical analysis of current research. Formulation of a dissertation proposal and development of dissertation research strategies.

ECON 8997. Independent Research. 3 Credits.
This course is limited to doctoral degree candidates in Economics. Departmental approval required to register. Before permission granted to register for ECON 8997, the student must submit a written plan of study for the approval of both the faculty member of the department who will be directing the research. And the Director of Graduate Studies for the PhD Program or the Department Chair. May be repeated for a total of 6 credits.

ECON 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

ECON 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

BACHELOR OF ARTS WITH A MAJOR IN ECONOMICS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73) and the following curricular requirements:

Code	Title	Credits
Required		
ECON 1011	Principles of Economics I	
ECON 1012	Principles of Economics II	
ECON 2101	Intermediate Microeconomic Theory	
or ECON 2103	Intermediate Microeconomic Theory: A Mathematical Approach	
ECON 2102	Intermediate Macroeconomic Theory	
or ECON 2104	Intermediate Macroeconomic Theory: A Mathematical Approach	
ECON 4198W	Proseminar in Economics	
MATH 1221	Calculus with Precalculus II	

or MATH 1231	Single-Variable Calculus I
or MATH 1252	Calculus for the Social and Management Sciences
STAT 1111	Business and Economic Statistics I (or equivalent)
STAT 2112	Business and Economic Statistics II
or STAT 2118	Regression Analysis
or ECON 2123	Introduction to Econometrics
Electives	
6 additional Economics (ECON) courses (18 credits) numbered between 2000 and 4999; a maximum of 3 of these courses can be regional and 2 international. If ECON 2123 was taken instead of STAT 2112 as a required course, only 5 additional ECON courses are required.	
Regional courses:	
ECON 2169	Introduction to the Economy of China
ECON 2170	Intro to the Economy of Japan
ECON 2185	Economic History and Problems of Latin America
ECON 2198	Special Topics in Economics - Regional
ECON 3098	Variable Topics-Regional Econ
ECON 3198	Advanced Topics in Economics - Regional
International courses:	
ECON 2180	Survey of International Economics
ECON 2181	International Trade Theory and Policy
or ECON 3181	International Trade Theory
ECON 2182	International Macroeconomic Theory and Policy

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must have a grade-point average of at least 3.5 in economics courses, and must submit an honors paper to the department. Upon review of the honors paper, the student may be recommended for graduation with Special Honors.

BACHELOR OF SCIENCE WITH A MAJOR IN ECONOMICS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73) and the following curricular requirements:

Code	Title	Credits
Required		
ECON 1011	Principles of Economics I	
ECON 1012	Principles of Economics II	
ECON 2103	Intermediate Microeconomic Theory: A Mathematical Approach	
or ECON 2101	Intermediate Microeconomic Theory	
ECON 2104	Intermediate Macroeconomic Theory: A Mathematical Approach	
or ECON 2102	Intermediate Macroeconomic Theory	
ECON 2123	Introduction to Econometrics	
ECON 4198W	Proseminar in Economics	
MATH 1221	Calculus with Precalculus II	
or MATH 1231	Single-Variable Calculus I	
or MATH 1252	Calculus for the Social and Management Sciences	
MATH 1232	Single-Variable Calculus II (MATH 1232 must be completed with a C- or better)	
STAT 1111	Business and Economic Statistics I (or equivalent)	
Electives		
Two courses (6 credits), completed with a C- or better, from the following:		
CSCI 1041	Introduction to FORTRAN Programming	
CSCI 1111	Introduction to Software Development	
CSCI 1121	Introduction to C Programming	
CSCI 1131	Introduction to Programming with C	
CSCI 1311	Discrete Structures I	
CSCI 4314	Discrete Analysis-Computer Sci	

CSCI 4341	Continuous Algorithms
CSCI 4511	Artificial Intelligence Algorithms
EMSE 2705	Mathematics in Operations Research
EMSE 3701	Operations Research Methods
EMSE 3850	Quantitative Models in Systems Engineering
EMSE 4710	Applied Optimization Modeling
MATH 2184	Linear Algebra I
MATH 2233	Multivariable Calculus
MATH 2572	Introduction to Computing in Mathematics
MATH 2971	Introduction to Mathematical Reasoning
MATH 3342	Ordinary Differential Equations
MATH 3410	Mathematics of Finance
MATH 4239	Real Analysis I
STAT 1129	Introduction to Computing
STAT 2183	Intermediate Stat Lab/Packages
STAT 3119	Analysis of Variance
STAT 3187	Introduction to Sampling
STAT 4157	Introduction to Mathematical Statistics I
STAT 4158	Introduction to Mathematical Statistics II
STAT 4181	Applied Time Series Analysis
STAT 4188	Nonparametric Stat Inference
STAT 4189	Mathematical Probability and Applications I
STAT 4190	Mathematical Probability and Applications II
STAT 4197	Fundamentals of SAS Programming for Data Management
MATH 2233, MATH 2971, MATH 3342, MATH 3410, and MATH 4239 are strongly recommended for those planning to pursue graduate study in Economics.	
Five additional economics courses (15 credits) numbered between 2000 and 4999. A maximum of 3 courses can be regional and two international.	
Regional courses:	
ECON 2169	Introduction to the Economy of China
ECON 2170	Intro to the Economy of Japan
ECON 2185	Economic History and Problems of Latin America
ECON 2198	Special Topics in Economics - Regional
ECON 3098	Variable Topics-Regional Econ
ECON 3198	Advanced Topics in Economics - Regional
International courses:	
ECON 2180	Survey of International Economics
ECON 2181	International Trade Theory and Policy
or ECON 3181	International Trade Theory
ECON 2182	International Macroeconomic Theory and Policy

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must have a grade-point average of at least 3.5 in economics courses, and must submit an honors paper to the department. Upon review of the honors paper, the student may be recommended for graduation with Special Honors.

COMBINED PROGRAMS, ECONOMICS

REQUIREMENTS

The Department of Economics offers two programs leading to combined bachelor's and master's degrees. The programs allow students to take a specified number of graduate credits as part of their undergraduate degree, thereby decreasing the number of credits normally required for the master's degree.

Combined Bachelor of Science and Master of Arts in the field of economics

Students interested in this dual degree program should consult the Department of Economics undergraduate program advisor by the second semester of their sophomore year.

Combined Bachelor of Arts or Bachelor of Science with a Major in Economics and Master of Public Policy

Students interested in this dual degree program should contact the director of the Public Policy program by the second semester of their sophomore year.

For more information visit the program website (http://economics.columbian.gwu.edu/combined-degree-programs).

MINOR IN ECONOMICS

REQUIREMENTS

The following requirements must be fulfilled: 21 credits

Code	Title	Credits
Required		
ECON 1011	Principles of Economics I	
ECON 1012	Principles of Economics II	
ECON 2101	Intermediate Microeconomic Theory (a grade of C– or better is required)	
or ECON 2103	Intermediate Microeconomic Theory: A Mathematical Approach	
ECON 2102	Intermediate Macroeconomic Theory (a grade of C– or better is required)	
or ECON 2104	Intermediate Macroeconomic Theory: A Mathematical Approach	
Two other approved upper-division courses in economics		
One of the following mathematics courses:		
MATH 1221	Calculus with Precalculus II	
MATH 1231	Single-Variable Calculus I	
MATH 1252	Calculus for the Social and Management Sciences	
And one of the following options		
Option A:		
STAT 1111	Business and Economic Statistics I	
Option B:		
MATH 1232	Single-Variable Calculus II	
Option C:		
One additional upper-division course in economics other than:		
ECON 2169	Introduction to the Economy of China	
ECON 2170	Intro to the Economy of Japan	
ECON 2185	Economic History and Problems of Latin America	
ECON 2198	Special Topics in Economics - Regional	
ECON 3098	Variable Topics-Regional Econ	

MASTER OF ARTS IN THE FIELD OF APPLIED ECONOMICS

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following curriculum requirements must be fulfilled: 30 credits, including 18 credits in core courses and 12 credits in elective courses.

Code	Title	Credits
Required		
ECON 6300	Mathematical Methods for Economics	
ECON 6301	Applied Microeconomic Theory	
ECON 6305	Applied Macroeconomic Theory	
ECON 6374	Probability and Statistics for Economics	
ECON 6375	Applied Econometrics	
ECON 6376	Time Series Analysis	
Electives		
Twelve credits in elective economics (ECON) courses at the 6000 level or above selected in consultation with the program director.		
Note: ECON 6217, ECON 6218, and ECON 6219 may not be used to fulfill the elective requirement. With program approval, students may select up to two graduate-level courses offered by the Trachtenberg School of Public Policy and Public Administration, School of Business, Milken Institute School of Public Health, and/or School of Engineering and Applied Science to fulfill the elective requirement. Courses in other graduate programs may meet this requirement subject to approval by the Program Director.		

MASTER OF ARTS IN THE FIELD OF ECONOMICS

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

30 credits

Prerequisite:	
A Bachelor's degree with a major in economics or with course work in economics that includes intermediate microeconomic and macroeconomic theory equivalent to:	
ECON 2101	Intermediate Microeconomic Theory
ECON 2102	Intermediate Macroeconomic Theory
Or:	
ECON 6217	Survey of Economics I
ECON 6218	Survey of Economics II
An understanding of basic calculus equivalent to:	
MATH 1231	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
Basic statistics, equivalent to:	
STAT 1111	Business and Economic Statistics I
STAT 2112	Business and Economic Statistics II

Required: 30 credits consisting of:	
ECON 8301	Microeconomic Theory I
ECON 8305	Macroeconomic Theory I
ECON 8375	Econometrics I
Two of the following:	
ECON 8302	Microeconomic Theory II
ECON 8306	Macroeconomic Theory II
ECON 8376	Econometrics II

Five additional 8000-level economics courses or four 8000-level economics courses and one 6000-level course approved by the student's Mater of Arts advisor.

MASTER OF SCIENCE IN THE FIELD OF ECONOMICS

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

30 credits, including 15 credits in required courses and 15 credits in elective courses.

Code	Title	Credits
Required		
ECON 8301	Microeconomic Theory I	
ECON 8305	Macroeconomic Theory I	
ECON 8375	Econometrics I	
Two of the following:		
ECON 8302	Microeconomic Theory II	
ECON 8306	Macroeconomic Theory II	
ECON 8376	Econometrics II	
Electives		
15 credits in ECON courses at the 8000-level		

DOCTOR OF PHILOSOPHY IN THE FIELD OF ECONOMICS

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy Program (p. 82).

Pre-candidacy Requirements

Pre-candidacy requirements include satisfactory completion of required courses and achievement of an acceptable grade in the general examination.

Code	Title	Credits
Required		
Core theory and econometrics		
ECON 8301	Microeconomic Theory I	
ECON 8302	Microeconomic Theory II	

ECON 8303	Microeconomic Theory III
ECON 8305	Macroeconomic Theory I
ECON 8306	Macroeconomic Theory II
ECON 8307	Macroeconomic Theory III
ECON 8375	Econometrics I
ECON 8376	Econometrics II
Electives	
24 credits in 8000-level (or approved 6000-level) courses.	
Passing grade in the general examination.	

General examination
The general examination consists of two preliminary examinations, one in microeconomic theory and one in macroeconomic theory, and two field examinations. The preliminary examinations are offered at the end of the spring semester examination period. Field examinations are given in econometrics, economic development, environmental and natural resource economics, health economics, industrial organization, international economics, international finance, labor economics, monetary theory and policy, public finance, and regional and urban economics.

To pass the general examination, students must earn:

1. A grade of "pass" or better in the preliminary examinations in microeconomic and macroeconomic theory; and
2. A grade of "satisfactory pass" or better in one of the two field examinations and no grade below "bare pass."

Two of the examinations, preliminary or field, may be taken a second time with the approval of the Department. No further opportunity to take the examinations is permitted. Substitution of a field examination (in an area not originally chosen by the student) to satisfy the requirements of the general examination is equivalent to taking a field examination a second time. Students should consult with the faculty members responsible for their fields and notify the Department two months in advance of their intention to take the examinations. If sufficient notice is not given, it may not be possible for the student to sit for the examination.

Time limits
The pre-candidacy stage must be concluded within five years after entry into the program. Upon successful completion of pre-candidacy, students are considered for admission to post-candidacy, i.e., the dissertation stage, which must be completed within five years after entry. In all cases the student is expected to complete the doctorate within eight years after admission.

Post-candidacy Requirements

For post-candidacy, requirements include formulation of an acceptable dissertation proposal, completion of a dissertation that demonstrates the candidate's ability to do original research, and 24 credits of additional graduate course work, of which at least 12 credits must be dissertation research. Students, including those who have an accepted dissertation proposal, must enroll in ECON 8397 Dissertation Proposal Seminar in the first semester after promotion to Unit II. Satisfactory performance in the seminar will be equivalent to 3 credits of Unit II course work. In cases where knowledge outside the discipline of economics is critical to the student's research field, up to 6 credits in Unit II may consist of required courses outside the Economics Department.

ENGLISH

Part of the Columbian College of Arts and Sciences' arts and humanities program, the Department of English fosters critical reflection on literature and culture, connecting reading practices with lucid writing and persuasive argumentation. Using a broad range of texts, students explore community, creativity, cultural conflict, history, and other relevant issues .

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in English (p. 206)
- Bachelor of Arts with a major in creative writing and English (p. 204)
- Combined program (p. 208)

Minors

- Minor in English (p. 209)
- Minor in creative writing (p. 208)

GRADUATE

Master's program

- Master of Arts in the field of English with optional concentrations in English or American literature (p. 210)

Doctoral program

- Doctor of Philosophy in the field of English with optional concentrations in English or American literature (p. 210)

FACULTY

Professors M. Alcorn *(Chair)*, J.J. Cohen, R.L. Combs, P. Cook, M. Frawley, A. Huang, E.P. Jones, S. Knapp, T.V. Mallon, D. McAleavey, R. McRuer, D. Mitchell, K. Moreland, F. Moskowitz, E. Schreiber, O.A. Seavey, J. Shore, C.W. Sten, A. Thompson, G. Wald, T.G. Wallace

Associate Professors G. Carter, P. Chu, K. Daiya, H. Dugan, J.M. Green-Lewis, P. Griffith, J. Hsy, J.C. James, A. López, D. Moshenberg, M.S. Soltan

Assistant Professors J. Chang, D. DeWispelare

Adjunct Professors L. Page, A.C. Stokes

Professorial Lecturer K.Z. Keller

Jenny McKean Moore Writer in Washington B. Skyhorse

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: The department strongly recommends a literature course, such as ENGL 1315 Literature and the Financial Imagination through ENGL 1711 Introduction to Postcolonial Literature and Film II or ENGL 1830 Tragedy or ENGL 1840 Comedy, as a prerequisite to upper-division English courses. All creative writing courses are limited to 15 students. Two creative writing courses in the same genre may not be taken during the same semester.

All graduate English courses, except ENGL 6100 Introduction to Literary Theory, may be repeated for credit with permission of the director of graduate studies.

ENGL 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details.

ENGL 1050. Introduction to Literary Studies. 3 Credits.
How to read and interpret literature at the college level and beyond. Close readings of poetry, fiction, and drama, emphasizing genre and form.

ENGL 1210. Introduction to Creative Writing. 3 Credits.
An exploration of genres of creative writing (fiction, poetry, and/or playwriting). Basic problems and techniques; examples of modern approaches; weekly writing assignments; workshop and/or conference discussion of student writing.

ENGL 1305. Colonial/Post-Colonial British Literature. 3 Credits.

ENGL 1315. Literature and the Financial Imagination. 3 Credits.
Literary studies focused broadly on representations of business, finance, or commerce; the economics of literary production; and/or theories of economic class as they pertain to literary works. Topic, genre, and time period vary by instructor.

ENGL 1320. Literature of the Americas. 3 Credits.
American literature considered in a global framework as writing that probes and spans the boundaries of the nation, connecting the United States to the rest of the Americas and to other parts of the globe.

ENGL 1320W. Literature of the Americas. 3 Credits.
American literature considered in a global framework as writing that probes and spans the boundaries of the nation, connecting the United States to the rest of the Americas and to other parts of the globe. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 1330. Myths of Britain. 3 Credits.
Why much great English literature turns out not to be so English after all. The literature of the island within a transnational frame. Readings generally range from Beowulf to Arthurian myths to Shakespeare. Topic, genre, and time period vary by instructor.

ENGL 1330W. Myths of Britain. 3 Credits.
Why much great English literature turns out not to be so English after all. The literature of the island within a transnational frame. Readings generally range from Beowulf to Arthurian myths to Shakespeare. Topic, genre, and time period vary by instructor.

ENGL 1340. Essential Shakespeare. 3 Credits.
Links between Shakespeare's geographical and theatrical "Globes." How did Shakespeare and his company represent racial, cultural, and linguistic difference in the Globe? What place did they imagine for England and Europe in this newly globalized world?.

ENGL 1340W. Essential Shakespeare. 3 Credits.
Links between Shakespeare's geographical and theatrical "Globes." How did Shakespeare and his company represent racial, cultural, and linguistic difference in the Globe? What place did they imagine for England and Europe in this newly globalized world?.

ENGL 1351. Shakespeare Seminar. 3 Credits.
Seminar course for first-year students in the Dean's Scholars in Shakespeare Program. Literary study of Shakespeare's poems and plays along with those of his contemporaries. Topic, genre, and time period vary by instructor.

ENGL 1360. Fantasy And Speculative Fiction. 3 Credits.
General overview of fantasy and speculative fiction. Topics may vary.

ENGL 1370. Topics in Global Cinema. 3 Credits.
Topics vary by semester. Consult the Schedule of Classes for more details.

ENGL 1410. Introduction to English Literature I. 3 Credits.
Representative works by major British authors studied in their historical context; discussion of recurrent themes and introduction to various types and forms of imaginative literature. Middle Ages through the 18th century.

ENGL 1410W. Introduction to English Literature I. 3 Credits.
Representative works by major British authors studied in their historical context; discussion of recurrent themes and introduction to various types and forms of imaginative literature. Middle Ages through the 18th century.

ENGL 1411. Introduction to English Literature II. 3 Credits.
Continuation of ENGL 1410. Representative works by major British authors studied in their historical context; discussion of recurrent themes and introduction to various types and forms of imaginative literature. 19th and 20th centuries.

ENGL 1411W. Introduction to English Literature II. 3 Credits.
Continuation of ENGL 1410. Representative works by major British authors studied in their historical context; discussion of recurrent themes and introduction to various types and forms of imaginative literature. 19th and 20th centuries.

ENGL 1510. Introduction to American Literature I. 3 Credits.
Historical survey. From early American writing through Melville, Whitman, and Dickinson.

ENGL 1510W. Introduction to American Literature I. 3 Credits.
Historical survey. From early American writing through Melville, Whitman, and Dickinson.

ENGL 1511. Introduction to American Literature II. 3 Credits.
Continuation of ENGL 1510. Historical survey. From Twain, James, and Crane to the present.

ENGL 1511W. Introduction to American Literature II. 3 Credits.
Continuation of ENGL 1510. Historical survey. From Twain, James, and Crane to the present.

ENGL 1610. Introduction to Black American Literature I. 3 Credits.
Survey of several genres of African American literature. From the 18th through the late 19th centuries, in such cultural contexts as the developing concept of "race.".

ENGL 1610W. Introduction to Black American Literature I. 3 Credits.
Survey of several genres of African American literature from the 18th through the late 19th centuries, in such cultural contexts as the developing concept of "race." Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 1611. Introduction to Black American Literature II. 3 Credits.
Continuation of ENGL 1610. Survey of several genres of African American cultural production, including literary and oral forms. From the early 20th century to the present day, in such cultural contexts as the "new Negro" Renaissance and the civil rights and Black Power movements.

ENGL 1611W. Introduction to Black American Literature II. 3 Credits.
Continuation of ENGL 1610. Survey of several genres of African American cultural production, including literary and oral forms. From the early 20th century to the present day, in such cultural contexts as the "new Negro" Renaissance and the civil rights and Black Power movements. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 1710. Introduction to Postcolonial Literature and Film I. 3 Credits.
Introduction to postcolonial literature from the perspectives of colonizer and colonized in Great Britain, India, Pakistan, Bangladesh, Sri Lanka, Australia, New Zealand, Canada, Anglophone Africa, and the Caribbean region; literature written on the wing, in diaspora.

ENGL 1710W. Introduction to Postcolonial Literature and Film I. 3 Credits.
Introduction to postcolonial literature from the perspectives of colonizer and colonized in Great Britain, India, Pakistan, Bangladesh, Sri Lanka, Australia, New Zealand, Canada, Anglophone Africa, and the Caribbean region; literature written on the wing, in diaspora.

ENGL 1711. Introduction to Postcolonial Literature and Film II. 3 Credits.
Continuation of ENGL 1710. Introduction to postcolonial literature from the perspectives of colonizer and colonized in Great Britain, India, Pakistan, Bangladesh, Sri Lanka, Australia, New Zealand, Canada, Anglophone Africa, and the Caribbean region; literature written on the wing, in diaspora.

ENGL 1711W. Introduction to Postcolonial Literature and Film II. 3 Credits.
Continuation of ENGL 1710. Introduction to postcolonial literature from the perspectives of colonizer and colonized in Great Britain, India, Pakistan, Bangladesh, Sri Lanka, Australia, New Zealand, Canada, Anglophone Africa, and the Caribbean region; literature written on the wing, in diaspora.

ENGL 1712. Introduction to Bollywood Cinema. 3 Credits.
Historical introduction to the industry of popular Hindi film known as Bollywood.

ENGL 1830. Tragedy. 3 Credits.
Modes of tragedy as developed in drama, nondramatic verse, and prose fiction in literature from ancient to modern times—Book of Job to Beckett.

ENGL 1830W. Tragedy. 3 Credits.
Modes of tragedy as developed in drama, nondramatic verse, and prose fiction in literature from ancient to modern times—Book of Job to Beckett.

ENGL 1840. Comedy. 3 Credits.
Modes of comedy as developed in drama, nondramatic verse, and prose fiction—Chaucer to Borges.

ENGL 1840W. Comedy. 3 Credits.
Modes of comedy as developed in drama, nondramatic verse, and prose fiction—Chaucer to Borges.

ENGL 2210. Techniques in Creative Writing. 3 Credits.
The craft and technique of creative writing and/or theories of creative writing. Topics vary by semester. Consult the Schedule of Classes for more information.

ENGL 2240. Play Analysis. 3 Credits.
Traditional and nontraditional (Aristotelian and non-Aristotelian) approaches to the analysis of dramatic literature; literary and theatrical techniques used by playwrights. Same as TRDA 2240.

ENGL 2250. Dramatic Writing. 3 Credits.
A workshop in playwriting and screenwriting, with emphasis on dramatic structure. Same as TRDA 2250. Recommended preparation: ENGL 1210 and two semesters of literature courses.

ENGL 2460. Fiction Writing. 3 Credits.
The writing of fiction. Recommended preparation: ENGL 1210 and two semesters of literature courses.

ENGL 2470. Poetry Writing. 3 Credits.
The writing of poetry. Recommended preparation: ENGL 1210 and two semesters of literature courses.

ENGL 2560. Intermediate Fiction Writing. 3 Credits.
The writing of fiction. Prerequisite: ENGL 2460 .

ENGL 2570. Intermediate Poetry Writing. 3 Credits.
The writing of poetry. Recommended preparation: ENGL 1210 and two semesters of literature courses.

ENGL 2800. Introduction to Critical Theory. 3 Credits.
Topics and techniques of literary and cultural analysis. Introduction to major schools of critical theory, including psychoanalysis, Marxism, feminism, queer theory, and disability studies.

ENGL 2800W. Introduction to Critical Theory. 3 Credits.
Topics and techniques of literary and cultural analysis. Introduction to major schools of critical theory, including psychoanalysis, Marxism, feminism, queer theory, and disability studies.

ENGL 3210. Readings in Creative Writing. 3 Credits.
Intensive reading of one to three texts selected by the instructor with the goal of learning to read as a writer and developing close reading skills. Authors and texts vary. May be repeated for credit provided course coverage differs.

ENGL 3240. Introduction to Dramaturgy. 3 Credits.
Fundamentals of classical and contemporary dramaturgical practice, including analyzing plays, doing research, supporting directors and actors in rehearsal, writing program notes, and leading post-show discussions. Same as TRDA 3240.

ENGL 3250. Intermediate Dramatic Writing. 3 Credits.
A workshop developing scripts for both theatre and film. Same as TRDA 3250. Prerequisite: ENGL 2250 . May be repeated for credit with departmental approval.

ENGL 3360. Advanced Fiction Writing. 3 Credits.
Further workshop study of the writing of fiction. Prerequisite: ENGL 2560 . May be repeated for credit with departmental approval.

ENGL 3370. Advanced Poetry Writing. 3 Credits.
Further workshop study of the writing of poetry. Prerequisite: ENGL 2570 . May be repeated for credit with departmental approval.

ENGL 3380. Creative Writing Workshop. 3 Credits.
Taught by the Jenny McKean Moore Writer in Washington; for undergraduates and graduate students. May be repeated for credit if taught by a different instructor. Prerequisites: One of the following upper-level creative writing courses: ENGL 2210, ENGL 2240, ENGL 2250, ENGL 2460, ENGL 2470, ENGL 2560, ENGL 2570, ENGL 3210, ENGL 3240, ENGL 3250, ENGL 3360, ENGL 3370, or ENGL 3390.

ENGL 3390. Topics in Creative Writing. 3 Credits.
Topics announced prior to the registration period; may be repeated for credit provided the topic differs. Topics may include poetry and poetics; forms and methods in fiction; forms and methods in poetry; memoir and personal narratives; creative nonfiction; "Literature, Live"; avant-garde and experimental writing.

ENGL 3400. Topics in Literature and Finance. 3 Credits.
Capstone course for English minors in the School of Business. Analysis of economic theories as they pertain to literary works. Topics may vary.

ENGL 3410. Chaucer. 3 Credits.
Chaucer's major works seen as exciting, lively texts from the modern perspective and as products of specific economic, social, and cultural trends of the late 14th century. Focus on The Canterbury Tales, read in the original Middle English.

ENGL 3410W. Chaucer. 3 Credits.
Chaucer's major works seen as exciting, lively texts from the modern perspective and as products of specific economic, social, and cultural trends of the late 14th century. Focus on The Canterbury Tales, read in the original Middle English.

ENGL 3420. Medieval Literature. 3 Credits.
Readings from a wide range of medieval genres, including romances, saints' legends, mystical narratives, lyrics, civic drama, and social satires. How these texts responded to and shaped changing patterns of medieval culture, as the clergy, the aristocracy, and the urban bourgeoisie attempted to define a culture of their own.

ENGL 3420W. Medieval Literature. 3 Credits.
Readings from a wide range of medieval genres, including romances, saints' legends, mystical narratives, lyrics, civic drama, and social satires. How these texts responded to and shaped changing patterns of medieval culture, as the clergy, the aristocracy, and the urban bourgeoisie attempted to define a culture of their own.

ENGL 3430. The English Renaissance. 3 Credits.
Verse and prose written in the period 1515-1625, examined in relation to cultural practices and social institutions that shaped English life. More, Sidney, Spenser, Shakespeare, Donne, Jonson, Bacon, Herbert, many others.

ENGL 3440. Shakespeare I. 3 Credits.
Close study of six or seven plays each semester, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution.

ENGL 3440W. Shakespeare I. 3 Credits.
Close study of six or seven plays each semester, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution.

ENGL 3441. Shakespeare II. 3 Credits.
Continuation of ENGL 3440. Close study of six or seven plays each semester, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution.

ENGL 3441W. Shakespeare II. 3 Credits.
Continuation of ENGL 3440. Close study of six or seven plays, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution.

ENGL 3445. Shakespeare on Film. 3 Credits.
Students will learn in detail the history of a small but significant subset of American and European film production: adaptations of Shakespeare's plays using the original language.

ENGL 3446. Shakespearean London. 3 Credits.
Early modern London's emergence as a global capital and its influence on Shakespeare's plays. Instructor permission required.

ENGL 3450. Topics in Shakespeare Studies. 3 Credits.
Critical study of a particular aspect of Shakespeare's work, or of a distinctive approach to the plays. Projected topics: Shakespeare on film, the history plays and Elizabethan England, 18th-century rewritings of Shakespeare, Shakespeare as poet, cultural materialist readings of Shakespeare.

ENGL 3460. Milton. 3 Credits.
Study of the major works in verse and prose, following the course of Milton's career.

ENGL 3470. English Drama I. 3 Credits.
Shakespeare's contemporaries.

ENGL 3471. English Drama II. 3 Credits.
Continuation of ENGL 3470. Historical survey, 1660 to present.

ENGL 3480. The Eighteenth Century I. 3 Credits.
Readings in significant 18th-century English and Continental writers—Dryden, Swift, Pope, Johnson, Montesquieu, Voltaire, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies.

ENGL 3480W. The Eighteenth Century I. 3 Credits.
Readings in significant 18th-century English and Continental writers—Dryden, Swift, Pope, Johnson, Montesquieu, Voltaire, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies.

ENGL 3481. The Eighteenth Century II. 3 Credits.
Continuation of ENGL 3480. Readings in significant 18th-century English and Continental writers—Dryden, Swift, Pope, Johnson, Montesquieu, Voltaire, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies.

ENGL 3481W. The Eighteenth Century II. 3 Credits.
Continuation of ENGL 3480. Readings in significant 18th-century English and Continental writers—Dryden, Swift, Pope, Johnson, Montesquieu, Voltaire, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies.

ENGL 3490. Early American Literature and Culture. 3 Credits.
The shaping of America's early literary and cultural traditions as shown by significant writers of the colonial and early national periods: Bradstreet, Cotton Mather, Edwards, Franklin, Crevecoeur, and others.

ENGL 3490W. Early American Literature and Culture. 3 Credits.
The shaping of America's early literary and cultural traditions as shown by significant writers of the colonial and early national periods: Bradstreet, Cotton Mather, Edwards, Franklin, Crevecoeur, and others.

ENGL 3510. Children's Literature. 3 Credits.
Nineteenth- and twentieth-century children's texts that illuminate the several worlds of childhood: the "small world" of childhood perception, the larger world of social and historical forces, and the "secondary world" of fantasy.

ENGL 3520. American Romanticism. 3 Credits.
The shaping of America's literary and cultural traditions as shown by significant writers of the Romantic era: Poe, Emerson, Hawthorne, Melville, Thoreau, Whitman, Dickinson, and others.

ENGL 3520W. American Romanticism. 3 Credits.
The shaping of America's literary and cultural traditions as shown by significant writers of the Romantic era: Poe, Emerson, Hawthorne, Melville, Thoreau, Whitman, Dickinson, and others.

ENGL 3530. The British Romantic Period. 3 Credits.
Major figures and topics in English and Continental romanticism: Blake, Wordsworth, Coleridge, Lamb, Byron, Shelley, Keats, Hazlitt, DeQuincey, and others.

ENGL 3530W. The British Romantic Period. 3 Credits.
Major figures and topics in English and Continental romanticism: Blake, Wordsworth, Coleridge, Lamb, Byron, Shelley, Keats, Hazlitt, DeQuincey, and others.

ENGL 3540. Victorian Literature I. 3 Credits.
Major writers between 1830 and 1865: E. Brontë, Dickens; Tennyson, Browning, Arnold; Darwin, Carlyle, Ruskin.

ENGL 3540W. Victorian Literature I. 3 Credits.
Major writers between 1830 and 1865: E. Brönte, Dickens, Tennyson, Browning, Arnold, Darwin, Carlyle, Ruskin.

ENGL 3541. Victorian Literature II. 3 Credits.
Major writers between 1865 and 1900: Eliot, Hardy, Conrad, Swinburne, the Rossettis, Morris, Pater, and Wilde.

ENGL 3550. The English Novel I. 3 Credits.
The 18th century—Defoe, Richardson, Fielding, Sterne, and others.

ENGL 3551. The English Novel II. 3 Credits.
Continuation of ENGL 3550. The 19th century—Austen, the Brontës, Dickens, George Eliot, Hardy, and others.

ENGL 3551W. The English Novel II. 3 Credits.
Continuation of ENGL 3550. The 19th century—Austen, the Brontës, Dickens, George Eliot, Hardy, and others.

ENGL 3560. American Realism. 3 Credits.
The shaping of America's literary and cultural traditions as shown by significant writers of the Realist school: Twain, James, Crane, Howells, Wharton, Chopin, Robinson, and others.

ENGL 3560W. American Realism. 3 Credits.
The shaping of America's literary and cultural traditions as shown by significant writers of the Realist school: Twain, James, Crane, Howells, Wharton, Chopin, Robinson, and others.

ENGL 3570. 19th-Century Black Literature. 3 Credits.
Studies in 19th-century black literature of the Americas and the transatlantic. Writing from the United States, Latin America, the Caribbean, Britain, and Africa may be included. Topics and emphasis may vary.

ENGL 3610. Modernism. 3 Credits.
The emergence of modernist experimentation (and the sense of epistemological and moral crisis it expressed) in the poetry and prose of Pound, T.S. Eliot, Woolf, Kafka, and others.

ENGL 3620. American Poetry I. 3 Credits.
Close examination of major American poems from the beginnings to the early 20th century: Poe, Emerson, Whitman, Dickinson, and others.

ENGL 3620W. American Poetry I. 3 Credits.
Close examination of major American poems from the beginnings to the early 20th century: Poe, Emerson, Whitman, Dickinson, and others.

ENGL 3621. American Poetry II. 3 Credits.
Close examination of major American poems since the early 20th century: Frost, Eliot, Stevens, Bishop, Hughes, Ashbery, and others.

ENGL 3621W. American Poetry II. 3 Credits.
Close examination of major American poems since the early 20th century: Frost, Eliot, Stevens, Bishop, Hughes, Ashbery, and others.

ENGL 3630. American Drama I. 3 Credits.
19th-century melodrama and the emergence of realism; works by O'Neill and other dramatists of the early 20th century.

ENGL 3631. American Drama II. 3 Credits.
Continuation of ENGL 3630. Developments in modern American drama since World War II, including works by Williams, Miller, Albee, Shepard, Rabe, Guare, Mamet, Henley, Wasserstein, Shange, Hwang, Wilson, and others.

ENGL 3640. The American Novel I. 3 Credits.
Historical and critical study of major works in the American novelistic tradition. From the beginnings through the 19th century: Hawthorne, Melville, James, Twain, Dreiser, and others.

ENGL 3640W. The American Novel I. 4 Credits.
Historical and critical study of major works in the American novelistic tradition. From the beginnings through the 19th century: Hawthorne, Melville, James, Twain, Dreiser, and others.

ENGL 3641. The American Novel II. 3 Credits.
Continuation of ENGL 3640. Historical and critical study of major works in the American novelistic tradition. The 20th century: Wharton, Cather, Anderson, Hemingway, Fitzgerald, Faulkner, Wright, R.P. Warren, Nabokov, and others.

ENGL 3641W. The American Novel II. 3 Credits.
Continuation of ENGL 3640. Historical and critical study of major works in the American novelistic tradition. The 20th century: Wharton, Cather, Anderson, Hemingway, Fitzgerald, Faulkner, Wright, R.P. Warren, Nabokov, and others.

ENGL 3650. The Short Story. 3 Credits.
An extensive survey of short fiction by a wide variety of writers of the 19th and 20th centuries, about half of them American; readings on the art of the short story by writers and literary critics.

ENGL 3660. 20th-Century Irish Literature I. 3 Credits.
Irish writers from the time of the literary revival in the late 19th century to the present. Yeats and other Irish poets and playwrights of his time and after—Synge, O'Casey, Kavanagh, Heaney, and others.

ENGL 3661. 20th-Century Irish Literature II. 3 Credits.
Continuation of ENGL 3660. Irish writers from the time of the literary revival in the late 19th century to the present. Joyce through Ulysses and other fiction writers of later generations—O'Brien, Beckett, and others.

ENGL 3661W. 20th-Century Irish Literature I. 3 Credits.
Continuation of ENGL 3660. Irish writers from the time of the literary revival in the late 19th century to the present. Joyce through Ulysses and other fiction writers of later generations—O'Brien, Beckett, and others.

ENGL 3710. Contemporary Drama. 3 Credits.
Examines drama written since 1960 in the light of postmodernism as both a literary and a theatrical theory. Explores the ways contemporary playwrights and directors challenge the perceptions and assumptions of today's audience.

ENGL 3710W. Contemporary Drama. 3 Credits.
Examines drama written since 1960 in the light of postmodernism as both a literary and a theatrical theory. Explores the ways contemporary playwrights and directors challenge the perceptions and assumptions of today's audience.

ENGL 3720. Contemporary American Literature. 3 Credits.
Historical, critical, and theoretical study of American literature since the 1960s. Various authors and genres.

ENGL 3720W. Contemporary American Literature I. 3 Credits.
Historical, critical, and theoretical study of American literature since the 1960s. Various authors and genres.

ENGL 3730. Topics in Postcolonial Literature and Film. 3 Credits.
Representations of empire and culture in modern, global Anglophone literature and cinema; cross-cultural encounter, migration, identity, orientalism, gender, environment, conflict, and globalization. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

ENGL 3730W. Topics in Postcolonial Literature. 3 Credits.
Historical, critical, and theoretical study of post-colonial literatures—African, Asian, Commonwealth—written in English. Topics vary with instructor; may be repeated for credit provided the topic differs.

ENGL 3810. Selected Topics in Literature. 3 Credits.
Topics announced in the Schedule of Classes; may be repeated for credit provided the topic differs. Topics may include the Bloomsbury group; southern literature; the picaresque; literature of the Holocaust; literature and politics; Freud, Dostoevsky, and Shakespeare.

ENGL 3810W. Selected Topics in Literature. 3 Credits.
Topics announced in the Schedule of Classes; may be repeated for credit provided the topic differs. Topics may include the Bloomsbury group; southern literature; the picaresque; literature of the Holocaust; literature and politics; Freud, Dostoevsky, and Shakespeare.

ENGL 3820. Major Authors. 3 Credits.
In-depth studies of a single figure or two or three authors (of British, American, or other nationality) who have written in English. Topics announced in the Schedule of Classes; may be repeated for credit provided the topic differs.

ENGL 3820W. Major Authors. 3 Credits.
In-depth studies of a single figure or two or three authors (of British, American, or other nationality) who have written in English. Topics announced in the Schedule of Classes; may be repeated for credit provided the topic differs.

ENGL 3826. Toni Morrison and William Faulkner. 3 Credits.
Commonalities between the fictional and discursive practices of Toni Morrison and William Faulkner; specifically, how their texts reenact and resist racism and patriarchal structures, explore the ways in which memory and the past construct identity, experiment with style.

ENGL 3830. Topics in Literary Theory and Cultural Studies. 3 Credits.
Selected topics in the diverse theoretical methodologies and interdisciplinary studies that characterize contemporary English and American literary studies. May be repeated for credit provided that topic differs.

ENGL 3830W. Topics in Literary Theory and Cultural Studies. 3 Credits.
Selected topics in the diverse theoretical methodologies and interdisciplinary studies that characterize contemporary English and American literary studies. May be repeated for credit provided the topic differs.

ENGL 3840. Gender and Literature. 3 Credits.
Symbolic representations of culturally defined roles and assumptions in literature. Male and female gender roles as fundamental to culture; the representation of culture, in literature especially and in the arts and humanities generally. May be repeated for credit provided the topic differs.

ENGL 3840W. Gender and Literature. 3 Credits.
Symbolic representations of culturally defined roles and assumptions in literature. Male and female gender roles as fundamental to culture; the representation of culture, in literature especially and in the arts and humanities generally. May be repeated for credit provided the topic differs.

ENGL 3850. Ethnicity and Place in American Literature. 3 Credits.
The relationships among ethnic identity, authorship, regional setting, and national consciousness. Differences in the literary culture of ethnically, racially, and regionally diverse American populations, and how considerations of ethnicity and place have been reshaping the American literary canon. Texts and emphases vary by instructor.

ENGL 3860. Topics in the History of the English Language. 3 Credits.
The cultural and literary functions of English across time and space. Scope and methodology vary by instructor. Topics may include language and identity, theoretical and linguistic approaches to language, multilingualism, diasporic writing, or history and periodization.

ENGL 3910. Disability Studies. 3 Credits.
Consideration of cultural texts that illustrate or illuminate issues of ability and disability-terms that extend the prism through which human experience may be understood.

ENGL 3912. Disability and the Holocaust. 3 Credits.
Investigating the question of direct links between the medical mass murder of disabled people in German psychiatric institutions to the Holocaust during World War II; studies of contemporary memorialization practices are examined.

ENGL 3915. Literature and Madness. 3 Credits.
A literary history of mental unrest; madness as a condition of culture, as an adaptive cognitive style, and as a cognitive challenge; descriptive, medical, historical, and socio-critical perspectives.

ENGL 3918. Literature and Medicine. 3 Credits.
The experience of illness as determined by historical, social, and psychological contexts; narrative as a mode of both understanding and managing illness, pain, loss, and the injustice of suffering.

ENGL 3920. U.S. Latina/o Literature and Culture. 3 Credits.
Introduction to the basic texts in the Chicana/o, Cuban-American, Dominican-American, and Puerto Rican literary and cultural traditions. Works by U.S. writers of Central American origin are discussed as well.

ENGL 3930. Topics in U.S. Latina/o Literature and Culture. 3 Credits.
In-depth exploration of a critical issue in the field of Latina/o literary and cultural studies. Topics may include ideologies of literary recovery, transnationalism and diaspora, blackness, and latinidad.

ENGL 3930W. Topics in U.S. Latina/o Literature and Culture. 3 Credits.
In-depth exploration of a critical issue in the field of Latina/o literary and cultural studies. Topics may include ideologies of literary recovery, transnationalism and diaspora, blackness and latinidad.

ENGL 3940. Topics in African American Literary Studies. 3 Credits.
Intensive study of a single aspect of African American literature: major authors, genre, theme, movement. Substantial attention to the critical tradition.

ENGL 3945. African American Poetry. 3 Credits.
African American poetry from the Black Atlantic through contemporary spoken word and web-based experiments in hypertext composition. Topics vary and may include Langston Hughes, Gwendolyn Brooks, poetry manifestoes, poetry and social justice, or eco-poetics of the black experience.

ENGL 3950. Cultural Theory and Black Studies. 3 Credits.
Selected topics in critical and cultural theories—often interdisciplinary—as used in understanding African American literature and culture. Topics may include genre, medium, period, social change, and leading contemporary African American thinkers/writers.

ENGL 3950W. Cultural Theory and Black Studies. 3 Credits.
Selected topics in critical and cultural theories—often interdisciplinary—as used in understanding African American literature and culture. Topics may include genre, medium, period, social change, and leading contemporary African American thinkers/writers.

ENGL 3960. Asian American Literature. 3 Credits.
How Asian American writers construct their identities in dialogue with shifting ideas of "America." Asian American history, gendering subjects, orientalism and postcolonial subjectivity, interracial relations, canonization. Representative writers: Kingston, Hwang, Jen, Chang-rae Lee, Ondaatje, Lahiri, Bulosan, Hagedorn.

ENGL 3960W. Asian American Literature. 3 Credits.
How Asian American writers construct their identities in dialogue with shifting ideas of "America." Asian American history, gendering subjects, orientalism and postcolonial subjectivity, interracial relations, canonization. Representative writers: Kingston, Hwang, Jen, Chang-rae Lee, Ondaatje, Lahiri, Bulosan, Hagedorn.

ENGL 3965. Topics in Asian American Cultural Studies. 3 Credits.
Literary and cinematic texts of Asian diasporic writers, with a focus on Asian American authors, history, and culture; the globalization of Asian American literature.

ENGL 3970. Jewish American Literature. 3 Credits.
One hundred years of Jewish American writing including fiction, nonfiction, autobiography, poetry, and drama. The immigrant experience, American philosemitism and antisemitism, the Holocaust and after, the New York intellectuals, Jewish feminism, and the patriarchal tradition.

ENGL 3970W. Jewish American Literature. 3 Credits.
One hundred years of Jewish American writing in fiction, autobiography, poetry, drama, and non-fictional prose. The immigrant experience, American philosemitism and antisemitism, the Holocaust and after, the New York intellectuals, Jewish feminism, and the patriarchal tradition.

ENGL 3980. Queer Studies. 3 Credits.
Examination of literature and culture in the context of the history and experience of lesbian, gay, bisexual, and transgendered people, with consideration of sexual identity as a core component of human experience. May be repeated once for credit provided the topic differs.

ENGL 3980W. Queer Studies. 3 Credits.
Examination of literature and culture in the context of the history and experience of lesbian, gay, bisexual, and transgendered people, with consideration of sexual identity as a core component of human experience. May be repeated once for credit provided the topic differs.

ENGL 3990. Literary Studies Workshop. 1 Credit.
Topics vary by semester. Consult the Schedule of Classes for more details. May be repeated once for credit provided the topic differs.

ENGL 4020. Studies in Contemporary Literature. 1-3 Credits.
Theme-based studies of specific issues or figures in 21st-century literature.

ENGL 4040. Honors Seminar. 3 Credits.
Genre and genre theory; literature as cultural artifact and as instrument of cultural criticism; various critical approaches —ideological, historical, and ahistorical. Open only to first-semester senior honors candidates in English.

ENGL 4040W. Honors Seminar. 3 Credits.
Genre and genre theory; literature as cultural artifact and as instrument of cultural criticism; various critical approaches —ideological, historical, and ahistorical. Open only to first-semester senior honors candidates in English.

ENGL 4135. Folger Seminar. 3 Credits.
The history of books and early modern culture. Use of the archive at the Folger Shakespeare Library. Students must obtain departmental approval in the preceding semester. Same as HIST 4135/ FREN 4135.

ENGL 4220. Creative Writing Senior Thesis. 3 Credits.
Under the guidance of an instructor, the student composes an original manuscript of poetry or short fiction accompanied by an essay situating the student's work in the contemporary context. Open only to seniors admitted to the English and creative writing major.

ENGL 4220W. Creative Writing Senior Thesis. 3 Credits.
Under the guidance of an instructor, the student composes an original manuscript of poetry or short fiction accompanied by an essay situating the student's work in the contemporary context. Open only to seniors admitted to the English and creative writing major.

ENGL 4250. Honors Thesis. 3 Credits.
Under the guidance of an instructor, the student writes a thesis on an approved topic. Open only to senior honors candidates in English.

ENGL 4250W. Honors Thesis. 3 Credits.
Under the guidance of an instructor, the student writes a thesis on an approved topic. Open only to senior honors candidates in English.

ENGL 4360. Independent Study. 1-4 Credits.
For exceptional students, typically majors, whose academic objectives are not accommodated in regular courses. Students must obtain departmental approval and arrange for supervision by an appropriate member of the faculty.

ENGL 4470. Internship. 1-3 Credits.
Position of responsibility with a publication, educational project, firm, or cultural organization offering practical experience in research, writing, editing, etc. Restricted to junior and senior English majors; approval of supervising faculty required for registration. May be repeated for credit; a maximum of 3 credits may be counted toward the English major. P/NP grading only.

ENGL 6100. Introduction to Literary Theory. 3 Credits.
An overview of methodologies for examining texts as linguistic and cultural productions. Methodologies explored may include structuralism, formalism, deconstruction, cultural materialism, postcolonial theory, feminism, gender studies, and queer theory.

ENGL 6120. Advanced Literary Theory. 3 Credits.
The course focuses on a major figure or topic in theory (e.g., Foucault, Lacan, Barthes, Kristeva, Bakhtin, post-Marxist theory, language and power, the canon).

ENGL 6130. Selected Topics in Criticism. 3 Credits.
Topics may include cultural studies, film, gay/lesbian studies, others.

ENGL 6220. Topics in Medieval and Early Modern Studies. 3 Credits.
Topics may include gender and body; postcolonial approaches to the period; surveys of poetry and/or prose with a special thematic coherence.

ENGL 6240. Literature of the British Archipelago. 3 Credits.
The literary and historical texts of early modern and medieval Britain within a pan-insular framework: England in conflict and coexistence with Ireland, Wales, Scotland.

ENGL 6250. Transnational England. 3 Credits.
The early literature of England within a global framework: England, Spain, France, Italy, Turkey, the Levant, the Americas, Africa, India, the Caribbean.

ENGL 6260. Seminar in Medieval and Early Modern Studies. 3 Credits.
Trends and cutting-edge research in medieval and early modern studies.

ENGL 6350. Nineteenth Century I. 3 Credits.
Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6351. Nineteenth Century II. 3 Credits.
Continuation of ENGL 6350. Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6352. Nineteenth Century III. 3 Credits.
Continuation of ENGL 6351. Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6353. Nineteenth Century IV. 3 Credits.
Continuation of ENGL 6352. Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6450. Twentieth Century I. 3 Credits.
Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6451. Twentieth Century II. 3 Credits.
Continuation of ENGL 6450. Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6452. Twentieth Century III. 3 Credits.
Continuation of ENGL 6451. Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6453. Twentieth Century IV. 3 Credits.
Continuation of ENGL 6452. Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6510. Writing, Race and Nation. 3 Credits.
Literary culture as a basis for exploration of intersections of origins and evolution of racial and ethnic identities and national myths and political objectives.

ENGL 6520. Ethnicity and Identity. 3 Credits.
Literary culture is used to explore how individuals, communities, and societies construct self-awareness and knowledge about others for cultural exchange.

ENGL 6530. Conceptualizing Genders. 3 Credits.
Structures of sex and gender difference considered historically and theoretically, including masculinity/femininity, sexualities, and their textual representations.

ENGL 6540. Women and Writing. 3 Credits.
Selected topics in the traditions, theory, and texts of women's literary production and culture. Same as WSTU 6251.

ENGL 6550. Studies in Genre I. 3 Credits.
Questions of genre, considered theoretically and practically. Content varies.

ENGL 6551. Studies in Genre II. 3 Credits.
Continuation of ENGL 6550. Questions of genre, considered theoretically and practically. Content varies.

ENGL 6560. Postcolonialism. 3 Credits.
Postcolonial theory and texts by representative writers.

ENGL 6620. Medicine and Society. 3 Credits.
The interaction of medicine and society in ways that touch on philosophy, economics, sociology, and public policy, but that cannot be fully understood in terms of any single perspective. Society's effect on medicine and medicine's effect on society.

ENGL 6630. Literature and Medicine. 3 Credits.
Methods of critical theory applied to issues concerning the practice of medicine. The polar constructs of illness and health, life and death, and life's worth or its waste.

ENGL 6720. Independent Research. 3 Credits.
Written permission of instructor required. May be repeated for credit to a maximum of 9 hours.

ENGL 6740. Mastering the Canon. 3 Credits.
Independent reading under a faculty member.

ENGL 6810. Folger Institute Seminars I. 3 Credits.
Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the graduate advisor before registration.

ENGL 6811. Folger Institute Seminars II. 3 Credits.
Continuation of ENGL 6810. Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the graduate advisor before registration.

ENGL 6998. Thesis Research. 3 Credits.

ENGL 6999. Thesis Research. 3 Credits.

ENGL 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

ENGL 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit. ENGL 8999 must be taken as the final 12 credit hours of the degree.

BACHELOR OF ARTS WITH A MAJOR IN CREATIVE WRITING AND ENGLISH

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

33 credits

Code	Title	Credits
Required		
One course (3 credits) in literature before the 18th century selected from the following:		
ENGL 3410	Chaucer	
or ENGL 3410W	Chaucer	
ENGL 3420	Medieval Literature	
or ENGL 3420W	Medieval Literature	

ENGL 3430	The English Renaissance
ENGL 3440	Shakespeare I
or ENGL 3440W	Shakespeare I
ENGL 3441	Shakespeare II
or ENGL 3441W	Shakespeare II
ENGL 3450	Topics in Shakespeare Studies
ENGL 3460	Milton
ENGL 3470	English Drama I
ENGL 3490	Early American Literature and Culture
or ENGL 3490W	Early American Literature and Culture
ENGL 4135	Folger Seminar

One course (3 credits) in literature during the 18th and 19th century selected from the following:

ENGL 3510	Children's Literature
ENGL 3520	American Romanticism
ENGL 3540	Victorian Literature I
ENGL 3640	The American Novel I
ENGL 3820	Major Authors

One course (3 credits) in literature after the 19th century selected from the following:

ENGL 3510	Children's Literature
ENGL 3610	Modernism
ENGL 3621	American Poetry II
or ENGL 3621W	American Poetry II
ENGL 3630	American Drama I
ENGL 3631	American Drama II
ENGL 3641	The American Novel II
or ENGL 3641W	The American Novel II
ENGL 3650	The Short Story
ENGL 3660	20th-Century Irish Literature I
ENGL 3661	20th-Century Irish Literature II
or ENGL 3661W	20th-Century Irish Literature I
ENGL 3710	Contemporary Drama
or ENGL 3710W	Contemporary Drama
ENGL 3720	Contemporary American Literature
or ENGL 3720W	Contemporary American Literature
ENGL 3721	Contemporary American Literature II
or ENGL 3721W	Contemporary American Literature II
ENGL 3730	Topics in Postcolonial Literature and Film
or ENGL 3730W	Topics in Postcolonial Literature
ENGL 3850	Ethnicity and Place in American Literature
ENGL 3930	Topics in U.S. Latina/o Literature and Culture
or ENGL 3930W	Topics in U.S. Latina/o Literature and Culture
ENGL 3960	Asian American Literature
or ENGL 3960W	Asian American Literature
ENGL 3970	Jewish American Literature
or ENGL 3970W	Jewish American Literature

One course (3 credits) in minority/postcolonial literature selected from the following:

ENGL 3570	19th-Century Black Literature
ENGL 3660	20th-Century Irish Literature I
ENGL 3661	20th-Century Irish Literature II
or ENGL 3661W	20th-Century Irish Literature I
ENGL 3730	Topics in Postcolonial Literature and Film
or ENGL 3730W	Topics in Postcolonial Literature
ENGL 3850	Ethnicity and Place in American Literature
ENGL 3910	Disability Studies
ENGL 3920	U.S. Latina/o Literature and Culture
ENGL 3930	Topics in U.S. Latina/o Literature and Culture
or ENGL 3930W	Topics in U.S. Latina/o Literature and Culture
ENGL 3940	Topics in African American Literary Studies
ENGL 3950	Cultural Theory and Black Studies

or ENGL 3950W	Cultural Theory and Black Studies
ENGL 3960	Asian American Literature
or ENGL 3960W	Asian American Literature
ENGL 3980	Queer Studies
or ENGL 3980W	Queer Studies
Five creative writing workshops (15 credits), two of which must be at the 3000 level or above, selected from the following:	
ENGL 2250	Dramatic Writing
or TRDA 2250	Dramatic Writing
ENGL 2460	Fiction Writing
ENGL 2470	Poetry Writing
ENGL 2560	Intermediate Fiction Writing
ENGL 2570	Intermediate Poetry Writing
ENGL 3250	Intermediate Dramatic Writing
or TRDA 3250	Intermediate Dramatic Writing
ENGL 3360	Advanced Fiction Writing
ENGL 3370	Advanced Poetry Writing
ENGL 3380	Creative Writing Workshop
ENGL 3390	Topics in Creative Writing
Other required courses (6 credits):	
ENGL 2210	Techniques in Creative Writing
ENGL 3210	Readings in Creative Writing

SPECIAL HONORS

Majors in Creative Writing and English who wish to be considered for Special Honors must apply in writing in the spring semester of the junior year; they must meet the requirements stated under University Regulations and have a GPA of 3.25 in courses in the English Department at the time of applying. Candidates take the Creative Writing Senior Thesis ENGL 4220 in the spring semester. To be eligible for graduation with Special Honors, candidates must earn an A or A– on the Honors Thesis and have achieved a 3.4 grade-point average in courses in the English Department.

BACHELOR OF ARTS WITH A MAJOR IN ENGLISH

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Prerequisite course(s):		
One introductory English literature course chosen from the following:		
ENGL 1050	Introduction to Literary Studies	
ENGL 1305	Colonial/Post-Colonial British Literature	
ENGL 1315	Literature and the Financial Imagination	
ENGL 1320	Literature of the Americas	
or ENGL 1320W	Literature of the Americas	
ENGL 1330	Myths of Britain	
ENGL 1340	Essential Shakespeare	
or ENGL 1340W	Essential Shakespeare	
ENGL 1410/	Introduction to English Literature I	
or ENGL 1410W	Introduction to English Literature I	
ENGL 1411	Introduction to English Literature II	
or ENGL 1411W	Introduction to English Literature II	
ENGL 1510	Introduction to American Literature I	
or ENGL 1510W	Introduction to American Literature I	
ENGL 1511	Introduction to American Literature II	
or ENGL 1511W	Introduction to American Literature II	
ENGL 1610	Introduction to Black American Literature I	
or ENGL 1610W	Introduction to Black American Literature I	
ENGL 1611	Introduction to Black American Literature II	
or ENGL 1611W	Introduction to Black American Literature II	
ENGL 1710	Introduction to Postcolonial Literature and Film I	

or ENGL 1710W	Introduction to Postcolonial Literature and Film I
ENGL 1711	Introduction to Postcolonial Literature and Film II
or ENGL 1711W	Introduction to Postcolonial Literature and Film II
ENGL 1830	Tragedy
ENGL 1840	Comedy
or ENGL 1840W	Comedy

Code	Title	Credits
Required courses in related areas:		
Required for the major:		
33 credit hours of upper-division English courses including:		
Two courses in literature before the 18th century from the following:		
Certain Special Topics and Major Authors courses can fulfill this requirement		
ENGL 3410	Chaucer	
ENGL 3420	Medieval Literature	
ENGL 3430	The English Renaissance	
ENGL 3440	Shakespeare I	
ENGL 3441	Shakespeare II	
ENGL 3450	Topics in Shakespeare Studies	
ENGL 3460	Milton	
ENGL 3470	English Drama I	
ENGL 3490	Early American Literature and Culture	
ENGL 4135	Folger Seminar	
Two courses in literature between the 18th and 19th centuries from the following:		
Certain Special Topics and Major Authors courses can fulfill this requirement		
ENGL 3480	The Eighteenth Century I	
ENGL 3481	The Eighteenth Century II	
ENGL 3490	Early American Literature and Culture	
ENGL 3510	Children's Literature	
ENGL 3530	The British Romantic Period	
ENGL 3540	Victorian Literature I	
ENGL 3541	Victorian Literature II	
ENGL 3550	The English Novel I	
ENGL 3551	The English Novel II	
ENGL 3520	American Romanticism	
ENGL 3560	American Realism	
ENGL 3620	American Poetry I	
ENGL 3620	American Poetry I	
ENGL 3640	The American Novel I	
ENGL 3570	19th-Century Black Literature	
One course in literature after the 19th century from the following:		
Certain Special Topics and Major Authors courses can fulfill this requirement		
ENGL 3510	Children's Literature	
ENGL 3610	Modernism	
ENGL 3621	American Poetry II	
ENGL 3630	American Drama I	
ENGL 3631	American Drama II	
ENGL 3641	The American Novel II	
ENGL 3650	The Short Story	
ENGL 3660	20th-Century Irish Literature I	
ENGL 3661	20th-Century Irish Literature II	
ENGL 3710	Contemporary Drama	
ENGL 3720	Contemporary American Literature	
ENGL 3721	Contemporary American Literature II	
ENGL 3730	Topics in Postcolonial Literature and Film	
ENGL 3850	Ethnicity and Place in American Literature	
ENGL 3930	Topics in U.S. Latina/o Literature and Culture	
ENGL 3960	Asian American Literature	

ENGL 3970	Jewish American Literature
One course in minority/postcolonial literature from the following:	
Certain Special Topics and Major Authors courses can fulfill this requirement	
ENGL 3570	19th-Century Black Literature
ENGL 3660	20th-Century Irish Literature I
ENGL 3661	20th-Century Irish Literature II
ENGL 3730	Topics in Postcolonial Literature and Film
ENGL 3850	Ethnicity and Place in American Literature
ENGL 3910	Disability Studies
ENGL 3920	U.S. Latina/o Literature and Culture
ENGL 3930	Topics in U.S. Latina/o Literature and Culture
ENGL 3940	Topics in African American Literary Studies
ENGL 3950	Cultural Theory and Black Studies
ENGL 3960	Asian American Literature
ENGL 3965	Topics in Asian American Cultural Studies
ENGL 3980	Queer Studies
Two courses in literary theory and/or cultural studies including ENGL 2800W and one of the following:	
Certain Special Topics and Major Authors courses can fulfill this requirement	
ENGL 2240	Play Analysis
ENGL 2800	Introduction to Critical Theory
ENGL 3610	Modernism
ENGL 3830	Topics in Literary Theory and Cultural Studies
ENGL 3840	Gender and Literature
ENGL 3860	Topics in the History of the English Language
ENGL 3910	Disability Studies
ENGL 3920	U.S. Latina/o Literature and Culture
ENGL 3950	Cultural Theory and Black Studies
ENGL 3965	Topics in Asian American Cultural Studies
ENGL 3980	Queer Studies
ENGL 4040	Honors Seminar
ENGL 4250	Honors Thesis
Three additional upper-division English courses, which may be in creative writing. With approval of the English Department, two courses in the literature of a foreign language (either in the original language or in translation) may be substituted for English electives.	
ENGL 2800W	Introduction to Critical Theory

With departmental approval, courses with appropriate subject matter may be substituted for those specified above. A single course may fulfill only one requirement.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must apply in writing in the spring semester of the junior year; and they must have a GPA of 3.25 in courses in the English Department at the time of applying. Candidates take ENGL 4040 Honors Seminar in the fall semester of the senior year and ENGL 4250 Honors Thesis in the spring semester. Candidates must earn an *A* or *A*− on the Honors Thesis and have achieved a 3.4 grade-point average in courses in the English Department.

COMBINED PROGRAM, ENGLISH

REQUIREMENTS

The Department of English offers a combined bachelor of arts and master of arts (B.A./M.A.) degree program. The program allows students to take a specified number of graduate credits as part of their undergraduate degree, thereby decreasing the number of credits normally required for the master's degree. Combined degrees are typically granted in a shorter period of time and at lower cost than if both programs were pursued separately.

Interested students should consult a departmental advisor early in their junior year. Visit the department website (https://english.columbian.gwu.edu) for additional information.

MINOR IN CREATIVE WRITING

The following requirements must be fulfilled: 21 credits in limited elective courses.

One introductory literature course (3 credits) from the following:	
ENGL 1305	Colonial/Post-Colonial British Literature
ENGL 1315	Literature and the Financial Imagination
ENGL 1320	Literature of the Americas
or ENGL 1320W	Literature of the Americas
ENGL 1330	Myths of Britain
or ENGL 1330W	Myths of Britain
ENGL 1340	Essential Shakespeare
or ENGL 1340W	Essential Shakespeare
ENGL 1410	Introduction to English Literature I
or ENGL 1410W	Introduction to English Literature I
ENGL 1411	Introduction to English Literature II
or ENGL 1411W	Introduction to English Literature II
ENGL 1510	Introduction to American Literature I
or ENGL 1510W	Introduction to American Literature I
ENGL 1511	Introduction to American Literature II
or ENGL 1511W	Introduction to American Literature II
ENGL 1610	Introduction to Black American Literature I
or ENGL 1610W	Introduction to Black American Literature I
ENGL 1611	Introduction to Black American Literature II
or ENGL 1611W	Introduction to Black American Literature II
ENGL 1710	Introduction to Postcolonial Literature and Film I
or ENGL 1710W	Introduction to Postcolonial Literature and Film I
ENGL 1711	Introduction to Postcolonial Literature and Film II
or ENGL 1711W	Introduction to Postcolonial Literature and Film II
ENGL 1830	Tragedy
or ENGL 1830W	Tragedy
ENGL 1840	Comedy
or ENGL 1840W	Comedy

Six courses (18 credits) from the following, of which five must be in creative writing:	
At least three in poetry:	
ENGL 2470	Poetry Writing
ENGL 2570	Intermediate Poetry Writing
ENGL 3370	Advanced Poetry Writing
ENGL 3380	Creative Writing Workshop
Or three in fiction:	
ENGL 2460	Fiction Writing
ENGL 2560	Intermediate Fiction Writing
ENGL 3360	Advanced Fiction Writing
ENGL 3380	Creative Writing Workshop
Or two in dramatic writing:	
ENGL 2250	Dramatic Writing
or TRDA 2250	Dramatic Writing
ENGL 3250	Intermediate Dramatic Writing
or TRDA 3250	Intermediate Dramatic Writing
ENGL 3390	Topics in Creative Writing

MINOR IN ENGLISH

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in limited elective courses.

Code	Title	Credits
One introductory courses (3 credits) from the following:		
ENGL 1305	Colonial/Post-Colonial British Literature	
ENGL 1315	Literature and the Financial Imagination	
ENGL 1320/1320W	Literature of the Americas	
ENGL 1330/1330W	Myths of Britain	
ENGL 1340/1340W	Essential Shakespeare	

ENGL 1410/1410W	Introduction to English Literature I
ENGL 1411/1411W	Introduction to English Literature II
ENGL 1510/1510W	Introduction to American Literature I
ENGL 1511/1511W	Introduction to American Literature II
ENGL 1610/1610W	Introduction to Black American Literature I
ENGL 1611/1611W	Introduction to Black American Literature II
ENGL 1710/1710W	Introduction to Postcolonial Literature and Film I
ENGL 1711/1711W	Introduction to Postcolonial Literature and Film II
ENGL 1830/1830W	Tragedy
ENGL 1840/1840W	Comedy

Remaining requirement

Five literature courses (15 credits) in English (ENGL) numbered 2000 or above.

MASTER OF ARTS IN THE FIELD OF ENGLISH WITH OPTIONAL CONCENTRATIONS IN ENGLISH OR AMERICAN LITERATURE

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

Non-thesis option—30 credits; including 30 credits in required courses and a final master's portfolio; thesis option—30 credits, including 24 credits in required courses and 6 credits of thesis.

Code	Title	Credits
Required		
ENGL 6100	Introduction to Literary Theory	

For students pursuing the thesis option only

ENGL 6998	Thesis Research
ENGL 6999	Thesis Research

The remainder of the program is developed in consultation with the departmental advisor.

Students must maintain a minimum grade-point average of 3.25.

DOCTOR OF PHILOSOPHY IN THE FIELD OF ENGLISH WITH OPTIONAL CONCENTRATIONS IN ENGLISH OR AMERICAN LITERATURE

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Prerequisite: a Bachelor of Arts degree with an undergraduate major in English or American literature, or 24 credits in English or American literature above the sophomore level.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy Program (p. 82).

Required:

1. Coursework planned in consultation with the department advisor
2. A comprehension exam in a language approved by the department
3. A qualifying examination passed at the beginning of the student's second year and a field examination passed by the end of the student's coursework, topics and reading lists for which are designed in consultation with two graduate faculty advisors
4. A dissertation proposal after the field exam
5. A dissertation on an approved topic, directed by a member of the department's graduate faculty, and completed by the end of the fifth year of study.

Each student plans a program of studies in consultation with the department advisor and a committee of the graduate faculty. Students must maintain a grade-point average of at least 3.5.

ENGLISH FOR ACADEMIC PURPOSES

OVERVIEW

The mission of the English for Academic Purposes (EAP) program is to introduce international students who speak English as a second or additional language to the University's academic community. The overarching objective of the program is to prepare students to meet academic expectations for written communication at a university level. The core courses offered in the EAP program focus on academic research and writing, with elective courses that target oral academic communication and other critical academic literacy skills.

FACULTY

Director M. Siczek

Assistant Professors Natalia D. Jacobsen (Teaching), Aisha Sayidina (Teaching)

Adjunct Professor N. Romanova

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Students who are not placed into EAP 6110 Academic Writing and Research for International Graduate Students I and EAP 6111 Academic Writing and Research for International Graduate Students II require instructor's permission to register.

EAP 1010. Academic Communication. 3 Credits.
Develops international students' oral academic English skills to prepare them for success in U.S. higher educational settings. Focus on listening and note-taking, leading and participating in class discussions, managing a variety of authentic academic literacy tasks, and delivering presentations. Additional emphasis on developing multi-literacy through intercultural, multimedia, and visual communication. Restricted to international students.

EAP 1015. American Multicultural Perspectives in Washington, D.C.. 3 Credits.
Designed to prepare international undergraduate students for university-level writing expectations. A structured academic writing course that explores the capital's rich multicultural heritage. Focus on the development of academic literacy skills, drafting and revising, and research-based writing. Upon successful completion of EAP 1015, students take UW 1020.

EAP 1016. Academic Skills Workshop. 1 Credit.
Development of critical academic skills for international students. Workshop topics may include grammar for academic writing, critical reading, listening and note-taking, academic vocabulary development, and discussion and presentation skills. Credit for this course cannot be applied to a degree.

EAP 1046. Independent Study. 1-4 Credits.
Individualized instruction in specific skill areas. Program director approval required. Credit for this course cannot be applied toward a degree.

EAP 6000. Academic Communication. 3 Credits.
Acclimation to the oral communication expectations of graduate school through developing listening and note-taking skills, expanding communicative vocabulary, leading and participating in class discussions, and preparing and delivering informal and formal presentations. Classroom activities directed toward scholarly and professional communication in students' fields of study whenever possible. Credit does not apply to any degree or certificate offered by GW.

EAP 6016. Academic Skills Workshop. 1 Credit.
Development of critical academic skills for international students. Workshop topics may include grammar for academic writing, critical reading, listening and note-taking, academic vocabulary development, and discussion and presentation skills. Credit for this course cannot be applied to a degree. (Same as EAP 1016).

EAP 6110. Academic Writing and Research for International Graduate Students I. 3 Credits.
The process of researching, planning, writing, and revising for academic purposes. Focus on key writing skills and critical thinking. Practice in reading and analyzing university-level materials and completing graduate-level academic exercises. Credit for this course does not apply toward any degree or certificate offered by GW.

EAP 6111. Academic Writing and Research for International Graduate Students II. 3 Credits.
An academic writing and research course for international students who demonstrate high proficiency in English. Focus on research paper writing, analysis of academic discourse, small-group work, and oral presentations on research. Credit for this course does not apply toward any degree or certificate offered by GW.

ENVIRONMENTAL RESOURCE POLICY

OVERVIEW

The Environmental Resource Policy (ENRP) program at GW offers a multidisciplinary approach to environmental and sustainability studies. The master of arts degree prepares students to enter environmental policy careers in government, nonprofit organizations, the private sector, and environmental advocacy. In addition to the M.A. degree program, ENRP offers two graduate certificate programs. The graduate certificate in environmental resource policy provides an alternative to the M.A. for working professionals who may not have the need for or the time to commit to the full master's; however, once completed, the credits earned toward the certificate may be applied to the master's degree requirements. The graduate certificate in the contexts of environmental policy is designed to help support the professional development of current and future leaders of the National Park Service who are responsible for the preservation and protection of public lands and cultural heritage.

GRADUATE

Master's program

- Master of Arts in the field of environmental resource policy (p. 213)

CERTIFICATES

- Graduate certificate in contexts of environmental policy (p. 213)
- Graduate certificate in environmental resource policy (p. 214)

FACULTY

Program Director P. Linquiti

Director of Graduate Studies N. Augustine

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ENRP 6085. Topics in Environmental Resource Policy. 1-3 Credits.
Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ENRP 6097. Practicum in Environmental Resource Policy. 0 Credits.
International students engage in an unpaid internship. Restricted to students enrolled in the MA in environmental resource policy program.

ENRP 6101. Environmental Sciences I: Physical Sciences. 3 Credits.
Basic physical sciences crucial to environmental issues, including chemistry, geology, hydrology, climate science, and cross-media interactions; land, air, and water pollution, climate change, production and consumption of energy, sea level rise, and anthropogenic changes in the cryosphere. Restricted to students in the MA in environmental resource policy; graduate certificate in contexts of environmental policy; and BA/MA in environmental studies and environmental resource policy programs; permission of the instructor may be substituted.

ENRP 6102. Environmental Sciences II: Life Sciences. 3 Credits.
Basic life sciences crucial to environmental issues, including biology, ecology, environmental health and toxicology, epidemiology, and agriculture; biodiversity, ecosystem services, habitat preservation, deforestation, conservation biology, nutrient cycling, and the impacts of climate change on living systems. Restricted to students in the MA in environmental resource policy; graduate certificate in contexts of environmental policy; and BA/MA in environmental studies and environmental resource policy programs; permission of the instructor may be substituted.

ENRP 6140. Environmental Impact Statement Procedures and Environmental Law. 3 Credits.
The rationale for environmental impact statements from the viewpoint of the nature and origins of environmental concerns. Government agencies responsible for environmental impact statements; current statutes and regulations pertaining to the environment.

ENRP 6145. Global Environmental Justice and Policy. 3 Credits.
Environmental justice, considered as both a movement and a public policy. Examination of environmental injustices—both perceived and actual—affecting individuals, communities, and populations. Adherence to, and enforcement of, environmental laws and regulations that affect the allocation of environmental benefits and the distribution of sources of toxic pollution and other hazards.

ENRP 6295. Research Topics in Environmental Resource Policy. 1-3 Credits.
May be repeated for credit to a maximum of 6 credits.

ENRP 6298. Seminar in Environmental Resource Policy. 3 Credits.
The capstone seminar involves team development of a project sponsored by an external entity, such as a government agency or non-governmental organization, or participation in an aspect of a research project directed by a faculty member. The student team functions as an external consultant tasked with analysis of the chosen issue.

MASTER OF ARTS IN THE FIELD OF ENVIRONMENTAL RESOURCE POLICY

The master of arts in environmental resource policy (ENRP) degree program offers a multidisciplinary approach to environmental and sustainability studies, blending theory and practical experience with a curriculum that includes environmental economics, environmental law, public policy, research methods, and environmental science. Elective courses can be taken in almost any department at the University, including, but not limited to, biology, chemistry, geography, international affairs, public policy, economics, political science, engineering management and systems engineering, business administration, and public health. Students graduate prepared to enter environmental policy careers in government, nonprofit organizations, the private sector, and environmental advocacy groups.

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

36 credits, including 24 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
ENRP 6101	Environmental Sciences I: Physical Sciences	
ENRP 6102	Environmental Sciences II: Life Sciences	
ENRP 6140	Introduction to Environmental Law	
ENRP 6298	Capstone Seminar in Environmental Resource Policy	
ECON 6217	Survey of Economics I	
ECON 6237	Economics of the Environment and Natural Resources	
PPPA 6002	Research Methods and Applied Statistics	
PPPA 6006	Policy Analysis	
Electives		

12 credits of approved elective drawn from a number of departments throughout the University.

Students who previously completed required courses may be allowed to substitute additional elective courses with program approval.

GRADUATE CERTIFICATE IN CONTEXTS OF ENVIRONMENTAL POLICY

National Park Service Roger Kennedy Fellows Program

Graduate certificate in contexts of environmental policy for National Park Service (NPS) employees who have served for three or more years
The NPS Graduate Certificate in Contexts of Environmental Policy program is designed to help prepare current and future leaders who are responsible for the preservation and protection of public lands and cultural heritage. Inspired by a gift from Roger and Frances Kennedy and made possible by the Friends of Roger Kennedy, this program funds NPS students to undertake a course of study that strengthens their knowledge of the natural and cultural resources that lie at the heart of the NPS mission. Offering a wide range of courses that contextualize environmental policy, the program allows both flexibility and purpose to NPS students.

Program Overview

Students are required to complete 12 credits taken in four 3-credit graduate-level courses. Students may take one or two courses per semester; some courses are also offered in the summer. Program courses are offered by the Columbian College of Arts and Sciences (CCAS) on GW's Foggy Bottom campus in downtown Washington, D.C., and all courses are taught by GW faculty members who are experts in their field.

Applicants must meet GW admission requirements and are enrolled as degree students upon admission. Once admitted to the program, students do not need to reapply for subsequent semesters as long as they remain in good academic standing as defined by Columbian College of Arts and Sciences standards (http://bulletin.gwu.edu/arts-sciences/#degreeregulationstext).

Students are required to take one policy course as they enter the program and then can choose among a large number of electives that fall under either policy or culture categories.

By special permission, students may also enroll in graduate courses in the sciences.

The admissions process for this program comprises a two-tiered review:

- The first level of review is conducted by an NPS review committee to ensure that NPS employees meet all eligibility requirements and are appropriate candidates to be considered for participation. The review committee ranks each nominee based on the information provided in the nominee's application materials. The ranking process consists of an evaluation of the nominee's education, work experience, personal and professional goals, and writing ability.
- The second level of review is the actual selection of participants by a CCAS admissions committee. This committee conducts its selections based on the admission policies of CCAS and GW.

REQUIREMENTS

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following requirements must be fulfilled: 12 credits, including one 3-credit required course and 9 credits in elective courses.

Code	Title	Credits
Required:		
PPPA 6006	Policy Analysis	
or PPPA 6066	Environmental Policy	
Electives		
9 credits in elective courses selected from the following:		
AMST 6530	Field Methods in Architectural Documentation	
ANTH 6101	Proseminar in Biological Anthropology	
ANTH 6807	Public Archaeology	
ENGL 6510	Writing, Race and Nation	
ENGL 6520	Ethnicity and Identity	
ENRP 6101	Environmental Sciences I: Physical Sciences	
ENRP 6140	Introduction to Environmental Law	
GEOG 6219	Seminar: Climatology	
GEOG 6230	Seminar: Environmental Issues in Development	
HIST 6011	Reading and Research in History and Public Policy	
HIST 6302	Colonial North America	
HIST 6304	American Indian History to 1890	
HIST 6420	Religion & American Culture	
HIST 6480	Theory and Practice of Public History	
HIST 6495	Historic Preservation: Principles and Methods	
MSTD 6101	Museum Management	
MSTD 6103	Leading Change	
MSTD 6203	Preventive Conservation Concepts	
PHIL 6281	Environmental Philosophy and Policy	
PPPA 6010	Politics & The Policy Process	
PPPA 6031	Governing and Managing Nonprofit Organizations	
PPPA 6043	Land Use Planning and Community Development	
PPPA 6067	Environment, Energy, Technology, and Society	
PSC 6103	Approaches to Public Policy Analysis	
SMPA 6201	Strategic Communications Skills	
SOC 6250	Urban Sociology	
STAT 6104	Statistics in Management, Administration, and Policy Studies	
Students may be permitted to take alternative electives with permission of the advisor.		

Students should consult with Environmental and Resource Policy Director of Graduate Studies to construct an individualized curriculum best suited to their needs and interests.

GRADUATE CERTIFICATE IN ENVIRONMENTAL RESOURCE POLICY

The graduate certificate in environmental resource policy helps students develop the skills to design, analyze, implement, and evaluate environmental policy; gain knowledge regarding relevant international, federal, state, and local environmental

policies, processes, and tools; understand basic aspects of environmental science and how scientific principles govern the natural behavior of the Earth's environment; and identify the economic factors that drive the decisions of firms and consumers when it comes to environmentally-relevant behavior. Certificate students may apply to the master of arts in the field of environmental resource policy degree program and, if accepted, may count the 12 credits from the certificate program toward the M.A. degree.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
ECON 6217	Survey of Economics I	
or ECON 6237	Economics of the Environment and Natural Resources	
ENRP 6101	Environmental Sciences I: Physical Sciences	
or ENRP 6102	Environmental Sciences II: Life Sciences	
PPPA 6006	Policy Analysis	
PPPA 6066	Environmental Policy	
or ENRP 6140	Introduction to Environmental Law	

If a student can demonstrate, by virtue of prior course work, competency in all of the topics covered by a required course, that student may substitute another graduate course relevant to environmental policy, with the permission of the Environmental Resource Policy Program Director or Director of Graduate Studies.

ENVIRONMENTAL STUDIES

The Columbian College of Arts and Sciences offers an interdisciplinary program in environmental studies leading to the degree of bachelor of arts. Housed in the Department of Geography (http://departments.columbian.gwu.edu/geography), the major combines courses drawn from biological sciences, geological sciences, and geography, as well as American studies, anthropology, economics, English, history, public health, religion, sociology, and statistics.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in environmental studies (https://next.bulletin.gwu.edu/arts-sciences/environmental-studies/ba)
- Combined Bachelor of Arts with a Major in Environmental Studies and Master of Arts in the Field of Environmental Resource Policy (https://next.bulletin.gwu.edu/arts-sciences/environmental-studies/combined-ba-ma-environmental-resource-policy)

FACULTY

Director D. Rain

Adviser M. Keeley

BACHELOR OF ARTS WITH A MAJOR IN ENVIRONMENTAL STUDIES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Foundational courses		
BISC 1006	The Ecology and Evolution of Organisms	
or BISC 1112	Introductory Biology: The Biology of Organisms	
GEOG 1002	Introduction to Physical Geography	
or GEOL 1005	Environmental Geology	
GEOG 1003	Society and Environment	
GEOG 2104	Introduction to Cartography and GIS	
STAT 1053	Introduction to Statistics in Social Science	

Code	Title	Credits
Requirements for the major		
GEOG 2196	Field Methods in Geography (or equivalent)	
Three of the following science courses:		
BISC 2454	General Ecology	
BISC 3460	Conservation Biology	
BISC 3459	Field Biology *	
CHEM 2085	Environmental Chemistry	

GEOG 2108	Weather and Climate
GEOG 2128	Geomorphology *
GEOG 2136	Water Resources
GEOL 2106	Oceanography
Three of the following society courses:	
ECON 2136	Environmental and Natural Resource Economics
GEOG 2133	People, Land, and Food
GEOG 2134	Energy Resources
GEOG 3143	Urban Sustainability
GEOG 3132	Environmental Quality and Management
GEOL 3193	Intro to Environmental Law
HIST 3001	Special Topics (an environmental topic)
PPPA 2701	Sustainability and Environmental Policy
Capstone	
ENVR 4195	Environmental Studies Capstone
Electives	
Two upper-level courses chosen from the Green Leaf course list	
Two upper-level courses chosen from the list of courses that apply to the sustainability minor	

* May also count toward field methods requirement.

COMBINED BACHELOR OF ARTS WITH A MAJOR IN ENVIRONMNENTAL STUDIES AND MASTER OF ARTS IN THE FIELD OF ENVIRONMENTAL RESOURCE POLICY

The Environmental Resource Policy program offers a combined bachelor of arts in environmental studies (https://next.bulletin.gwu.edu/arts-sciences/environmental-studies/ba) and master of arts in environmental resource policy (https://next.bulletin.gwu.edu/arts-sciences/environmental-resource-policy/ma). Undergraduate students take up to 12 graduate credits as part of their degree program, thereby decreasing the number of credits normally required for the master's degree. Students in the combined program must complete all requirements for both degrees.

Interested undergraduate students should consult with the Environmental Resource Policy Program (https://enrp.columbian.gwu.edu/combined-bama-degree) for requirements by the beginning of their junior year.

FILM STUDIES

Housed in the Columbian College of Arts and Sciences, Film Studies covers classical film aesthetics, surveys the history of world cinema, and takes an in-depth look at films from the United States, China, France, Germany, Japan, the Middle East, Russia, and the Spanish-speaking world.

UNDERGRADUATE

Minor

- Minor in film studies (p. 217)

FACULTY

Committee on Film Studies Y. Captain, H. Feigenbaum, K. Harvey (*Chair*), A. Hiltebeitel, P. Rollberg, N. Seavey

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FILM 2151. Film Theory. 3 Credits.
A reading-intensive immersion in classical film aesthetics and a survey of the theoretical and critical canon of cinema literature. Laboratory fee.

FILM 2152. Genres of Film. 3 Credits.
An exploration of the relationship between cinematic structure and narrative content in various types of film. Laboratory fee.

FILM 2153. History of World Cinema I. 3 Credits.
A two-semester sequence covering 100 years of international cinematic history from an aesthetic and political point of view. Laboratory fee.

FILM 2154. History of World Cinema II. 3 Credits.
Continuation of FILM 2153. A two-semester sequence covering 100 years of international cinematic history from an aesthetic and political point of view. Laboratory fee.

FILM 2155. Screen Writing. 3 Credits.
Introduction to the art and craft of screenwriting—concept, genre, character, structure, dialogue, scene/sequence construction, and, ultimately, the preparation of scripts and treatments for a variety of screen formats.

FILM 2156. Advanced Screenwriting. 3 Credits.
Advanced phases of screenwriting culminating in the preparation of a full-length screenplay, with contextual study of contemporary, international, and classical films toward a fuller appreciation of movies as a cultural whole.

FILM 3390. Screen Writing. 3 Credits.

MINOR IN FILM STUDIES

REQUIREMENTS

The following requirements must be fulfilled: 21 credits, including 12 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
Required		
FILM 2151	Film Theory	
FILM 2152	Genres of Film	
FILM 2153	History of World Cinema I	
FILM 2154	History of World Cinema II	
Electives		
Three from the following:		
AMST/AH 1070	The American Cinema	
AMST 1100	Politics and Film	
ARAB 3502	Arab Film & Culture in English	
CHIN 3163	Taiwanese Literature and Film	
CLAS 3103	Israeli Cinema	
CLAS 3114	Topics in Ancient Literatures and Cultures (Classics and Film)	
CLAS 3202	Arab Film and Culture	
FILM 2155	Screen Writing	
FILM 2156	Advanced Screenwriting	
FREN 3560	Topics in 20th-Century Francophone Literature and Cinema	
FREN 3700	History of French Cinema	
GER 3181	History of German Cinema—in English	
GER 3187	German Cinema after 1945	
ITAL 4183	History of Italian Film	
JAPN 3162	Japanese Culture Through Film	
KOR 3162	Korean Culture through Film	
PERS 3502	Post-Revolutionary Iranian Cinema	
PHIL 1062	Philosophy and Film	
SLAV 2785	Introduction to Russian Cinema I	
SLAV 2786	Introduction to Russian Cinema II	
SMPA 1000	Dean's Seminar (Hollywood and Politics)	
SMPA 3194	Selected Topics in Political Communication *	
or SMPA 3195	Selected Topics in Journalism and Mass Communication	
SPAN 3560	Early Modern Poetry of Spain and Latin America	
SPAN 3700	Cinema of Spain and Latin America	
SMPA 6274	Media and War	

*Special topics courses must have the approval of the Program Director and will be considered only if the section covers a film-focused topic. SMPA 3194 and SMPA 3195 are offered on the same topic simultaneously. Topics offered include Film and Social Justice; Film and the American President; and War and Terrorism in Hollywood Film. For each section offered, students must choose to register under either SMPA 3194 or SMPA 3195.

FINE ARTS AND ART HISTORY

The Department of Fine Arts and Art History offers instruction in the visual and creative arts. Its programs strengthens a student's ability to develop visual literacy, as well as critical thinking and creative skills. Classroom study is supplemented by partnerships with the art museums and libraries of Washington, D.C.

Fine Arts, an interdisciplinary program, fosters a rigorous, experimental approach to art as students cultivate creative pursuits in the studio and beyond.

Art History is rooted in direct, interpretive engagement with the visual arts. The program combines visual and historical analyses with philosophical hypotheses and theoretical, political debates. The curriculum promotes connections to the studio arts and interdisciplinary exchanges with other fields of inquiry. It also emphasizes the narrative qualities and rhetorical

persuasiveness of art historical writing in dialogue with art objects, spaces, and performances.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in art history (p. 218)
- Bachelor of Arts with a major in fine arts (p. 220)
- Bachelor of Arts with a combined major in art history and fine arts (p. 223)
- Combined programs (p. 226)

Minors

- Minor in art history (p. 226)
- Minor in fine arts (p. 226)
- Combined minor in art history and fine arts (p. 227)

GRADUATE

Master's programs

- Master of Arts in the field of art history (p. 227)
- Master of Fine Arts in the field of fine arts (p. 228)

FACULTY

Professors B. von Barghahn, D. Bjelajac, T. Ozdogan, L.F. Robinson, J.F. Wright Jr.

Associate Professors A.B. Dumbadze (*Chair*), P. Jacks, D. Kessmann, B.K. Obler, S. Rigg, S. Travis

Assistant Professors J. Brown, T. Evans, M. Natif, J.G.H. Sham, N.V. Volchansky

Adjunct Instructors R. Pollack

Research Instructors C. Wu

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: Upper-division undergraduate fine arts Special Topics and Critical Practices courses may be repeated for credit when topic is different with approval of the undergraduate fine arts advisor or the department chair. A course fee is charged for all fine arts courses listed here except FA 1075 East Asian Calligraphy, FA 4195 Critical Practices, and FA 4199 Internship.

Note: Core graduate fine arts courses may be repeated for credit with approval of the department. A course fee is charged for all fine arts courses listed here except FA 6295 Critical Practices and FA 6998 Thesis Research–FA 6999 Thesis Research.

- Art History (AH) (p. 1038)
- Fine Arts (FA) (p. 1222)

BACHELOR OF ARTS WITH A MAJOR IN ART HISTORY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Required		
At least one course from six of the seven categories below and one additional course from any category for a total of 21 credits.		
Ancient		
AH 3101	Ancient Art of the Bronze Age and Greece	
AH 3102	Ancient Art of the Roman Empire	
AH 3103	Art and Archaeology of Egypt and the Near East	
AH 3104	Art and Archaeology of the Aegean Bronze Age	
or ANTH 3806	Art and Archaeology of the Aegean Bronze Age	
AH 3105	Topics in Ancient Art and Archaeology	
AH 3106	Art and Archaeology of Israel and Neighboring Lands	
AH 4109	Topics in Ancient Art and Archaeology	
Medieval/Islamic World		
AH 3111	Early Christian and Byzantine Art and Architecture	
AH 3112	Romanesque and Gothic Art and Architecture	

AH 3113	Islamic Art and Architecture
AH 3114	Art of the Book in the Medieval Muslim World
AH 3120	Italian Art and Architecture of the 13th through 15th Centuries
AH 4119	Seminar in Medieval Art and Architecture
Renaissance/Baroque	
AH 2145	History of Decorative Arts: European Heritage
AH 3121	Italian Art and Architecture of the 16th Century
AH 3122	Topics in Early Northern Renaissance Art and Architecture
AH 3122W	Topics in Early Northern Renaissance Art and Architecture
AH 3123	Topics in Northern Renaissance Art and Architecture
AH 3123W	Topics in Northern Renaissance Art and Architecture
AH 3131	Italian Art and Architecture of the 17th Century
AH 3132	Topics in Northern European Art and Architecture of the 17th Century
AH 3134	Topics in Spanish and Portuguese Art through the 16th Century
AH 3134W	Topics in Spanish and Portuguese Art through the 16th Century
AH 3135	Topics in 17th/18th Century Spanish and Portuguese Art
AH 4129	Seminar in Renaissance Art and Architecture
AH 4139	Seminar in Baroque Art and Architecture
18th/19th Century	
AH 2154	American Architecture I
or AMST 2520	American Architecture I
AH 2161	History of Decorative Arts: American Heritage
AH 3140	European Art of the 18th Century
AH 3141	European Art of the Early 19th Century
AH 3141W	European Art of the Early 19th Century
AH 3142	European Art of the Late 19th Century
AH 3142W	European Art of the Late 19th Century
AH 3151	American Art in the Age of Revolution
AH 3152	American Art in the Era of National Expansion
Modern and Contemporary	
AH 2155	American Architecture II
AH 2162	History of Photography
AH 2162W	History of Photography
AH 2071	Introduction to the Arts in America
AH 3143	Early Twentieth-Century Art
AH 3143W	Early Twentieth-Century Art
AH 3146	Modern Architecture in Europe and America
AH 3146W	Modern Architecture in Europe and America
AH 3153	American Art of the 20th Century
AH 3165	Later Twentieth-Century Art
AH 3165W	Later Twentieth-Century Art
AH 4149	Seminar in Modern European Art and Architecture
AH 4169	Seminar in Contemporary Art
Asian	
AH 2190	East Asian Art
AH 2191	South Asian Art
AH 2192	The Art of Southeast Asia
Pre-Columbian/Latin American/African	
AH 3107	Ancient Mexican Civilizations
or ANTH 3814	Ancient Mexican Civilizations
AH 3116	The Aztec Empire
AH 3117	Special Topics in Precolumbian Art and Archaeology

AH 3160	Latin American Art and Architecture
Junior/Senior seminars	
At least two of the following for a total of six credits:	
AH 4109	Topics in Ancient Art and Archaeology
AH 4119	Seminar in Medieval Art and Architecture
AH 4129	Seminar in Renaissance Art and Architecture
AH 4139	Seminar in Baroque Art and Architecture
AH 4149	Seminar in Modern European Art and Architecture
AH 4159	Seminar in American Art and Architecture
AH 4159W	Seminar in American Art and Architecture
AH 4169	Seminar in Contemporary Art
AH 4189	Seminar: Special Topics in Art History
One fine arts (FA) course at any level for a total of 3 credits	
Art history electives	
Any two courses listed in the above categories and/or two from the following for a total of 6 credits:	
AH 1000	Dean's Seminar
AH 1031	Survey of Art and Architecture I
AH 1032	Survey of Art and Architecture II
AH 1070	The American Cinema
AH 1099	Variable Topics
AH 1135	Spanish Art: Prado/Thyssen Museums
AH 1136	Spanish Art:From Goya to Picasso
AH 3099	Variable Topics
AH 3170	Materials, Methods, and Techniques in Art History
AH 4198	Independent Study
AH 4199	Internship in Art History

With prior approval from the Director of Undergraduate Studies, students may select up to 6 credits of electives from relevant coursework in another department.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must have attained, by the end of the junior year, a grade-point average of at least 3.5 in the major and 3.3 overall. By the end of the junior year, students should consult their advisor regarding eligibility and selection of an area of research, and the appropriate faculty member to supervise the project. Students must write an Honors Thesis (registering for AH 4198 Independent Study) and receive a grade of *A*.

BACHELOR OF ARTS WITH A MAJOR IN FINE ARTS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Required		
One course (3 credits) of introductory art history from the following:		
AH 1032	Survey of Art and Architecture II	
AH 2071	Introduction to the Arts in America	
AH 2162	History of Photography	
or AH 2162W	History of Photography	
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts	
Two courses (6 credits) of art history from the following:		
AH 2071	Introduction to the Arts in America	
AH 2109	Sem:Ancient Art & Architecture	
or AH 2109W	European Art: Early 19th Cent	
AH 2110W	European Art: Late 19th Cent	
AH 2154	American Architecture I	
AH 2154	American Architecture I	
AH 2155	American Architecture II	

AH 2161	History of Decorative Arts: American Heritage
AH 2162	History of Photography
or AH 2162W	History of Photography
AH 2190	East Asian Art
AH 2191	South Asian Art
AH 2192	The Art of Southeast Asia
AH 3101	Ancient Art of the Bronze Age and Greece
AH 3102	Ancient Art of the Roman Empire
AH 3103	Art and Archaeology of Egypt and the Near East
AH 3104	Art and Archaeology of the Aegean Bronze Age
AH 3105	Topics in Ancient Art and Archaeology
AH 3106	Art and Archaeology of Israel and Neighboring Lands
AH 3107	Ancient Mexican Civilizations
AH 3111	Early Christian and Byzantine Art and Architecture
AH 3112	Romanesque and Gothic Art and Architecture
AH 3113	Islamic Art and Architecture
AH 3114	Art of the Book in the Medieval Muslim World
AH 3117	Special Topics in Precolumbian Art and Archaeology
AH 3120	Italian Art and Architecture of the 13th through 15th Centuries
AH 3121	Italian Art and Architecture of the 16th Century
AH 3122	Topics in Early Northern Renaissance Art and Architecture
or AH 3122W	Topics in Early Northern Renaissance Art and Architecture
AH 3123	Topics in Northern Renaissance Art and Architecture
or AH 3123W	Topics in Northern Renaissance Art and Architecture
AH 3131	Italian Art and Architecture of the 17th Century
AH 3132	Topics in Northern European Art and Architecture of the 17th Century
AH 3134	Topics in Spanish and Portuguese Art through the 16th Century
or AH 3134W	Topics in Spanish and Portuguese Art through the 16th Century
AH 3135	Topics in 17th/18th Century Spanish and Portuguese Art
AH 3140	European Art of the 18th Century
AH 3141	European Art of the Early 19th Century
or AH 3141W	European Art of the Early 19th Century
AH 3142	European Art of the Late 19th Century
or AH 3142W	European Art of the Late 19th Century
AH 3143	Early Twentieth-Century Art
AH 3146	Modern Architecture in Europe and America
or AH 3146W	Modern Architecture in Europe and America
AH 3151	American Art in the Age of Revolution
AH 3152	American Art in the Era of National Expansion
AH 3153	American Art of the 20th Century
AH 3160	Latin American Art and Architecture
AH 3165	Later Twentieth-Century Art
AH 3170	Materials, Methods, and Techniques in Art History
AH 4119	Seminar in Medieval Art and Architecture
AH 4129	Seminar in Renaissance Art and Architecture
AH 4139	Seminar in Baroque Art and Architecture
AH 4149	Seminar in Modern European Art and Architecture
AH 4159	Seminar in American Art and Architecture
or AH 4159W	Seminar in American Art and Architecture

AH 4189	Seminar: Special Topics in Art History
Three courses (9 credits) from the following. The three courses should be drawn from three different areas.	
FA 1000	Dean's Seminar
Ceramics	
FA 1101	Introduction to Handbuilt Ceramics
FA 1102	Introduction to Wheelthrown Ceramics
Sculpture	
FA 1201	Sculpture: Material Investigations
Drawing	
FA 1301	Drawing Fundamentals
Painting	
FA 1401	Painting: Visual Thinking
Photography	
FA 1501	Black & White Photography
FA 1502	Color Photography
New Media	
FA 1601	New Media: Digital Art
One second-year seminar (3 credits):	
FA 2001	Concept Lab
Three courses (9 credits) from the following. Minimum of one course from at least two different areas.	
Ceramics	
FA 2111	Ceramic Design in Handbuilt Forms
FA 2112	Ceramic Design in Wheelthrown Forms
FA 2113	Ceramic Sculpture
FA 3101	Special Topics: Ceramics
Sculpture	
FA 2211	Sculpture Fabrication
FA 2212	Sculpture: Design in Action
FA 2213	Digital Fabrication
FA 3201	Special Topics: Sculpture
Drawing	
FA 2311	Drawing: Perception and Mark Making
FA 2312	Advanced Drawing Techniques
FA 2313	Experimental Drawing
FA 3301	Special Topics: Drawing
Painting	
FA 2411	Painting: Watercolor
FA 2412	Painting a Figure
FA 2413	Painting: Process and Materials Lab
FA 2431	Painting: Contemporary Issues
FA 3401	Special Topics: Painting
Photography	
FA 2511	Photography: Abstraction versus Representation
FA 2512	Photography: Altered Landscapes
FA 2513	Photography: From Photograms to Scanograms
FA 2531	Photography: Contemporary Issues
FA 3501	Special Topics: Photography
New Media	
FA 2611	Video Art and Time-based Media
FA 2612	Video: Remixing the Archive
FA 2613	Site and Sound
FA 3601	Special Topics: New Media
Two courses (6 credits) of cross-disciplinary courses from the following:	
FA 3901	Special Topics: Fine Arts
FA 3911	Collaborative Practices: Social Practices of Art
FA 3912	The Cinematic in Contemporary Art
FA 3913	Painting: Off the Wall
FA 3951	Creative Photovoltaics
Two capstone courses (6 credits):	
FA 4193	Professional Practices
FA 4195	Critical Practices

One elective fine arts course (3 credits), from any course listed above or,	
FA 4199	Internship
Additionally, required participation in a capstone exhibition, concurrently with FA 4195	

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must have attained, by the end of the junior year, a grade-point average of at least 3.5 in the major and 3.3 overall. By the end of the junior year, students should consult their advisor regarding eligibility, selection of an area of study, and a director of the research or creative arts project.

BACHELOR OF ARTS WITH A COMBINED MAJOR IN ART HISTORY AND FINE ARTS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Art History		
At least one course from six of the seven categories below and one additional course from any category for a total of 21 credits.		
Ancient		
AH 3101	Ancient Art of the Bronze Age and Greece	
AH 3102	Ancient Art of the Roman Empire	
AH 3103	Art and Archaeology of Egypt and the Near East	
AH 3104	Art and Archaeology of the Aegean Bronze Age	
AH 3105	Topics in Ancient Art and Archaeology	
AH 3106	Art and Archaeology of Israel and Neighboring Lands	
AH 4109	Topics in Ancient Art and Archaeology	
Medieval/Islamic World		
AH 3111	Early Christian and Byzantine Art and Architecture	
AH 3112	Romanesque and Gothic Art and Architecture	
AH 3113	Islamic Art and Architecture	
AH 3114	Art of the Book in the Medieval Muslim World	
AH 3120	Italian Art and Architecture of the 13th through 15th Centuries	
AH 3122	Topics in Early Northern Renaissance Art and Architecture	
AH 3122W	Topics in Early Northern Renaissance Art and Architecture	
AH 4119	Seminar in Medieval Art and Architecture	
Renaissance/Baroque		
AH 2145	History of Decorative Arts: European Heritage	
AH 3121	Italian Art and Architecture of the 16th Century	
AH 3123	Topics in Northern Renaissance Art and Architecture	
AH 3123W	Topics in Northern Renaissance Art and Architecture	
AH 3131	Italian Art and Architecture of the 17th Century	
AH 3132	Topics in Northern European Art and Architecture of the 17th Century	
AH 3134	Topics in Spanish and Portuguese Art through the 16th Century	
AH 3134W	Topics in Spanish and Portuguese Art through the 16th Century	
AH 3135	Topics in 17th/18th Century Spanish and Portuguese Art	
AH 4129	Seminar in Renaissance Art and Architecture	
AH 4139	Seminar in Baroque Art and Architecture	
18th/19th century		
AH 2154	American Architecture I	

AH 2161	History of Decorative Arts: American Heritage
AH 3140	European Art of the 18th Century
AH 3141	European Art of the Early 19th Century
AH 3141W	European Art of the Early 19th Century
AH 3142	European Art of the Late 19th Century
AH 3142W	European Art of the Late 19th Century
AH 3151	American Art in the Age of Revolution
AH 3152	American Art in the Era of National Expansion
Modern and contemporary	
AH 2155	American Architecture II
AH 2162	History of Photography
AH 2162W	History of Photography
AH 2071	Introduction to the Arts in America
AH 3143	Early Twentieth-Century Art
AH 3143W	Early Twentieth-Century Art
AH 3146	Modern Architecture in Europe and America
AH 3146W	Modern Architecture in Europe and America
AH 3153	American Art of the 20th Century
AH 3165	Later Twentieth-Century Art
AH 3165W	Later Twentieth-Century Art
AH 4149	Seminar in Modern European Art and Architecture
AH 4169	Seminar in Contemporary Art
Asian	
AH 2190	East Asian Art
AH 2191	South Asian Art
AH 2192	The Art of Southeast Asia
Pre-Columbian/Latin American/African	
AH 3107	Ancient Mexican Civilizations
AH 3116	The Aztec Empire
AH 3117	Special Topics in Precolumbian Art and Archaeology
AH 3160	Latin American Art and Architecture
Junior/senior seminars	
At least two of the following for a total of 6 credits:	
AH 4109	Topics in Ancient Art and Archaeology
AH 4119	Seminar in Medieval Art and Architecture
AH 4129	Seminar in Renaissance Art and Architecture
AH 4139	Seminar in Baroque Art and Architecture
AH 4149	Seminar in Modern European Art and Architecture
AH 4159	Seminar in American Art and Architecture
AH 4159W	Seminar in American Art and Architecture
AH 4169	Seminar in Contemporary Art
AH 4189	Seminar: Special Topics in Art History
Fine Arts	
Required	
FA 2001	Studio Seminar: Conceptual Propositions
One introductory level course from three of the studio areas listed below for a total of 9 credits; for this purpose, FA 1000 counts as a studio area	
FA 1000	Dean's Seminar
Ceramics	
FA 1101	Introduction to Handbuilt Ceramics
FA 1102	Introduction to Wheelthrown Ceramics
Sculpture	
FA 1201	Sculpture: Material Investigations
Drawing	
FA 1301	Drawing Fundamentals
Painting	
FA 1401	Painting: Visual Thinking

Photography	
FA 1501	Black & White Photography
FA 1502	Color Photography
New Media	
FA 1601	New Media: Digital Art
Three courses at the 2000 or 3000 level including at least one course in two of the six studio areas below for a total of 9 credits:	
Ceramics	
FA 2111	Ceramic Design in Handbuilt Forms
FA 2112	Ceramic Design in Wheelthrown Forms
FA 2113	Ceramic Sculpture
FA 2125	Ceramics: Wheelthrown Functional Forms
FA 2127	Ceramic Design in Handbuilding
FA 2131	Ceramic Sculpture
FA 2139	Special Topics: Ceramics
FA 3101	Special Topics: Ceramics
Sculpture	
FA 2211	Sculpture Fabrication
FA 2212	Sculpture: Design in Action
FA 2213	Digital Fabrication
FA 3201	Special Topics: Sculpture
Drawing	
FA 2311	Drawing: Perception and Mark Making
FA 2312	Advanced Drawing Techniques
FA 2313	Experimental Drawing
FA 3301	Special Topics: Drawing
Painting	
FA 2411	Painting: Watercolor
FA 2412	Painting a Figure
FA 2413	Painting: Process and Materials Lab
FA 2431	Painting: Contemporary Issues
FA 3401	Special Topics: Painting
Photography	
FA 2511	Photography: Abstraction versus Representation
FA 2512	Photography: Altered Landscapes
FA 2513	Photography: From Photograms to Scanograms
FA 2531	Photography: Contemporary Issues
FA 3501	Special Topics: Photography
New Media	
FA 2611	Video Art and Time-based Media
FA 2612	Video: Remixing the Archive
FA 2613	Site and Sound
FA 3601	Special Topics: New Media
One of the following courses:	
FA 3901	Special Topics: Fine Arts
FA 3911	Collaborative Practices: Social Practices of Art
FA 3912	The Cinematic in Contemporary Art
FA 3913	Painting: Off the Wall
FA 3951	Creative Photovoltaics
The following capstone course:	
FA 4195	Critical Practices *

*A capstone exhibition is required concurrent with enrollment in FA 4195 Critical Practices

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must have attained, by the end of the junior year, a grade-point average of at least 3.5 in the major and 3.3 overall. By the end of the junior year, students should consult their advisor regarding eligibility, area of study, and a director of the research or creative arts project.

COMBINED PROGRAMS, FINE ARTS AND ART HISTORY

REQUIREMENTS

Combined Bachelor of Arts with a Major in Art History/Master of Arts in the Field of Art History

Combined bachelor of arts with a major in art history/master of arts in the field of art history offers undergraduate students who are excelling in their studies the opportunity to advance to graduate level coursework in their senior year and enter the M.A. program upon graduation.

Students must meet the art history undergraduate major requirements. During their senior year students take 9 credits of graduate art history courses (6000 level), including AH 6258 Art Historiography, which count towards both the B.A. and the M.A. degrees.

Students must receive a grade of *B* or above in the graduate coursework taken while an undergraduate. If a minimum grade of *B* is not earned, the course(s) will not apply to the M.A. degree. If the student earns a *B* or above, these grades are used when computing their graduate GPA.

After graduating with the B.A. degree, students take an additional 27 credits at the 6000 level. As many as 6 credits of graduate coursework may be completed outside the department with approval of the Director of Graduate Studies. Students must submit one qualifying paper after the completion of 18 credits.

Students must pass a reading examination in Arabic, Dutch, French, German, Italian, Latin, Persian, Portuguese, or Spanish. If a student's research is in a language other than those listed above, the student may demonstrate proficiency in said language in consultation with the Director of Graduate Studies.

Combined Bachelor of Arts with a major in Fine Arts/Master of Arts in the Field of Art Therapy

Students interested in this dual degree program should consult the director of the Art Therapy Program (http://programs.columbian.gwu.edu/arttherapy) early in the junior year.

MINOR IN ART HISTORY

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in art history courses

Code	Title	Credits
Required		
AH 1031	Survey of Art and Architecture I	
AH 1032	Survey of Art and Architecture II	
Electives		
Four upper-division Art History (AH) courses for a total of 12 credits.		

MINOR IN FINE ARTS

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including a 3-credit required course and 15 credits in elective courses.

Code	Title	Credits
Required		
FA 2001	Studio Seminar: Conceptual Propositions	
Electives		
One FA course at any level		
Two courses from the following; courses cannot be in the same studio area:		
Ceramics		
FA 1101	Introduction to Handbuilt Ceramics	
FA 1102	Introduction to Wheelthrown Ceramics	
Sculpture		
FA 1201	Sculpture: Material Investigations	
Drawing		
FA 1301	Drawing Fundamentals	
Painting		
FA 1401	Painting: Visual Thinking	
Photography		
FA 1501	Black & White Photography	
FA 1502	Color Photography	
New Media		
FA 1601	New Media: Digital Art	
Two courses at the 2000 or 3000 level in any studio area.		

COMBINED MINOR, ART HISTORY AND FINE ARTS

REQUIREMENTS

The combined minor requires 9-12 credits of course work in Art History and 9-12 credits in Fine Arts, for a total of 21 credits. The student's program of study is developed in consultation with the undergraduate advisors in the Department of Fine Art and Art History. See departmental website (http://art.columbian.gwu.edu/combined-degree-fine-arts-art-history) for more information.

MASTER OF ARTS IN THE FIELD OF ART HISTORY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

36 credits

Code	Title	Credits
Required		
AH 6258	Art Historiography	
Elective		
At least one course from five of the following seven categories:		
Ancient		
AH 6201	Proseminar in Ancient Art of the Bronze Age and Greece	
AH 6202	Proseminar in Ancient Art of the Roman Empire	
AH 6205	Ancient Art Seminar	
AH 6270	Special Topics in Art History	
Medieval/Islamic World		
AH 6211	Proseminar in Early Christian and Byzantine Art and Architecture	
AH 6212	Proseminar in Romanesque and Gothic Art and Architecture	
AH 6213	Islamic Art and Architecture	
AH 6214	The Art of the Book in the Medieval Muslim World	
AH 6215	Seminar in Medieval Art and Architecture	
AH 6265	Seminar in Islamic Art and Architecture	
AH 6270	Special Topics in Art History	
Renaissance/Baroque		
AH 6220	Proseminar in Italian Art and Architecture of the 13th through 15th Centuries	
AH 6221	Prosem:Ital Art&Arch 16th Cent	
AH 6222	Proseminar in Early Northern Renaissance Art and Architecture	
AH 6223	Proseminar in Northern Renaissance Art and Architecture	
AH 6225	Seminar in Renaissance Art	
AH 6231	Proseminar in Italian Art and Architecture of the 17th Century	
AH 6232	Proseminar in Northern European Art and Architecture of the 17th Century	
AH 6234	Proseminar in Spanish and Portuguese Art through the 16th Century	
AH 6235	Seminar in Baroque Art	
AH 6270	Special Topics in Art History	
18th-19th Century		
AH 6240	Proseminar in European Art of the 18th Century	
AH 6245	Seminar in European Art of the 19th Century	
AH 6251	Proseminar in American Art in the Age of Revolution	
AH 6254	Seminar in American Art before 1900	
AH 6270	Special Topics in Art History	
Modern/Contemporary		
AH 6246	Proseminar in Modern Architecture in Europe and America	
AH 6250	Seminar: Modern Art	
AH 6256	Seminar in American Art of the 20th Century	

AH 6257	Seminar in Photography
AH 6270	Special Topics in Art History
Asian/African	
AH 6270	Special Topics in Art History
Pre-Columbian/Latin American	
AH 6270	Special Topics in Art History

Up to 6 credits of graduate coursework may be completed outside the department with approval of the graduate advisor.

One qualifying paper must be submitted in the spring semester of the second year. Part-time students will submit one qualifying paper at date set in consultation with the graduate advisor.

A reading examination in Arabic, Dutch, French, German, Italian, Latin, Persian, Portuguese, or Spanish must be passed. If a student's research is in a language other than those listed above, the student may demonstrate proficiency in said language in consultation with the Director of Graduate Studies.

Museum Training Concentration

Code	Title	Credits

Prerequisites and requirements are the same as those for the Master of Arts in the field of art history; students include in their course work 6 credits of AH 6299 Museum Internship, after completion of 18 credits of art history courses.

MASTER OF FINE ARTS IN THE FIELD OF FINE ARTS

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

60 credits, including 48 credits in required courses, 9 credits in elective courses, 3 credits in thesis, including a thesis exhibition.

Code	Title	Credits
Required		
FA 6291	Contemporary Art and Theory for Artists I	
FA 6292	Contemporary Art and Theory for Artists II	
FA 6293	Professional Practices	
FA 6294	Writing in Practice	
FA 6295	Critical Practices (taken for a total of 24 credits)	
FA 6296	Studio Visits (taken for a total of 12 credits)	
Thesis exhibition		
FA 6998	Thesis Research	
FA 6999	Thesis Research	

A thesis exhibition consisting of the execution of creative work along with a critical statement about this work must be completed under the supervision of a committee consisting of at least two full-time departmental faculty members.

Electives		
9 credits in studio and seminar electives		

Studio and art history electives should be taken at the 6000 level or above. In consultation with the Director of Graduate Studies, MFA students may elect to take up to 6 credits of upper-level and graduate courses in other academic departments, assuming prerequisites have been met. Students may take one 3000-level course in another academic area with approval.

FORENSIC SCIENCES

As part of the Columbian College of Arts and Sciences's natural, mathematical, and biomedical sciences programs, forensic sciences provides an understanding of the integration of forensic disciplines with the investigation of criminal activity, while providing an overview of the analytical methods, procedures, equipment, and data used by forensic specialists. Course work emphasizes the identification and analysis of evidence as well as the interpretation and reporting of the results.

The master of forensic sciences (M.F.S.) degree program offers concentrations in forensic chemistry, forensic molecular biology, friction ridge analysis, and forensic toxicology. Students also may complete the master of forensic sciences degree without selecting a concentration. The master of science (M.S.) degree is offered in the following fields of study: crime scene investigation, friction ridge analysis, and high-technology crime investigation. The M.S. in the field of high-technology crime investigation program is offered at the Graduate Education Center in Arlington, Virginia.

In addition, graduate certificates are offered in bloodstain pattern analysis, digital investigations, forensic investigation, and latent print examination.

GRADUATE

Master's programs

- Master of Forensic Sciences (p. 233)
- Master of Forensic Sciences in the field of forensic molecular biology (p. 234)
- Master of Forensic Sciences in the field of forensic chemistry (p. 234)
- Master of Forensic Sciences in the field of forensic toxicology (p. 235)
- Master of Forensic Sciences in the field of friction ridge analysis (p. 235)
- Master of Science in the field of crime scene investigation (p. 236)
- Master of Science in the field of digital forensics (p. 236)
- Master of Science in the field of friction ridge analysis (p. 237)

CERTIFICATE

Certificate programs

- Graduate certificate in bloodstain pattern analysis (p. 237)
- Graduate certificate in digital investigations (p. 238)
- Graduate certificate in forensic investigation (p. 238)
- Graduate certificate in latent print examination (p. 238)

FACULTY

Professors I.S. Lurie *(Research),* W.F. Rowe *(Acting Chair)*, M.S. Schanfield, E.A. Vincze, V. Weedn

Assistant Professors I. Marginean

Professorial Lecturers D. Barghaan, E. Bernard, S. Brazelle, O. Carroll, K. Clarke, H. Cox, C. Davis, H. Deadman, J. Doyle, H. Elliott, N. Galbreth, K. Gerber, J.G. Jackson, M. Keller, M. Mack, C. McGovern, M.R. Parker, E. Toomer, L. Zarwell

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: FORS 2118 Introduction to Computer Systems for Security Professionals and FORS 2119 Introduction to Network Systems for Security Professionals are available only to students conditionally admitted to programs offered by the Department of Forensic Sciences; credit does not apply to any degree programs at GW. FORS 2118 Introduction to Computer Systems for Security Professionals, FORS 2119 Introduction to Network Systems for Security Professionals, and FORS 6259 Computer Related Law–FORS 6291 Computer Forensics III: Advanced Techniques are offered off campus only.

FORS 2104. Introduction to Forensic Sciences. 3 Credits.
Topics in the application of science to the criminal justice system, including personal identification, analysis of drugs, forms of trace evidence, identification of biological fluids, forensic pathology, and forensic toxicology. Prerequisites: two semesters of a laboratory science other than astronomy and permission of instructor.

FORS 2104W. Introduction to Forensic Sciences. 3 Credits.
Topics in the application of science to the criminal justice system, including personal identification, analysis of drugs, forms of trace evidence, identification of biological fluids, forensic pathology, and forensic toxicology.

FORS 2118. Introduction to Computer Systems for Security Professionals. 3 Credits.
Aspects of computer systems and software that directly relate to media analysis, i.e., storage, memory, the structure of file systems, and system peripherals that may contain evidence. Laboratory fee.

FORS 2119. Introduction to Network Systems for Security Professionals. 3 Credits.
Aspects of network tools, administrative tools, network protocols, and fundamentals of TCP/IP that can be used to carry out a network-based attack. Development of a working knowledge of how information is processed and can be intercepted on the Internet/Intranet. Laboratory fee.

FORS 2190. Topics in Forensic Science. 3 Credits.
Prerequisite: Any combination of two courses from BISC 1005–BISC 1006 or CHEM 1003– CHEM 1004 and junior standing.

FORS 6004. Fundamentals of Forensic Science I. 3 Credits.
This course will survey crime scene investigation techniques, medicolegal death investigation, and patterned evidence examination. This will satisfy the 10 hours instruction for a FEPAC accredited MFS degree in the core topics of crime scene investigation, physical evidence concepts, and pattern evidence. This course will help students prepare for the American Board of Criminalistics ("ABC") examination in the disciplines of firearms and toolmarks, fingerprints, and questioned documents. Lectures will be given by faculty members and guest lecturers who are subject matter experts on the topic presented. This course includes a four hour laboratory (fingerprints). This is a required course for MFS and CSI students. This course, along with FORS 6005 Fundamentals of Forensic Science II, replaces FORS 6213, Elements of Forensic Science (3 Credits). Prerequisites: None.

FORS 6005. Fundamentals of Forensic Science II. 3 Credits.
This course will survey the traditional crime laboratory (criminalistics) disciplines—specifically forensic drug chemistry, forensic toxicology, trace evidence, fire debris, explosives, and forensic molecular biology. This will satisfy the 10 hours instruction for a FEPAC accredited MFS degree in the core topics of analytical chemistry and instrumental methods of analysis, drug chemistry/toxicology, microscopy and materials analysis, and forensic biology. This course will help students prepare for the American Board of Criminalistics ("ABC") examination in the disciplines of forensic biology, trace evidence, fire debris, controlled substances, and toxicology/blood alcohol determinations. Lectures will be given by faculty members and guest lecturers who are subject matter experts on the topic presented. This course includes three four hour laboratories (mass spectrometry, microscopy, DNA). This is a required course for MFS and CSI students. This course, along with FORS 6004 Fundamentals of Forensic Science I, replaces FORS 6213, Elements of Forensic Science (3 Credits). Restricted to None.

FORS 6010. Bloodstain Pattern Analysis I. 3 Credits.
Human blood in flight and the patterns it makes on target surfaces. Crime scene investigation, crime scene analysis, and crime scene reconstruction. Laboratory fee. Restricted to graduate students. Recommended background: FORS 6251 and FORS 6256.

FORS 6011. Bloodstain Pattern Analysis II. 3 Credits.
Continuation of the concepts learned in FORS 6010. Serving as an expert witness; refining blood pattern analysis and documentation skills; effectively communicating observations, analysis, and conclusions in the courtroom. Laboratory fee. Restricted to graduate students. Prerequisites: FORS 6010. Recommended background: FORS 6251 and FORS 6256.

FORS 6020. Ethics, Professional Responsibility, and Quality Assurance. 2 Credits.
Issues of forensic science laboratory professional responsibility, including ethics, public policy, and quality assurance. Satisfies 10 hours of instruction for a Forensic Science Education Programs Accreditation Commission (FEPAC) accredited M.F.S. degree in the core topics of ethics and professional responsibility and quality assurance; also assists in preparation for the American Board of Criminalistics examination in the area of ethics. Taken online during the summer session.

FORS 6201. Forensic Biology. 3 Credits.
Principles of the forensic analysis of blood and other biological materials. Specific procedures and techniques used in forensic biology and serology. Laboratory fee.

FORS 6202. Instrumental Analysis. 3 Credits.
Principles and application of various instrumental methods to the examination of physical evidence, including chromatographic and spectroscopic techniques and mass spectrometry. Laboratory fee.

FORS 6203. Examination of Questioned Documents. 3 Credits.
Theory and principles of handwriting and handprinting, duplicating processes, paper manufacture and fiber analysis; studies of paper and methods of examining questioned documents. Laboratory fee.

FORS 6204. Firearms and Toolmark Identification. 3 Credits.
Methods for identifying firearms, bullet cartridge casings, toolmarks, gunshot residue, obliterated serial numbers, tire marks, and footprints. Laboratory fee.

FORS 6206. Trace Evidence Analysis. 3 Credits.
Principles that govern the analysis of trace evidence, including recovery, transference, interpretation, and comparison. Assessment of evidentiary value, reporting, and court testimony. Laboratory fee.

FORS 6207. Photography in the Forensic Sciences. 3 Credits.
Basic use of forensic photography, including selection and use of equipment, photographs as evidence, close-up work, and common misconceptions. Laboratory fee.

FORS 6210. Advanced Instrumental Analysis. 3 Credits.
Theory and practice of modern instrumental methods used in forensic laboratories, including mass spectrometry, optical spectroscopy, microscopy, chromatographic and electrophoretic separations. It is a required course for MFS students with concentration in Forensic Chemistry and Forensic Toxicology. Recommended background: undergraduate analytical methods.

FORS 6213. Elements of of Forensic Sciences. 3 Credits.

FORS 6215. Science of Fingerprints. 3 Credits.
A general overview of the history and biology of and principles underlying the science of fingerprints. Latent print development methods, recording, classification, and methodology of comparison of fingerprints and palm prints to include latent prints. Subject matter is covered at an introductory level; additional study is required to develop expertise as a latent fingerprint examiner. Restricted to None. Prerequisites: None.

FORS 6216. Development of Latent Prints. 3 Credits.
This Advanced Fingerprint Science Course will provide the students an increased understanding of the main principles of fingerprint identification: uniqueness and persistence. The course is broken down into three main sections, which will address the chemistry behind processing fingerprints, the anatomy and physiology of friction ridge skin and the extensive research that has been conducted in the field of fingerprint science. The students will be required to complete a skills processing exam to assess their understanding and ability to develop latent prints on items of evidence. In addition, there will be a written examination covering the topics of biology and development of friction ridge skin and a final comprehensive exam. Upon conclusion of this course, each student should have a firm grasp of why friction ridge skin can be used as a means of identification. Recommended background: FORS 6215.

FORS 6217. Fingerprint Comparisons. 3 Credits.
In-depth study of analysis, comparison, evaluation, and verification (ACE-V) methodology; assessing the quality and quantity of information and establishing a tolerance for comparison using the effects of distortion; uniqueness and persistence; anatomy and embryology of friction ridge skin. Laboratory fee. Prerequisites: FORS 6215.

FORS 6219. Digital Image Processing. 3 Credits.
Digital images of marginal value can be processed to reveal details which had been in the original, but were difficult to see. These changes must be done in ways to survive court challenges. Best practices for doing so are provided. Prerequisites: FORS 6207 or permission of the instructor. Recommended background: graduate level work in MS/CSI, MFS/FRA, MS/FRA or Grad Cert in Forensic Investigations; graduate-level work in crime scene investigation and/or friction ridge analysis, or in the graduate certificate program in forensics investigations.

FORS 6224. Criminal Law for Forensic Scientists. 3 Credits.
This course will provide an overview of criminal law offenses, criminal law procedures, issues of evidence recovery, admissibility of scientific evidence, and expert testimony, with an emphasis on the interaction between the criminal process and forensic science. A moot court experience is integral to this course. (This course combines and replaces Crim Law I and III.).

FORS 6225. Statistics for Forensic Scientists. 3 Credits.
Statistics with a focus on forensic applications. Emphasis on the Bayesian approach. Logical, probabilistic statistical reasoning skills, and R software skills. Course content is the basis for an examination question on the comprehensive examination. Students must have taken an undergraduate statistics course before registering. Restricted to None. Prerequisites: An undergraduate statistics course.

FORS 6231. Principles of Toxicology. 3 Credits.
Concepts of toxicology, including its historical development and modern applications, drug disposition, mechanisms of toxicity; factors that influence toxicity and toxicity evaluation.

FORS 6232. Analytical Toxicology. 3 Credits.
Principles and procedures used in the isolation, identification, and quantitation of drugs of abuse from human samples. Prerequisite: FORS 6202 or permission of instructor.

FORS 6234. Medicinal Chemistry I. 3 Credits.
Theory and principles of classification, synthesis, and structure activity relationships of drugs. Discussion of the complex chemical events that take place between administration of a drug and its action on the user, with emphasis on drugs of abuse.

FORS 6235. Medicinal Chemistry II. 3 Credits.
Chemical, pharmacological, toxicological, and pathological characteristics of commonly abused drugs, including ethanol, barbiturates, narcotics, stimulants, and hallucinogens.

FORS 6236. Forensic Toxicology I. 3 Credits.
Biological, chemical, and pharmacological principles that underlie forensic toxicology. Prerequisite: FORS 6235 or permission of instructor.

FORS 6237. Forensic Toxicology II. 3 Credits.
Lectures, student seminars, and projects dealing with topics of current interest in forensic toxicology. Prerequisite: FORS 6236 or permission of instructor.

FORS 6238. Forensic Chemistry I. 3 Credits.
Examination of glass and soils. Laboratory exercises include refractive index measurements using immersion methods; polarized light observations of minerals; x-ray diffraction analysis of minerals; and classical chemical and physical methods of analysis. Prerequisite: FORS 6202 or permission of instructor. Laboratory fee.

FORS 6239. Forensic Chemistry II. 3 Credits.
Examination of arson accelerants, textile fibers, plastics, and paints. Laboratory exercises include infrared spectrometry and pyrolysis–gas–liquid chromatography of polymeric materials, as well as classical chemical and physical methods of analysis. Prerequisite: FORS 6238 or permission of instructor. Laboratory fee.

FORS 6240. Forensic Drug Analysis. 3 Credits.
Examination of dosage forms of drugs. Laboratory exercises include color spot tests, crystal tests, infrared spectrometry and gas chromatography-mass spectrometry. Laboratory fee.

FORS 6241. Forensic Molecular Biology I. 3 Credits.
Techniques of molecular biology applied to the collection, examination, analysis, and interpretation of biological evidence.

FORS 6242. Forensic Molecular Biology II. 3 Credits.
Advanced methods of forensic molecular biology. Laboratory examinations and classifications of dried blood and other biological materials through a variety of nuclear and mitochondrial markers. Laboratory fee. Prerequisite: FORS 6241 and permission of instructor.

FORS 6243. Forensic Molecular Biology III. 3 Credits.

FORS 6246. Human Genetic Variation. 3 Credits.
The genetic variation in human populations as a framework for measurement and analysis of genetic diversity and evolutionary process. Consideration of the possible roles of cultural change leading to adaptive/selective events. Same as ANTH 6406.

FORS 6247. Population Genetics. 3 Credits.
Origin, maintenance, and possible significance of genetic variation in populations. Selection, genetic drift, and population structure are emphasized. Both theoretical and applied aspects of population genetics are discussed. Same as BISC 6228.

FORS 6250. Crime Scene Investigation for Lab Personnel. 3 Credits.
A condensed offering of the subject matter of FORS 6251–FORS 6252. FORS 6250 cannot be taken for credit toward the crime scene investigation concentration. Laboratory fee.

FORS 6251. Crime Scene Investigation I. 3 Credits.
Examination, analysis, and reconstruction of crime scenes. Principles from biology, chemistry, and physics applied to identification, documentation, preservation, and collection of physical evidence. Laboratory fee.

FORS 6252. Crime Scene Investigation II. 3 Credits.
Continuation of FORS 6251. Examination, analysis, and reconstruction of crime scenes. Principles from biology, chemistry, and physics applied to identification, documentation, preservation, and collection of physical evidence. Laboratory fee.

FORS 6254. Forensic Psychiatry. 3 Credits.
Introduction to the constructs of dynamic psychiatry, psychiatric treatment, and the nomenclature of mental disorders. Consideration of expert testimony, direct examination, and cross-examination in hospitalization and criminal cases.

FORS 6255. Investigation of Child Abuse. 3 Credits.
This course integrates medical, scientific, psychological, sociological and legal information for investigators and professionals involved in the field of child abuse. Special emphasis will be placed on the application of research-supported data to situations involving the murder, abuse and exploitation of children.

FORS 6256. Forensic Pathology. 3 Credits.
Terminology and scientific techniques used in medico-legal investigations, sudden or unexpected deaths, homicides, suicides, accidental deaths, and trauma.

FORS 6257. Medicolegal Death Investigation. 3 Credits.
Medical, scientific, sociological, and legal methodologies applied to forensic investigations. Aspects of death scene analysis by a medical examiner, including autopsy procedures, unidentified remains, child death investigations, and mass disaster investigations. Prerequisite: FORS 6256 and permission of instructor. Laboratory fee.

FORS 6258. The Investigation of Sexual Assault and Other Sex Crimes. 3 Credits.
This course integrates medical, psychological, sociological and legal information for investigators and professionals involved in the field of sex crime investigation. Special emphasis will be placed on the application of research-supported data to situations involving the sexual exploitation and victimization of adults.

FORS 6259. Computer Related Law. 3 Credits.
A problem-oriented course that focuses on applying the holdings of cases and analysis of statutes to different criminal fact patterns. The course is designed to examine criminal law, criminal procedures, and evidence as it relates to computer crime and the collection/analysis of digital evidence. Open only to students enrolled in off-campus forensic sciences programs.

FORS 6260. Security Case Law. 3 Credits.
Negligence and liability, international torts, compensatory and punitive damages, and contract law. The exercise of security functions by private individuals and organizations.

FORS 6261. Security Management. 3 Credits.
An overview of the factors that shape modern security management: technology, law, ethics and societal changes. The course focuses on risk assessment and the necessity to identify, analyze, and counter threat.

FORS 6264. Computer Network Defense. 3 Credits.
Identification of common threats to enterprise information systems and the tools, techniques, and strategies for mitigating those threats. Access control concepts, methodologies, and implementation within centralized and decentralized environments across an enterprise's computer systems; common methods of cyber-attacks; principles, means, and methods for ensuring system integrity, confidentiality, and availability; auditing and monitoring technologies for preventative, detective, and corrective measures.

FORS 6270. Digital Artifacts: Points of Evidence. 3 Credits.
The inner workings of common activity on a computer system, the digital trail these activities leave, and how to recover, interpret, and present such artifacts forensically.

FORS 6271. Cyberpsychology. 3 Credits.
How cyberpsychology can be used in the conduct of digital forensic investigations; the role of the psychologist in and methods used for investigating cybercrime cases.

FORS 6273. RschMethods for SecurityProfs. 3 Credits.

FORS 6277. Computer Forensics I: File System Analysis. 3 Credits.
An introduction to the tools and procedures used for digital investigations. Analysis of the FAT, NTFS, EXT, and HFS file systems. How data is stored at the file system level. Laboratory fee. Restricted to students enrolled in the department or with approval of the program director.

FORS 6278. Computer Forensics II: Applied Computer Forensics. 3 Credits.
Application of the tools and techniques learned in FORS 6277. Digital forensics as it relates to both civil and criminal investigations; best practices in securing, processing, acquiring, examining, and reporting on digital evidence. Prerequisite: FORS 6277.

FORS 6279. Incidence Response: Understanding and Identifying Network-Based Attacks. 3 Credits.
Computer network operations and network-based computer crime. Fraud schemes related to electronic commerce, theft of sensitive computer information, compromise of computer networks, and identity theft. Elements of proof of network-based crime are discussed. Prerequisite: FORS 6277 or approval of program director. Laboratory fee.

FORS 6280. Advanced Incidence Response: Investigating Network-Based Attacks. 3 Credits.
Detecting and responding to network- and host-based intruders, integrating intrusion detection systems into network topologies, identifying methods hackers use to break into network systems, analyzing network traffic and detecting attacks, and creating an effective response strategy. Prerequisite: FORS 6279. Laboratory fee.

FORS 6283. Steganography and Electronic Watermarking. 3 Credits.
Digital data hiding techniques. Investigation of data hiding and labeling techniques, attacks against steganography and watermarked information; countermeasures to such attacks. Open only to students enrolled in the department or by approval of the program director. Laboratory fee. Prerequisite: FORS 6277, FORS 6278.

FORS 6284. Security Mgt Capstone Course. 3 Credits.

FORS 6285. Digital Forensics Capstone. 3 Credits.
The culminating experience in the digital forensics program allows students to integrate the knowledge and skills they have acquired in the program and demonstrate their command, analysis, and synthesis of the material. Restricted to students in the MS in digital forensics program.

FORS 6287. Project Management for Security Professionals. 3 Credits.

FORS 6288. The Investigative Process for Computer Forensics. 3 Credits.
In-depth examination of the investigative process for computer-related crime in both criminal and civil sectors. Topics include identification and validation of information sources, development and handling of informants, interview and interrogation techniques, and managing the investigative process.

FORS 6290. Selected Topics. 3 Credits.
Current issues in research, investigation, and law.

FORS 6291. Computer Forensics III: Advanced Techniques. 3 Credits.
Further examination of methods and techniques used to conduct and report high-technology crime investigations. Open only to students enrolled in the department or by approval of the program director. Laboratory fee. Prerequisite: FORS 6278.

FORS 6292. Graduate Seminar. 1 Credit.
Students in designated forensic sciences degree programs must register for this course in their first semester and again after completion of the required independent research project.

FORS 6295. Research. 1-12 Credits.
Research on problems approved by the department, under the supervision of an appropriate member of the program faculty. Admission by permission only.

FORS 6298. Forensic Sciences Practicum. 1-3 Credits.
Internship experience in a forensic science laboratory or criminal justice agency, under the supervision of an appropriate member of the program faculty. Students must preregister for this course. Admission by permission only.

FORS 6998. Thesis Research. 3 Credits.

FORS 6999. Thesis Research. 3 Credits.

MASTER OF FORENSIC SCIENCES

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

37 credits including 18 credits in required courses, 19 credits in courses selected in consultation with the advisor, and successful completion of a master's comprehensive examination.

Code	Title	Credits
Required		

FORS 6004	Fundamentals of Forensic Science I
FORS 6005	Fundamentals of Forensic Science II
FORS 6020	Ethics, Professional Responsibility, and Quality Assurance
FORS 6224	Criminal Law for Forensic Scientists
FORS 6225	Statistics for Forensic Scientists
FORS 6292	Graduate Seminar (taken twice) *

Electives

19 elective credits are selected in consultation with the departmental advisor.

Additional requirements

Successful completion of an independent research project is required.

Successful completion of a master's comprehensive examination is required.

*Students must register for FORS 6292 in their first semester and again after or during the completion of the required independent research project.

MASTER OF FORENSIC SCIENCES IN THE FIELD OF FORENSIC CHEMISTRY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

37 credits in required courses, successful completion of a master's comprehensive examination, and successful completion of an independent research project.

Code	Title	Credits
Required		
FORS 6004	Fundamentals of Forensic Science I	
FORS 6005	Fundamentals of Forensic Science II	
FORS 6020	Ethics, Professional Responsibility, and Quality Assurance	
FORS 6206	Trace Evidence Analysis	
FORS 6210	Advanced Instrumental Analysis	
FORS 6224	Criminal Law for Forensic Scientists	
FORS 6225	Statistics for Forensic Scientists	
FORS 6234	Medicinal Chemistry I	
FORS 6235	Medicinal Chemistry II	
FORS 6238	Forensic Chemistry I	
FORS 6239	Forensic Chemistry II	
FORS 6240	Forensic Drug Analysis	
FORS 6292	Graduate Seminar (taken twice) *	

Successful completion of the master's comprehensive examination

Successful completion of an independent research project

*Students must register for FORS 6292 in their first semester and again during or after completion of the required independent research project.

MASTER OF FORENSIC SCIENCES IN THE FIELD OF FORENSIC MOLECULAR BIOLOGY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

37 credits, including 31 credits in required courses and 6 elective credits selected in consultation with the advisor. Other requirements are successful completion of an independent study project and successful completion of a master's comprehensive examination is also required.

Code	Title	Credits
Required		
FORS 6004	Fundamentals of Forensic Science I	
FORS 6005	Fundamentals of Forensic Science II	
FORS 6020	Ethics, Professional Responsibility, and Quality Assurance	
FORS 6201	Forensic Biology	
FORS 6224	Criminal Law for Forensic Scientists	

FORS 6225	Statistics for Forensic Scientists
FORS 6241	Forensic Molecular Biology I
FORS 6242	Forensic Molecular Biology II
FORS 6243	Forensic Molecular Biology III
FORS 6247	Population Genetics
FORS 6292	Graduate Seminar (taken twice) *
Electives	
Six additional credits selected in consultation with the departmental advisor	
Other requirements	
Successful completion of an independent research project is required.	
Successful completion of a master's comprehensive examination is required.	

*Students must register for FORS 6292 in their first semester and again after or during the completion of the required independent research project.

MASTER OF FORENSIC SCIENCES IN THE FIELD OF FORENSIC TOXICOLOGY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

37 credits, including 34 credits in required courses, 3 credits in elective courses selected in consultation with the advisor, and successful completion of a master's comprehensive examination.

Code	Title	Credits
Required		
FORS 6004	Fundamentals of Forensic Science I	
FORS 6005	Fundamentals of Forensic Science II	
FORS 6020	Ethics, Professional Responsibility, and Quality Assurance	
FORS 6210	Advanced Instrumental Analysis	
FORS 6224	Criminal Law for Forensic Scientists	
FORS 6225	Statistics for Forensic Scientists	
FORS 6232	Analytical Toxicology	
FORS 6234	Medicinal Chemistry I	
FORS 6235	Medicinal Chemistry II	
FORS 6236	Forensic Toxicology I	
FORS 6237	Forensic Toxicology II	
FORS 6292	Graduate Seminar (taken twice) *	
Electives		
3 credits in elective courses selected in consultation with the departmental advisor.		
Other requirements		
Successful completion of an independent research project.		
Successful completion of a master's comprehensive examination.		

*Students must register for FORS 6292 in their first semester and again during or after completion of the required independent research project.

MASTER OF FORENSIC SCIENCES IN THE FIELD OF FRICTION RIDGE ANALYSIS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

37 credits, including 34 credits in required courses and a one 3-credit elective course. Other requirements are successful completion of an independent research project and successful completion of a master's comprehensive examination.

Code	Title	Credits
Required		
FORS 6004	Fundamentals of Forensic Science I	
FORS 6005	Fundamentals of Forensic Science II	
FORS 6020	Ethics, Professional Responsibility, and Quality Assurance	
FORS 6207	Photography in the Forensic Sciences	
FORS 6215	Science of Fingerprints	
FORS 6216	Development of Latent Prints	

FORS 6217	Fingerprint Comparisons
FORS 6219	Digital Image Processing
FORS 6224	Criminal Law for Forensic Scientists
FORS 6225	Statistics for Forensic Scientists
FORS 6251	Crime Scene Investigation I
FORS 6292	Graduate Seminar (taken twice) *
Electives	
One of the following:	
FORS 6252	Crime Scene Investigation II
FORS 6256	Forensic Pathology
An alternate course may be selected with approval of the departmental advisor.	
Other requirements	
Successful completion of an independent research project is required.	
Successful completion of a master's comprehensive examination is required.	
Note: Students must register for FORS 6292 in their first semester and again during or after completion of the required independent research project.	

MASTER OF SCIENCE IN THE FIELD OF CRIME SCENE INVESTIGATION

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

36 credits, including 27 credits in required courses and 9 credits in elective courses, and successful completion of a master's comprehensive examination.

Code	Title	Credits
Required		
FORS 6005	Fundamentals of Forensic Science II	
FORS 6207	Photography in the Forensic Sciences	
FORS 6215	Science of Fingerprints	
FORS 6219	Digital Image Processing	
FORS 6224	Criminal Law for Forensic Scientists	
FORS 6251	Crime Scene Investigation I	
FORS 6252	Crime Scene Investigation II	
FORS 6256	Forensic Pathology	
FORS 6257	Medicolegal Death Investigation	
Electives		
9 credits selected in consultation with the departmental advisor. Suggested electives include:		
FORS 6010	Bloodstain Pattern Analysis I	
FORS 6203	Examination of Questioned Documents	
FORS 6204	Firearms and Toolmark Identification	
FORS 6255	Investigation of Child Abuse	
FORS 6290	Selected Topics (Crime Scene Investigation III)	
Other requirements		
Successful completion of a master's comprehensive examination is required.		

MASTER OF SCIENCE IN THE FIELD OF DIGITAL FORENSICS

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

36 credits, including 30 credits in required courses and 6 credits in elective courses, and successful completion of a master's comprehensive examination.

Code	Title	Credits
Required		
FORS 6259	Computer Related Law	
FORS 6264	Computer Network Defense	
FORS 6270	Digital Artifacts: Points of Evidence	

FORS 6273	RschMethods for SecurityProfs
FORS 6277	Computer Forensics I: File System Analysis
FORS 6278	Computer Forensics II: Applied Computer Forensics
FORS 6279	Incidence Response: Understanding and Identifying Network-Based Attacks
FORS 6280	Advanced Incidence Response: Investigating Network-Based Attacks
FORS 6285	Digital Forensics Capstone
FORS 6287	Project Management for Security Professionals
Electives	
6 credits from the following:	
FORS 6261	Security Management
FORS 6271	Cyberpsychology
FORS 6274	Video Forensic Analysis
FORS 6283	Steganography and Electronic Watermarking
FORS 6288	The Investigative Process for Computer Forensics
FORS 6289	Linux for Computer Forensics
FORS 6291	Computer Forensics III: Advanced Techniques
FORS 6295	Research
FORS 6298	Forensic Sciences Practicum
Other requirements	
Successful completion of a master's comprehensive examination is required.	

MASTER OF SCIENCE IN THE FIELD OF FRICTION RIDGE ANALYSIS

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

36 credits, including 30 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
FORS 6004	Fundamentals of Forensic Science I	
FORS 6207	Photography in the Forensic Sciences	
FORS 6215	Science of Fingerprints	
FORS 6216	Development of Latent Prints	
FORS 6217	Fingerprint Comparisons	
FORS 6219	Digital Image Processing	
FORS 6224	Criminal Law for Forensic Scientists	
FORS 6225	Statistics for Forensic Scientists	
FORS 6251	Crime Scene Investigation I	
FORS 6257	Medicolegal Death Investigation	
Electives		
Two of the following:		
FORS 6010	Bloodstain Pattern Analysis I	
FORS 6203	Examination of Questioned Documents	
FORS 6204	Firearms and Toolmark Identification	
FORS 6256	Forensic Pathology	
Alternate courses may be selected with the advisor's approval.		

GRADUATE CERTIFICATE IN BLOODSTAIN PATTERN ANALYSIS

REQUIREMENTS

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following requirements must be fulfilled: 18 credits, including 15 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		

FORS 6010	Bloodstain Pattern Analysis I
FORS 6011	Bloodstain Pattern Analysis II
FORS 6207	Photography in the Forensic Sciences
FORS 6219	Digital Image Processing
FORS 6295	Research (taken for 3 credits)
Elective	
One of the following:	
FORS 6251	Crime Scene Investigation I
FORS 6257	Medicolegal Death Investigation

An alternate course may be selected with the approval of the departmental advisor.

GRADUATE CERTIFICATE IN DIGITAL INVESTIGATIONS

REQUIREMENTS

The graduate certificate in digital investigations addresses the increasing need for IT professionals with the knowledge and skills to conduct digital forensic investigations. Students acquire an understanding of the proper methods for identifying, acquiring, preserving, and analyzing data from computers, media and mobile devices, and network environments.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following requirements must be fulfilled: 18 credits, including 15 credits in required courses and 3 credits in elective courses.

Code	Title	Credits
Required		
FORS 6270	Digital Artifacts: Points of Evidence	
FORS 6277	Computer Forensics I: File System Analysis	
FORS 6278	Computer Forensics II: Applied Computer Forensics	
FORS 6279	Incidence Response: Understanding and Identifying Network-Based Attacks	
FORS 6280	Advanced Incidence Response: Investigating Network-Based Attacks	
Elective		
One of the following:		
FORS 6259	Computer Related Law	
FORS 6290	Selected Topics (Macintosh Forensics)	
FORS 6290	Selected Topics (Malware Analysis)	
FORS 6290	Selected Topics (Computer Forensics III)	
FORS 6290	Selected Topics (Mobile Forensics)	

GRADUATE CERTIFICATE IN FORENSIC INVESTIGATION

REQUIREMENTS

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following requirements must be fulfilled: 18 credits, including 15 credits in required courses and 3 credits in elective courses.

Code	Title	Credits
Required		
FORS 6207	Photography in the Forensic Sciences	
FORS 6215	Science of Fingerprints	
FORS 6251	Crime Scene Investigation I	
FORS 6252	Crime Scene Investigation II	
FORS 6257	Medicolegal Death Investigation	
Elective		
One of the following:		
FORS 6203	Examination of Questioned Documents	
FORS 6204	Firearms and Toolmark Identification	
FORS 6254	Forensic Psychiatry	
FORS 6255	Investigation of Child Abuse	
FORS 6257	Medicolegal Death Investigation	
Alternate courses can be selected with approval of advisor.		

GRADUATE CERTIFICATE IN LATENT PRINT EXAMINATION

The graduate certificate in latent print examination trains students on the scientific methods behind fingerprint

identification and how these methods apply to processing fingerprints. Ideal for aspiring latent print examiners, the program covers topics including the biological aspects of friction ridge skin, the ACE-V methodology for fingerprint evaluation, and the complex interaction of environmental and genetic factors that influence friction ridge skin development. Students also gain critical hands-on laboratory experience throughout the course of the program.

Graduates are uniquely qualified for latent print examiner positions. Forensic laboratories are increasingly seeking Latent Print Unit candidates with advanced degrees. Additionally, the program's robust curriculum is designed to prepare students for the International Association for Identification (IAI) examination, which leads to certification as a Latent Print Examiner.

REQUIREMENTS

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following requirements must be fulfilled:18 credits, including 15 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
FORS 6207	Photography in the Forensic Sciences	
FORS 6215	Science of Fingerprints	
FORS 6216	Development of Latent Prints	
FORS 6217	Fingerprint Comparisons	
FORS 6219	Digital Image Processing	
Elective		
One of the following:		
FORS 6203	Examination of Questioned Documents	
FORS 6204	Firearms and Toolmark Identification	
FORS 6251	Crime Scene Investigation I	
FORS 6252	Crime Scene Investigation II	
FORS 6255	Investigation of Child Abuse	
FORS 6256	Forensic Pathology	
FORS 6257	Medicolegal Death Investigation	
Alternate courses may be selected with approval of advisor		

GEOGRAPHY

The Department of Geography is dedicated to achieving excellence in research and education through the diffusion of geographic knowledge that focuses on the relationships between the physical world and its occupation and modification by humans. Students trained in geography will understand society and environmental dynamics, the significance of scale, the uneven distribution of resources and levels of development, and the uses of geospatial techniques, including GIS (geographic information systems) and remote sensing.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in geography (p. 243)

Minors

- Minor in geography (p. 244)
- Minor in geographic information systems (p. 244)

GRADUATE

Master's program

- Master of Science in the field of geography (p. 246)

Dual Degree program

- Combined Master of Science in the field of geography and Graduate Certificate in geographical information systems (p. 246)

CERTIFICATE

Graduate certificate

- Graduate certificate in geographical information systems (p. 246)

FACULTY

Professor M.D. Price

Associate Professors M. Atia, L.M. Benton-Short (*Chair*), E. Chacko, R. Engstrom, D. Rain, N. Shiklomanov

Assistant Professors N. Cowan, J.P. Dymond *(Teaching),* M. Keeley, M. Mann, D. Streletskiy

Professorial Lecturers I. Cheung, L. Marcus, W. Reisser, S. Sklar, D. Squire

Lecturers S. Cowan, D. Gopalakrishna, R. Hinton, N. Smith

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GEOG 1000. Dean's Seminar. 3 Credits.

GEOG 1001. Introduction to Human Geography. 0-3 Credits.
A systematic survey of human geography; spatial perspectives on demographic, social, cultural, economic, and political changes around the world.

GEOG 1002. Introduction to Physical Geography. 4 Credits.
A systematic survey of environmental geography; perspectives on environments and human ecology, including ecosystems and their use, and resource geography. Laboratory fee.

GEOG 1003. Society and Environment. 0-3 Credits.
An introduction to the dynamic relationship between society and the physical environment, with focus on population, natural resources, environmental degradation, pollution, and conservation.

GEOG 2104. Introduction to Cartography and GIS. 3 Credits.
Fundamentals of cartography; geographic data structure and information systems. Laboratory fee.

GEOG 2105. Techniques of Spatial Analysis. 3 Credits.
Nature of geographical inquiry and analytical methods used in the study of spatial processes and patterns. Laboratory fee.

GEOG 2107. Introduction to Remote Sensing. 3 Credits.
Remote-sensing techniques using digital satellite imagery and aerial photography. Application to rural and urban settings, vegetation, and environmental monitoring. Laboratory fee. Prerequisite: GEOG 2105 or permission of instructor.

GEOG 2108. Weather and Climate. 3 Credits.
The elements and controls of weather and climate. Topics include energy and water balances, atmospheric general circulation, and severe weather events. Prerequisite: GEOG 1002.

GEOG 2110. Climate and Human Ecology. 3 Credits.
Interrelationships between human activities and the climatic environment. Emphasis on global climatic change. Prerequisite: GEOG 1002.

GEOG 2120. World Regional Geography. 3 Credits.
Practical approach to the themes, concepts, and tools appropriate for in-depth examination of the geography of the world's. Historical and physical regional geographies; contemporary regional issues; and intra- and interregional issues.

GEOG 2124. Urban Transportation. 3 Credits.
The relationship between freight and passenger transportation systems and urban land use patterns and structure. Prerequisite: GEOG 1001.

GEOG 2125. Transportation Systems and Networks. 3 Credits.
The structure and evolution of transportation networks and their impact on regional development.

GEOG 2127. Population Geography. 3 Credits.
Patterns of world population; factors contributing to population pressures, growth, and migrations.

GEOG 2128. Geomorphology. 3 Credits.
Understanding the nature, origin, and development of landforms in the field and through the use of maps and aerial photos. Prerequisite: GEOG 1002.

GEOG 2133. People, Land, and Food. 3 Credits.
The relationship between humans and their food sources through exploration of nutritional dynamics, food sourcing, agricultural land use, and food markets.

GEOG 2134. Energy Resources. 3 Credits.
Analysis of regional patterns and trends in consumption and production of energy resources. Examination of international energy linkages and energy policies of selected nations. Prerequisite: GEOG 1002.

GEOG 2134W. Energy Resources. 3 Credits.
Analysis of regional patterns and trends in consumption and production of energy resources. Examination of international energy linkages and energy policies of selected nations. Prerequisite: GEOG 1002.

GEOG 2136. Water Resources. 3 Credits.
Analysis of the global spatial patterns, development, use, and quality of water resources. Prerequisite: GEOG 1002.

GEOG 2137. Environmental Hazards. 3 Credits.
Examination of environmental hazards with an emphasis on physical geography, economics, and the basics of geographic information systems (GIS).

GEOG 2140. Cities and Societies. 3 Credits.
The design and function of cities in the United States; contemporary, economic, political, and social change. Prerequisite: GEOG 1001.

GEOG 2140W. Urban Geography. 3 Credits.
The design and function of cities in the United States; contemporary, economic, political, and social change. Prerequisite: Geog 1001.

GEOG 2141. Cities in the Developing World. 3 Credits.
Urbanization processes, problems, and management in the developing world. Focus on urban location, politics, housing, services, employment, and environmental issues. Prerequisite: GEOG 1001.

GEOG 2144. Explorations in Historical Geography. 3 Credits.
Examination of selected themes in the cultural geography of the United States over the course of its history, in relation to an overview of the historical geography of the country. Same as AMST 2144.

GEOG 2145. The Cultural Landscape. 3 Credits.
The distribution and dynamics of cultural patterns around the world; analysis of culture as a process.

GEOG 2145W. Cultural Geography. 3 Credits.
The distribution and dynamics of cultural patterns around the world; analysis of culture as a process.

GEOG 2146. Political Geography. 3 Credits.
Interrelationships among the human and physical environment and political systems; the organization of political territories.

GEOG 2147. Military Geography. 3 Credits.
An examination of environmental and locational factors and their impact on military planning and operations.

GEOG 2148. Economic Geography. 3 Credits.
Locational influences on and spatial variation of the development of manufacturing, services, trade, and finance. Prerequisite: GEOG 1001.

GEOG 2196. Field Methods in Geography. 3 Credits.
For geography and environmental studies majors in their junior or senior year. Field research in human and physical geography. Students participate in several field exercises and develop their skills of observation, field mapping, repeat photography, and surveys. Laboratory fee.

GEOG 3106. Intermediate Geographic Information Systems. 3 Credits.
Principles of geographic information systems and their use in spatial analysis and information management. Laboratory fee. Prerequisite: GEOG 2104 and GEOG 2105.

GEOG 3132. Environmental Quality and Management. 3 Credits.
The evolution of environmental management philosophies and tools. The global distribution, utilization, and degradation of natural resources. Prerequisite: GEOG 1002.

GEOG 3143. Urban Sustainability. 3 Credits.
Relationship between urban spaces and the environment through the lens of sustainability. Prerequisite: GEOG 1001.

GEOG 3143W. Urban Sustainability. 3 Credits.
Relationship between urban spaces and the environment through the lens of sustainability. Prerequisite: GEOG 1001.

GEOG 3154. Geography of the Middle East and North Africa. 3 Credits.
Cultural and physical regional patterns of the Middle East and North Africa. Prerequisite: Geog 1001 or GEOG 1002.

GEOG 3161. Geography of Latin America. 3 Credits.
Examination of spatial characteristics of physical and cultural phenomena in Latin America.

GEOG 3164. The Geography of Africa. 3 Credits.
Human and environmental geography of Africa south of the Sahara desert, including study of patterns and processes, culture and environment, and development issues. Prerequisites: GEOG 1001 or GEOG 1002.

GEOG 3165. Geography of South Asia. 3 Credits.
An examination of the complex interplay of environmental, economic, sociocultural, and political factors in South Asia and their effects at the local and regional levels.

GEOG 3189. Readings in Geography I. 1-12 Credits.
Prerequisite: 12 credit hours of geography and permission of instructor.

GEOG 3190. Readings in Geography II. 1-12 Credits.
Continuation of GEOG 3189. Prerequisite: 12 credit hours of geography and permission of instructor.

GEOG 3193. Environmental Law and Policy. 3 Credits.
An introduction to selected pieces of major environmental legislation. The role of the courts and bureaucracy in implementing and interpreting legislation and their impacts on decision making. Designed for students with no training in law Prerequisites: None.

GEOG 3194. Special Topics in Physical Geography. 3 Credits.
Topics covering physical principles of the Earth's physical geography and natural environment including the hydrosphere, atmosphere, biosphere, and lithosphere. Enrollment requires permission of the instructor.

GEOG 3195. Special Topics in Human Geography. 3 Credits.
Topics in human geography including population, urban, cultural, political and economic issues amongst others. Enrollment requires permission of the instructor.

GEOG 3196. Special Topics in Techniques. 3 Credits.
Topics covering specific skills in geographic information systems and field methods. Enrollment requires permission of the instructor.

GEOG 3197. Special Topics in Regional Geography. 3 Credits.
Various topics in regional geography, including world regional geography as well studies of specific regions of interest. Enrollment requires permission of the instructor.

GEOG 3198. Special Topics. 3 Credits.
Consideration of geographic aspects of topical and future problems of society. May be repeated for credit provided that the topic differs. Prerequisite: GEOG 1001 or GEOG 1002.

GEOG 3810. Planning Cities. 3 Credits.
An examination of historical and contemporary trends and dynamics in urban planning in the United States and abroad. Same as AMST 3810. Prerequisite: GEOG 1001.

GEOG 4195. Proseminar in Geographic Thought. 3 Credits.
For students completing the major in geography. Development of geographic thought, theories, and methodologies; geographic curricula. Prerequisite: permission of the advisor.

GEOG 4195W. Proseminar in Geographic Thought. 3 Credits.
For students completing the major in geography. Development of geographic thought, theories, and methodologies; geographic curricula. Prerequisite: permission of the advisor.

GEOG 4199. Internship. 1-3 Credits.
Fieldwork, internship, or other controlled assignment with an agency or organization engaged in work in applied geography. Prerequisite: 12 credit hours of geography courses and permission of instructor. May be repeated for credit to a maximum of 6 credits.

GEOG 4307. Digital Image Processing and Analysis. 3 Credits.
Land use/land cover change analysis using satellite and aircraft platforms. Digital image processing techniques, analysis, and applications. Prerequisites: GEOG 2107 and GEOG 3106.

GEOG 4309. GIS for Emergency Management. 3 Credits.
Introduction to the theoretical principles of geographic information systems and examination of its history, current uses, and potential for emergency management through case studies, guest lectures, and hands-on training on various GIS products. Prerequisites: GEOG 3106.

GEOG 4311. Open Source GIS. 3 Credits.
Geospatial project management, from design through implementation. Students work exclusively with open source technology for data capture, management, analysis, and communication; open source solutions and the effectiveness and sustainability of project management. Prerequisite: GEOG 3106.

GEOG 6201. Geographic Thought. 3 Credits.
For first-year master's students, a survey of geographic thought and theories. Emphasis on contemporary issues in geography and on the development of research.

GEOG 6207. Urban Planning and Development. 3 Credits.
Selected problems in urban and regional planning: applications of zoning, environmental controls, and other techniques for achieving sustainable urban development.

GEOG 6208. Land Use and Urban Transportation Planning. 3 Credits.
Relationships between land use and the movement of goods and people. Examination of land use and transportation planning principles, issues, and techniques. Roles of public and private interests in land use and transportation planning and management.

GEOG 6219. Seminar: Climatology. 3 Credits.
Inadvertent climate modification due to urbanization and impacts on environmental and human health.

GEOG 6220. Seminar: Climatic Change. 3 Credits.
Examination of natural and human-induced climatic change, at global, regional, and local scales.

GEOG 6222. Seminar: Resources and the Environment. 3 Credits.
Topics related to the spatial variations and interrelationships of resources and the environment; applications of geographic information systems and remote sensing. Prerequisite: permission of instructor.

GEOG 6223. Seminar: Population and Health. 3 Credits.
Interrelationships between population characteristics and dynamics and impacts on human health.

GEOG 6224. Seminar:Political Geography. 3 Credits.
Examination of political factors in location theory and analysis of the nature of political territories and conflict.

GEOG 6225. Seminar: Transportation and Development. 3 Credits.
Transportation and communication in the organization of space.

GEOG 6230. Seminar: Environmental Issues in Development. 3 Credits.
A consideration of the geographical dimensions of the links between development and the environment.

GEOG 6232. Migration and Development. 3 Credits.
Analysis of migration's impact on development at various scales for both the sending and receiving localities.

GEOG 6243. Seminar: Urban Geography. 3 Credits.
Topics concerning social, political, economic, and environmental issues in U.S. cities.

GEOG 6244. Urban Sustainability. 3 Credits.
Urban sustainability and environmental issues in developed and developing cities.

GEOG 6245. Water Resources Policy and Management. 3 Credits.
In this course, we will examine the history and practice of water resources policy and management in the context of integrated water resource management. Thus, we will address management issues and policy responses to such topics as the impacts of urban and agricultural runoff on water quality; provision of wastewater and water quality services; water supply, water allocation and scarcity; and modification of waterbodies for the purposes of flood control, hydropower, navigation, and recreation. In addition, non-human water requirements: e.g. for fish and wildlife, as well as the need to preserve the natural ecosystems that provide and sustain water resources will be central to each discussion. We will examine management and policy issues in the United States and worldwide at a range of scales: local, state, federal and international. In the course of these examinations, students will gain an understanding of how current issues such as growing populations, increasing affluence, and climate change may impact water resource policy and management.

GEOG 6250. Geographical Perspectives on Development. 3 Credits.
Theory and debates surrounding economic development in a globalizing world, with case studies.

GEOG 6261. Geographical Perspectives on Latin America. 3 Credits.
Natural resources, the environment, and population dynamics through time.

GEOG 6262. Geographical Perspectives on the Middle East. 3 Credits.
Examination of selected topics related to political, economic, social, cultural, and geographic patterns and processes in the region.

GEOG 6265. Geography of Russia and Its Neighbors. 3 Credits.
A deeper understanding of Post-Soviet geography with a focus on the physical and environmental characteristics of the region, geography of natural and human resources, ethnic, cultural and religious diversity, characteristics of economic and political regions, and recent geopolitical developments.

GEOG 6290. Principles of Demography. 3 Credits.
Introduction to basic demographic perspectives and data; methods for analysis of population size, distribution, and composition; determinants and consequences of population trends. Departmental prerequisite waived. Same as ECON 6290/ SOC 6290/ STAT 6290.

GEOG 6291. Methods of Demographic Analysis. 3 Credits.
Basic methods for analysis of mortality, natality, and migration; population estimates and projections; estimation of demographic measures from incomplete data. Departmental prerequisite waived. Same as ECON 6291/ SOC 6291/ STAT 6291.

GEOG 6293. Special Topics. 3 Credits.
Consideration of geographic aspects of topical social or environmental problems. May be repeated for credit provided the topic differs.

GEOG 6295. Research. 1-12 Credits.
May be repeated for credit.

GEOG 6299. Internship. 1-3 Credits.

GEOG 6300. Geography Capstone Internship. 3 Credits.
This course will provide hands-on experiential learning in a local government agency, NGO, or corporation while allowing the candidate to use his/her geographical skills in a real world setting. Restricted to Geography graduate students only. Prerequisites: GEOG 6201.

GEOG 6304. Geographical Information Systems I. 3 Credits.
Fundamentals of cartography; geographic data structure and geographic information systems.

GEOG 6305. Geospatial Statistics. 3 Credits.
Nature of geographical inquiry and the analytical and statistical methods used in the study of spatial processes and patterns.

GEOG 6306. Geographical Information Systems II. 3 Credits.
Advanced principles of geographic information systems and their use in spatial analysis and information management. Prerequisites: GEOG 6304 and GEOG 6305.

GEOG 6307. Digital Image Processing. 3 Credits.
This course introduces students to the theoretical, technical and applied aspects of remote sensing as a tool for monitoring and managing earth resources. This course will provide students with the knowledge for analyzing and applying remotely sensed data for problem solving as it applies to land cover. Prerequisite: GEOG 6304.

GEOG 6309. GIS for Emergency Management. 3 Credits.
This course will introduce students to the theoretical principles of geographic information systems and will examine its history, current uses and potential for emergency management through case studies, guest lectures and hands-on training on various GIS products. Prerequisites: GEOG 6304.

GEOG 6998. Thesis Research. 3 Credits.

GEOG 6999. Thesis Research. 3 Credits.

BACHELOR OF ARTS WITH A MAJOR IN GEOGRAPHY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

The program of study consists of 36 credits including:

GEOG 1001	Introduction to Human Geography
GEOG 1002	Introduction to Physical Geography
GEOG 4195	Proseminar in Geographic Thought
A minimum of two courses from each of the following groups:	
Group A (Physical/Environmental/Resources)	
GEOG 1003	Society and Environment
GEOG 2108	Weather and Climate
GEOG 2110	Climate and Human Ecology
GEOG 2128	Geomorphology
GEOG 2134	Energy Resources
GEOG 2136	Water Resources
GEOG 2137	Environmental Hazards
GEOG 3132	Environmental Quality and Management
GEOG 3143	Urban Sustainability
Group B (Human)	
GEOG 2124	Urban Transportation

GEOG 2125	Transportation and Communication
GEOG 2127	Population Geography
GEOG 2133	People, Land, and Food
GEOG 2140	Cities and Societies
GEOG 2141	Cities in the Developing World
GEOG 3143	Urban Sustainability
GEOG 2144	Explorations in Historical Geography
GEOG 2145	Cultural Geography
GEOG 2146	Political Geography
GEOG 2147	Military Geography
GEOG 2148	Economic Geography
GEOG 3810	Building Cities
Group C (Techniques)	
GEOG 2104	Introduction to Cartography and GIS
GEOG 2105	Techniques of Spatial Analysis
GEOG 2107	Introduction to Remote Sensing
GEOG 2196	Field Methods in Geography
GEOG 3106	Intermediate Geographic Information Systems
GEOG 4121	Advanced Geographic Information Systems
At least one course from Group D (Regional):	
GEOG 3120	World Regional Geography
GEOG 3154	Geography of the Middle East and North Africa
GEOG 3161	Geography of Latin America
GEOG 3164	The Geography of Africa
GEOG 3165	Geography of South Asia

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must have a minimum grade-point average of 3.75 in geography courses and a 3.5 average overall.

MINOR IN GEOGRAPHIC INFORMATION SYSTEMS

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 12 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
GEOG 2104	Introduction to Cartography and GIS	
GEOG 2105	Techniques of Spatial Analysis	
GEOG 2107	Introduction to Remote Sensing	
GEOG 3106	Intermediate Geographic Information Systems	
One of the following:		
GEOG 3198	Special Topics (Open Source GIS)	
GEOG 3198	Special Topics (Programming for Geographic Applications)	
GEOG 4307	Digital Image Processing and Analysis	
GEOG 4309	GIS for Emergency Management	
Elective		
One 3-credit Geography (GEOG) course.		

MINOR IN GEOGRAPHY

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
Required		
GEOG 1001	Introduction to Human Geography	
GEOG 1002	Introduction to Physical Geography	
One course from each of the following groups:		
Group A (Physical/Environmental/Resources)		
GEOG 1003	Society and Environment	
GEOG 2108	Weather and Climate	
GEOG 2110	Climate and Human Ecology	

GEOG 2128	Geomorphology
GEOG 2134	Energy Resources
GEOG 2136	Water Resources
GEOG 2137	Environmental Hazards
GEOG 3132	Environmental Quality and Management
GEOG 3143	Urban Sustainability
Group B (Human)	
GEOG 2124	Urban Transportation
GEOG 2125	Transportation Systems and Networks
GEOG 2127	Population Geography
GEOG 2133	People, Land, and Food
GEOG 2140	Cities and Societies
GEOG 2141	Cities in the Developing World
GEOG 2144	Explorations in Historical Geography
GEOG 2145	Cultural Geography
GEOG 2146	Political Geography
GEOG 2147	Military Geography
GEOG 2148	Economic Geography
GEOG 3143	Urban Sustainability
GEOG 3810	Planning Cities
Group C (Techniques)	
GEOG 2104	Introduction to Cartography and GIS
GEOG 2105	Techniques of Spatial Analysis
GEOG 2107	Introduction to Remote Sensing
GEOG 2196	Field Methods in Geography
GEOG 3106	Intermediate Geographic Information Systems
GEOG 4121	Advanced Geographic Information Systems
Group D (Regional)	
GEOG 3120	World Regional Geography
GEOG 3154	Geography of the Middle East and North Africa
GEOG 3161	Geography of Latin America
GEOG 3164	The Geography of Africa
GEOG 3165	Geography of South Asia

MASTER OF ARTS IN THE FIELD OF GEOGRAPHY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

Thesis option: 30 credits, including 6 credits in required courses, 18 credits in elective courses, and 6 credits in thesis; non-thesis option: 36 credits, including 6 credits in required courses, 18 credits in elective courses, 9 credits in research, and a 3-credit capstone internship.

Code	Title	Credits
Required		
GEOG 6201	Geographic Thought	
GEOG 6304	Geographical Information Systems I	
Electives		
18 credits in elective courses		
Depending on the chosen area of focus, students select, in consultation with the advisor and graduate committee, appropriate courses from within the department or in related programs and departments within the University or the Consortium of Universities.		
Thesis option		
GEOG 6998	Thesis Research	
GEOG 6999	Thesis Research	
Non-thesis option		
Degree candidates choosing the non-thesis option must take three credits of directed research		
GEOG 6295	Research	
or GEOG 6300	Geography Capstone Internship	

MASTER OF SCIENCE IN THE FIELD OF GEOGRAPHY

REQUIREMENTS

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

Thesis option—30 credits, including 6 credits in required courses, 18 credits in elective courses, and 6 credits in thesis; non-thesis option—36 credits, including 6 credits in required courses, 18 credits in elective courses, 9 credits in research, and a 3-credit capstone internship.

Code	Title	Credits
Required		
GEOG 6201	Geographic Thought	
GEOG 6304	Geographical Information Systems I	
Thesis option		
GEOG 6292	Qualitative Methods in Geography	
or GEOG 6305	Geospatial Statistics	
GEOG 6998	Thesis Research	
GEOG 6999	Thesis Research	
Non-thesis option		
Degree candidates selecting the non-thesis option must take 3 credits of directed research.		
GEOG 6292	Qualitative Methods in Geography	
or GEOG 6305	Geospatial Statistics	
GEOG 6295	Research	
or GEOG 6300	Geography Capstone Internship	
Electives		
18 credits of electives courses to include at least one of the following:		
GEOG 6226	Water Resources Policy and Management	
GEOG 6232	Migration and Development	
GEOG 6250	Geographical Perspectives on Development	
GEOG 6306	Geographical Information Systems II	
GEOG 6307	Digital Image Processing	
GEOG 6308	Programming for Geospatial Applications	
GEOG 6309	GIS for Emergency Management	
GEOG 6310	Geovisualization & Cartography	
GEOG 6311	Open Source Solutions for Geospatial Project Management	
GEOG 6300	Geography Capstone Internship	
Depending upon the chosen field of specialization, each student will select electives from appropriate courses within the department or from related programs and departments within the University or the Consortium of Universities.		

The student's program of study is developed in consultation with the advisor and graduate committee.

COMBINED MASTER OF SCIENCE IN THE FIELD OF GEOGRAPHY AND GRADUATE CERTIFICATE IN GEOGRAPHICAL INFORMATION SYSTEMS

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Please visit the department page (https://geography.columbian.gwu.edu) for more information.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (http://bulletin.gwu.edu/arts-sciences/#degreeregulationstext).

Thesis option—30 credits, including thesis research; non-thesis option—36 credits, including 3 credits in either research or internship capstone.

GRADUATE CERTIFICATE IN GEOGRAPHICAL INFORMATION SYSTEMS

The graduate certificate in geographical information systems (GIS) program helps students acquire the knowledge and skills to move directly from the classroom into the workplace as environmental scientists, civil engineers, and public health officials, among the many professionals who rely on GIS in

government agencies, nonprofits, and the private sector. The curriculum guides students through all aspects of GIS theory and practice, from the science of cartography to analyzing geographical statistics to database design and geospatial modeling. Students are equipped with a solid grounding in geospatial theory and techniques as well as its practical applications.

REQUIREMENTS

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

12 credits, including 6 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
GEOG 6304	Geographical Information Systems I	
GEOG 6305	Geospatial Statistics	
Electives		
Two of the following:		
GEOG 6306	Geographical Information Systems II	
GEOG 6307	Digital Image Processing	
GEOG 6309	GIS for Emergency Management	
GEOG 6308		
GEOG 6309	GIS for Emergency Management	
GEOG 6310		
GEOG 6311		

GEOLOGICAL SCIENCES

The geological sciences program offers undergraduate instruction in rigorous research techniques. It allows students to work directly with faculty in research on the geology and paleontology of the Appalachian mountains, the Rocky mountains, Asia, and elsewhere. The student–faculty partnership provides a broad education and hands-on training.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in geological sciences (p. 249)
- Bachelor of Science with a major in geological sciences (p. 249)

Minor

- Minor in geological sciences (p. 250)

FACULTY

Committee on Geological Sciences C.E. Brown, J.M. Clark, C.A. Forster, G. Mattietti, E. Pauli, J. Kravitz, H. Teng, R.P. Tollo

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GEOL 1001. Physical Geology. 3 Credits.
Lecture, laboratory. An introduction to the principal features of the composition and structure of the earth. Topics include the nature of minerals and rocks, surface and deep earth processes, mineral and energy resources, and plate tectonics. Laboratory fee. Credit will not be given for both GEOL 1001 and GEOL 1005.

GEOL 1002. Historical Geology. 3 Credits.
Lecture, laboratory. An introduction to the history of the earth. Topics include sedimentary environments, plate tectonics, origin of life, and evolution. Laboratory fee. Prerequisite: GEOL 1001 or GEOL 1005.

GEOL 1005. Environmental Geology. 3 Credits.
Lecture, laboratory. An introduction to the impact of geology on the environment, with emphasis on the relation of people and society to natural environments; population evolution, natural hazards, and mineral resources. Laboratory fee. Credit will not be given for both GEOL 1001 and GEOL 1005.

GEOL 1006. Science & the Environment. 3 Credits.
The large-scale processes operating within the atmosphere, oceans, and solid Earth. Prerequisite: GEOL 1001 or GEOL 1005.

GEOL 2106. Oceanography. 3 Credits.
The ocean with its many environments represents the last largely unexplored frontier on earth. Origin of the ocean systems and plate tectonics, ocean habitats and their biota, marine hydrology and ocean currents; air–sea interaction and climate control; ocean mapping techniques; environmental regulations covering marine resources. Laboratory fee. Prerequisite: GEOL 1001 or GEOL 1005.

GEOL 2111. Mineralogy. 4 Credits.
Lecture and laboratory. Introduction to the crystallography and chemical systematics of rock-forming and ore minerals. Exercises emphasize the analysis of mineralogic data and the paragenesis of mineral assemblages. Prerequisite: GEOL 1001 or GEOL 1005 or permission of instructor. Laboratory fee.

GEOL 2112. Igneous and Metamorphic Petrology. 4 Credits.
Lecture and laboratory. Introduction to basic light theory and the identification and characterization of minerals through optical properties. Laboratory exercises provide an introduction to petrologic analysis of igneous and metamorphic mineral systems. Prerequisite: GEOL 2111 or permission of the instructor. Laboratory fee.

GEOL 2122. Structural Geology. 3 Credits.
Lecture and laboratory. Study of natural and experimental rock deformation and the relationships between stress and strain as recorded by geologic structures. Prerequisite: GEOL 1001 or GEOL 1005. Laboratory fee.

GEOL 2151. History of Life. 3 Credits.
A review of the origin of life, the geologic record, and the evolutionary history of the major groups of organisms, including the origin of life and evolution of invertebrates, vertebrates, and plants. Prerequisite: GEOL 1001 or GEOL 1002 or BISC 1111– BISC 1112. Laboratory fee. Same as BISC 2451.

GEOL 2159. Geobotanical Ecology of the Central Appalachians. 4 Credits.
A multidisciplinary approach to Appalachian ecology involving application of scientific principles from both geology and botany, stressing interrelationships between geological, geochemical, and biological processes. Field trips. Laboratory fee. Prerequisite: GEOL 1001 or GEOL 1005 and BISC 1111–BISC 1112; with permission of instructor.

GEOL 2190. Special Topics in Geology. 1-3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

GEOL 2333. Evol/Extinction of Dinosaurs. 3 Credits.
The 165-million-year history of dinosaurs; different groups and their evolution, end-Cretaceous extinction event, the origin of birds, and the biology of the group. Prerequisites: BISC 1111 and BISC 1112; or GEOL 1001 and GEOL 1002 or GEOL 1002 and GEOL 1005. Same as BISC 2333.

GEOL 3118. Volcanology. 3 Credits.
Fundamental principles and geologic processes associated with volcanism. Eruptive styles, processes leading to magma production and transport, triggering mechanisms, plate tectonic settings, volcanic hazards, and disaster mitigation. Case histories of selected volcanic eruptions examined in detail. Prerequisite: GEOL 2111 or permission of instructor. Laboratory fee.

GEOL 3119. Field Experience in Volcanology. 1 Credit.
Week-long field exercise at a major volcanic center in the western United States. Field-based interpretation and analysis of volcanic and related rocks. The geology of each site and the processes responsible for volcanism discussed in detail. Corequisite: GEOL 3118. Deposit for expenses is required.

GEOL 3123. Crustal Dynamics. 0-3 Credits.
Basic plate tectonic processes and features; the plate tectonic paradigm in historical evolutionary framework. Students present an original research project orally and in writing. Prerequisite: GEOL 2122. Laboratory fee.

GEOL 3126. Sedimentology and Stratigraphy. 4 Credits.
Lecture and laboratory. Introduction to sedimentation and stratigraphy; origin and classification of sediments and sedimentary rocks; introduction to clastic and carbonate depositional environments and stratigraphic principles. Prerequisite: GEOL 1002, GEOL 2111. Laboratory fee.

GEOL 3131. Global Climate Change. 3 Credits.
Fundamental causes and patterns of climate change. Methods of reconstruction of past climates; modeling and predicting climate change.

GEOL 3138. Hydrogeology. 3 Credits.
Principles and theory of basic and applied hydrology: surface water hydrology, geology of groundwater systems, groundwater flow, surface water–groundwater interactions, contamination and remediation technologies, conservation, management, and regulations. Prerequisite: GEOL 2111, GEOL 2122; MATH 1221 or MATH 1231; or permission of instructor. Laboratory fee.

GEOL 3140. Geochemistry. 3 Credits.
Chemical systems and processes on the planet Earth; origins and interactions among and within the Earth's lithosphere, oceans, and atmosphere; origin, distribution, and behavior of the elements; radioactive and stable isotope systems. Aqueous geochemistry; geochemical cycles. Same as CHEM 3140. Prerequisite: GEOL 1001 or GEOL 1005; CHEM 1111– CHEM 1112 .

GEOL 3189. Geophysics. 3 Credits.
Principles of magnetic, gravity, seismic and electrical methods applied to geological problem-solving. Prerequisite: GEOL 2122 or permission of instructor.

GEOL 3191. Geology of Energy Resources. 3 Credits.
Principles of geology applied in energy exploration, exploitation, and production; the geology of energy resources in ocean basins; borehole and surface geophysical applications and reconnaissance mapping techniques; management and regulation of energy resources; sustainability, efficiency, and conservation issues. Prerequisite: GEOL 2122 or permission of instructor. Laboratory fee.

GEOL 4195. Geological Field Methods. 4 Credits.
Weekend field trips. Methods of outcrop analysis, geologic mapping, and data interpretation. The geological evolution of the central Appalachian mountains and the plate tectonic processes responsible for their formation emphasized. Prerequisite: GEOL 2111, GEOL 2122. Field trip fee.

GEOL 4195W. Geological Field Methods. 4 Credits.

GEOL 4199. Undergraduate Research or Reading. 1-12 Credits.
Problems approved by the staff. May be repeated for credit.

BACHELOR OF ARTS WITH A MAJOR IN GEOLOGICAL SCIENCES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Prerequisite courses:	
GEOL 1002	Historical Geology
GEOL 1001	Physical Geology
or GEOL 1005	Environmental Geology
Required courses in related areas:	
CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
Required courses for the major:	
GEOL 2111	Mineralogy
GEOL 2112	Igneous and Metamorphic Petrology
GEOL 2122	Structural Geology
GEOL 3126	Sedimentology and Stratigraphy
GEOL 4195	Geological Field Methods
Three upper-level electives chosen from the following:	
GEOL 2106	Oceanography
GEOL 2151	History of Life
GEOL 2190	Special Topics in Geology (3 credits only)
GEOL 3118	Volcanology
GEOL 3123	Crustal Dynamics
GEOL 3131	Global Climate Change
GEOL 3138	Hydrogeology
GEOL 3140	Geochemistry
GEOL 3191	Geology of Energy Resources
GEOL 4199	Undergraduate Research or Reading (3 credits only)

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, candidates must maintain a cumulative grade-point average of 3.3 both overall and for courses in the major, and must submit an approved Honors thesis.

BACHELOR OF SCIENCE WITH A MAJOR IN GEOLOGICAL SCIENCES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Prerequisite courses:	
GEOL 1002	Historical Geology
GEOL 1001	Physical Geology
or GEOL 1005	Environmental Geology
Required courses in related areas:	
CHEM 1111 & CHEM 1112	General Chemistry I and General Chemistry II
One of the following:	
PHYS 1011 & PHYS 1012	General Physics I and General Physics II
Or	
ASTR 1001 & ASTR 1002	Stars, Planets, and Life in the Universe and Origins of the Cosmos
One of the following:	
MATH 1220 & MATH 1221	Calculus with Precalculus I and Calculus with Precalculus II

MATH 1231	Single-Variable Calculus I
STAT 1051	Introduction to Business and Economic Statistics
STAT 1053	Introduction to Statistics in Social Science
STAT 1111	Business and Economic Statistics I
STAT 1127	Statistics for the Biological Sciences
Required courses for the major:	
GEOL 2111	Mineralogy
GEOL 2112	Igneous and Metamorphic Petrology
GEOL 2122	Structural Geology
GEOL 3126	Sedimentology and Stratigraphy
GEOL 4195	Geological Field Methods
Four courses chosen with approval of the program advisor from the following list of designated courses:	
GEOL 2106	Oceanography
GEOL 2151	History of Life
GEOL 2159	Geobotanical Ecology of the Central Appalachians
GEOL 2190	Special Topics in Geology (3 credits only)
GEOL 3118	Volcanology
GEOL 3131	Global Climate Change
GEOL 3138	Hydrogeology
GEOL 3140	Geochemistry
GEOL 3189	Geophysics
GEOL 3191	Geology of Energy Resources
GEOL 4199	Undergraduate Research or Reading (3 credits only)

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, candidates must maintain a cumulative grade-point average of 3.3 both overall and for courses in the major, and must submit an approved Honors thesis.

MINOR IN GEOLOGICAL SCIENCES

REQUIREMENTS

The following requirements must be fulfilled: 19 credits for the minor and successful completion of all prerequisite courses.

Prerequisite:

GEOL 1002	Historical Geology
GEOL 1001	Physical Geology
or GEOL 1005	Environmental Geology

The minor consists of:

GEOL 2111	Mineralogy
GEOL 2112	Igneous and Metamorphic Petrology
GEOL 2122	Structural Geology
GEOL 3126	Sedimentology and Stratigraphy
GEOL 4195	Geological Field Methods

HISTORY

The Department of History offers a curriculum that includes a wide range of geographical, thematic, and temporal fields. Students can choose from courses in American, European, Asian, Middle Eastern, Latin American, and African history in the early modern and modern time periods, as well as courses centering on cross-national themes such as the history of colonialism and imperialism, the Cold War, the Atlantic World, immigration, women's history, and military history. The program strengthens students' ability to understand the past in political, social, and cultural context and the relationship of the past to the present. It is also designed so that students gain experience in writing and acquire the knowledge and analytical tools necessary for success in a range of careers and professions.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in history (p. 262)

Minor

- Minor in history (p. 274)

GRADUATE

Master's program

- Master of Arts in the field of history (p. 274)

Doctoral programs

- Doctor of Philosophy in the field of history (p. 275)
- Doctor of Philosophy in the field of American religious history (p. 275)

FACULTY

Professors H.L. Agnew, T. Anbinder, E. Arnesen, M.A. Atkin, W.H. Becker, E. Berkowitz, A.M. Black *(Research)*, E.H. Cline, R.J. Cottrol, J. Hershberg, A.J. Hiltebeitel, D.K. Kennedy, D.R. Khoury, E.A. McCord, L.P. Ribuffo, D. Silverman, R.H. Spector, R.B. Stott, R. Thornton, B.Vinson, J. Weissman Joselit, A. Zimmerman

Associate Professors P.M. Alonso-Gortari, N. Blyden, G.A. Brazinsky, D. Brunsman, E. Chapman, D. Cline, H.M. Harrison, B. Hopkins, C. Klemek, S. McHale, M. Norton, S.N. Robinson, A. Smith II, D. Schwartz, K. Schultheiss (*Chair*), D. Yang

Assistant Professors J. Belcher, T. Christov, J. Kim, J. Krug, C.T. Long, S. Miller

Adjunct Professors K. Bowling, A. Howard

Post-Doctoral Fellow J. Shea

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Course Accessibility: All listed undergraduate courses are open to students without history course prerequisites with the exception of HIST 3095 Internship, HIST 4098 Thesis Seminar, and HIST 4099 Senior Honors Thesis Tutorial.

HIST 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

HIST 1011. World History, 1500-Present. 3 Credits.
An introduction to world history over the past half millennium, stressing themes of exchange and integration, tracing the ways various peoples of the world became bound together in a common system.

HIST 1020. Approaches to Women's History. 3 Credits.
Exploration of critical periods of intellectual and cultural change in Western societies as influenced by and affecting women. Examination of images of women and of changing ideal types of femininity and masculinity. Aspects of law, religion, art, culture, work, and politics in relation to these topics. Same as WSTU 1020.

HIST 1110. European Civilization in Its World Context. 3 Credits.
Introduction to the history of Europe, emphasizing primary sources and their interpretation. From the beginning of written culture through 1715.

HIST 1120. European Civilization in Its World Context. 3 Credits.
Continuation of HIST 1110. Introduction to the history of Europe, emphasizing primary sources and their interpretation. From 1715 to the present.

HIST 1120W. European Civilization in its World Context. 3 Credits.
European history from the early eighteenth century to the present; mutual influence and impact between Europe and the rest of the world. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 1121. The War of Ideas in European and International History, 1750–Present. 0-3 Credits.
The ideas that made people fight, from the French Revolution to the worldwide uprisings of the 1960s and beyond. Key texts whose ideas of freedom and slavery, tradition and progress, state authority and revolutionary violence changed the world. The political, economic, and social contexts and effects of these texts.

HIST 1310. Introduction to American History. 3 Credits.
The political, social, economic, and cultural history of the United States. From the earliest settlements to 1876.

HIST 1311. Introduction to American History. 3 Credits.
Continuation of HIST 1310. The political, social, economic, and cultural history of the United States. From 1876 to present.

HIST 2001. Special Topics. 0-4 Credits.
Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

HIST 2005. Majors' Introductory Seminar. 3 Credits.
Introduction to the analytical and writing expectations of the history major. Topics vary by semester. Consult the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

HIST 2005W. Majors' Introductory Seminar. 3 Credits.
Introduction to the analytical and writing expectations of the history major. Topics vary by semester. Consult the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

HIST 2010. Early American Cultural History. 3 Credits.
How culture was important in the creation of the United States —in its origins as a colonial outpost and its expansion across the continent; in its hierarchies and expressions of power, especially as organized by race, class, ethnicity, or gender; in the creation of democracy and the valuing of free expression; and in the development of cities and the varied uses of the countryside. Same as AMST 2010.

HIST 2011. Modern American Cultural History. 3 Credits.
The effects of culture in the shaping of the United States since 1876. The role of the mass media; effects of cultural conceptions on the physical landscape; changing ideas of race, ethnicity, gender, and sexuality; and the political meanings of cultural conflict. Transnational influences on U.S. culture and effects of U.S. culture abroad. Same as AMST 2011.

HIST 2020. Washington, D.C.: History, Culture, and Politics. 0-3 Credits.
Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Same as AMST 2020.

HIST 2020W. Washington, D.C.: History, Culture, and Politics. 0-3 Credits.
Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Same as AMST 2020.

HIST 2050. History of Jewish Civilization: From the Bible to Modernity. 3 Credits.
Introduction to the richness and diversity of Jewish civilization from antiquity to the present. Examination of evolving notions of "who" or "what" is Jewish. Key concepts including "chosenness," community, peoplehood, diaspora, redemption, and Torah. How the boundaries of Jewishness have been formed, contested, and revised over time; how Jews managed to retain their identity throughout their millennial history of migration, dispersion, and persecution; what unites Jewish civilization; and whether a unified Jewish history over centuries and continents can be traced, as distinct from multiple "histories" of the Jews in the myriad times and places in which they lived. Emphasis on analysis of primary texts and cultural objects along with contextual understanding of Jews and Judaism.

HIST 2105. Majors' Introductory Seminar: Europe. 0-3 Credits.

HIST 2105W. Majors' Introductory Seminar: Europe. 0-3 Credits.

HIST 2112. History of Ancient Greece. 3 Credits.
A political and social survey of Bronze Age Minoan and Mycenaean civilizations, the Iron Age, Archaic Period, Classical Greece through Alexander the Great. (Same as CLAS 2112).

HIST 2113. The Roman World to 337 A.D.. 3 Credits.
Prehistoric Italy; rise and decline of the Roman Empire and Latin civilization; cultural, social, and political developments in the Greek world under Roman rule. Same as CLAS 2113.

HIST 2124. 19th-Century Europe. 3 Credits.
Exploration of primary source documents and works of professional historians to introduce important issues of 19th-century European history.

HIST 2125. 20th-Century Europe. 3 Credits.
Diplomatic, political, and cultural developments from the turn of the century to the present.

HIST 2131. History of England Since 1689. 3 Credits.
Development of English civilization and its impact on Western culture.

HIST 2141. History of France Since 1814. 3 Credits.
Breaks and continuities in the succession of regimes; the interplay between revolution and tradition; the weakened international position of France; Gaullism and the survival of France; European Unity.

HIST 2160. History of Germany. 3 Credits.
Political, social, and cultural development.

HIST 2180. Russia to 1801. 3 Credits.
Survey of Russian history from the rise of the Kievan confederation in the ninth century to the establishment of Imperial Russia as a European great power; political, socioeconomic, and cultural history of the East Slavs, especially the Russians.

HIST 2181. Russia Since 1801. 3 Credits.
Survey of Russian and Soviet history from the reign of Alexander I to the Stalin era; contending forces of revolution, reform, and conservatism; diplomatic relations; economic development; and social change.

HIST 2305. Majors' Introductory Seminar: United States. 0-3 Credits.

HIST 2305W. Majors' Introductory Seminar: United States. 0-3 Credits.

HIST 2311. The Jacksonian Era and the Rise of Mass Politics. 3 Credits.
The period 1824-1950 as a crucial era in American history; popular impact of social and political changes caused by the growth of the market economy; emergence of two national political parties; and new reforms focused increasingly on slavery as the country's greatest problem.

HIST 2312. The American Civil War and Reconstruction, 1850-1877. 3 Credits.
Examination of the political crises of the1850s to determine how and why the issue of slavery led to the American Civil War; the war's important battles, including how generals and common soldiers shaped outcomes; Reconstruction and the aftermath of the war, including how it shapes politics and race relations to the present day.

HIST 2313. History of the American West. 3 Credits.
A history of the trans-Mississippi West from first settlement by American Indians to the present; the pre-contact West, the coming of the Spanish, American settlement, the Indian Wars, women in the West, labor and racial conflict, and the West in the twentieth century.

HIST 2320. U.S. Media and Cultural History. 3 Credits.
History and analysis of 20th-century U.S. media and culture, including the rise of consumer culture, film, and television. Racial, gendered, and national identities in the context of modernism, mass culture, and globalization. Same as AMST 2320.

HIST 2321. U.S. History, 1890-1945. 3 Credits.
A survey of modern U.S. history from the late nineteenth century to the end of WWII. Emphasis on politics, public policy, and culture. Basic readings include biography, autobiography, and contemporary novels.

HIST 2322. U.S. History since 1945. 3 Credits.
Political, social, diplomatic, and intellectual developments, with particular emphasis on the Cold War, "silent" '50s, and disrupted '60s.

HIST 2340. US Diplomatic History. 3 Credits.
American foreign relations in the 20th century.

HIST 2340W. US Diplomatic History. 3 Credits.
American foreign relations in the 20th century.

HIST 2341. History of FBI Counterintelligence. 3 Credits.
The issues, controversies, and personalities that have played critical roles in the history of FBI foreign counterintelligence development. Prerequisites: None.

HIST 2350. U.S. Religion and Politics. 3 Credits.
How religion and politics have influenced each other in the United States and how Americans have understood those influences. Religious violence; conflicts between faith and science; religious factors in racial and gender politics; and the separation of church and state. Same as AMST 2350.

HIST 2380. Sexuality in US Cultural Hist. 3 Credits.
Examination of the changing social organization and meaning of sexual practices and desires in American culture, with particular attention to the relationship between sexuality and gendered racial and class identities and politics. Same as AMST 2380/ WSTU 2380.

HIST 2410. 20th-Century U.S. Immigration. 3 Credits.
Survey of immigration policy and immigrants' lives. How immigrants have changed the United States and how the United States has changed immigrants. Same as AMST 2410.

HIST 2440. The American City. 3 Credits.
An interdisciplinary introduction to the ethnic, cultural, political, and architectural landscape of the American city. Urban theory, race and ethnicity, urban history, planning and architecture, city politics, and cultural representations of the city. Same as AMST 2440.

HIST 2490. Themes in U.S. Cultural History. 3 Credits.
Topical examination of the ideas, values, and modes of expression that have made American life distinctive, as revealed through a cross-cultural or global perspective. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Same as AMST 2490.

HIST 2490W. Themes in U.S. Cultural History. 3 Credits.
Topical examination of the ideas, values, and modes of expression that have made American life distinctive, as revealed through a cross-cultural or global perspective. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. (Same as AMST 2490W, AMST 2490W).

HIST 2505. Majors' Introductory Seminar: Africa. 0-3 Credits.

HIST 2601. Topics: Asian History. 3 Credits.
Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

HIST 2605. Majors' Introductory Seminar: Asia. 0-3 Credits.

HIST 2605W. Majors' Introductory Seminar: Asia. 0-3 Credits.

HIST 2705. Majors² Introductory Seminar: Latin America. 0-3 Credits.

HIST 2705W. Majors' Introductory Seminar: Latin America. 0-3 Credits.

HIST 2710. The United States in Global Context, 1898–Present. 0-3 Credits.
How the 20th- and 21st-century U.S. has been engaged globally, both politically and culturally, with attention to global culture, transnational ideas and social movements, foreign policy, and economic transformations. Same as AMST 2710.

HIST 2730. World War II in History and Memory. 0-3 Credits.
Examination of Americans' histories and memories of World War II. Same as AMST 2730.

HIST 2730W. World War II History & Memory. 0-3 Credits.
Examination of Americans' histories and memories of World War II. Same as AMST 2730.

HIST 2803. The Ancient Near East and Egypt to 322 B.C.. 3 Credits.
Survey of Egyptian, Mesopotamian, Anatolian, West Semitic, and Iranian civilizations from the Neolithic period to Alexander's conquest. Same as Clas 2803.

HIST 2804. History of Ancient Israel. 3 Credits.
The history of ancient Israel from the Patriarchs through the Romans. Topics include historical, archeological, political, social, cultural, religious, diplomatic, military, economic, and intellectual events, movements, and relationships. Same as CLAS 2804.

HIST 2805. Majors' Introductory Seminar: Middle East. 0-3 Credits.

HIST 2805W. Majors' Introductory Seminar: Middle East. 3 Credits.

HIST 3001. Special Topics. 0-4 Credits.
May be repeated for credit provided the topic differs.

HIST 3001W. Special Topics. 0-4 Credits.
May be repeated for credit provided the topic differs.

HIST 3030. Military History to 1860. 3 Credits.
The causes, conduct, and consequences of conflict in the ancient, medieval, renaissance, and early modern world. Examination of the Anglo-Dutch and Anglo-French wars leading to the Seven Years' War, American Revolution (including a "virtual staff ride" of the Saratoga Campaign), French Revolution, and Napoleonic Wars.

HIST 3031. Military History since 1860. 3 Credits.
Causes, conduct, and consequences of conflict from the American Civil War through the Austro- and Franco-Prussian Wars, Spanish-American War, Sino- and Russo-Japanese Wars, World Wars I and II (including a "virtual staff ride" of the Normandy Campaign), Korea, Vietnam, and modern "small wars".

HIST 3033. War and the Military in American Society from the Revolution to the Gulf War. 3 Credits.
Social and psychological dimensions of war and military service.

HIST 3035. The United States and the Wars in Indochina, 1945–1975. 3 Credits.
The American role in the Indochina Wars, emphasizing the period 1961–1975, and from the perspectives of the Vietnamese, French, and Americans in Vietnam. Related intellectual and political developments in the United States; Cold War relationships with China and the Soviet Union.

HIST 3038. Naval History to 1815. 3 Credits.
Causes, conduct, and consequences of war at sea from the Age of Reconnaissance and Conquest through the War of 1812 (including a "virtual staff ride" of the Battle of Trafalgar). Consideration of issues including technology, the impact of the environment, and theories of warfare associated with each period.

HIST 3039. Naval History since 1815. 3 Credits.
Causes, conduct, and consequences of war at sea in the Civil War, counterinsurgency operations of so-called small wars, World Wars I and II, and the post-Cold War period. The transition from sail to steam, asymmetric warfare, and the role of sea power in modern geopolitics. Students participate in a virtual staff ride of the Battle of Leyte Gulf.

HIST 3044W. The Price of Freedom: Normandy 1944. 4 Credits.
The causes, conduct, and consequences of warfare, considered through examination of the campaign in Normandy that began with the allied landings on D-Day. Assignments include researching and writing a biography of a member of the military who died in the campaign and presenting a eulogy at the soldier's graveside during a "staff ride" exploration of the battlefield conducted over spring break. The biography paper is to be submitted to and retained in the archives of the American Cemetery in Normandy. Restricted to Students must be approved by the Study Abroad Office and interviewed by the instructor.

HIST 3045. International History of the Cold War. 3 Credits.
Key events and themes of the Cold War, drawing on new evidence from U.S., Soviet, Chinese, German, East European, Vietnamese, Cuban, and other sources. Related historiographical controversies from multiple national perspectives. Why the Cold War began, why it lasted for 45 years, and why it ended.

HIST 3046. The Cold War in the Third World. 3 Credits.
The evolution of the Cold War in Asia, Africa, and Latin America. Decolonization and the response of the Great Powers, the political economy of the Third World, and American and Soviet interventions.

HIST 3047. Writing Cold War History. 3 Credits.
Seminar. Students prepare a research paper on selected topics in the history of the Cold War.

HIST 3047W. Writing Cold War History. 3 Credits.
Seminar. Students prepare a research paper on selected topics in the history of the Cold War.

HIST 3060. Modern Jewish History. 3 Credits.
Survey of Jewish history from the 17th century to the present, focusing on Europe, America, and the Middle East. The myriad political, economic, and intellectual challenges of modernity to Jewish life and how Jews responded to these challenges through various religious and secular movements and with new concepts of identity and community.

HIST 3061. The Holocaust. 3 Credits.
The origins, causes, and significance of the Nazi attempt to destroy European Jewry, within the context of European and Jewish history. Related themes include the behavior of perpetrators, victims, and bystanders; literary responses; contemporary implications of the Holocaust for religion and politics.

HIST 3062. War Crimes Trials. 3 Credits.
The Nuremberg trial and its legacy in subsequent international and hybrid tribunals. The need for judicial accountability for genocide, crimes against humanity, and war crimes.

HIST 3095. Internship. 1-3 Credits.
Study of history through internships in museums, libraries, Congress, or other appropriate institutions and agencies. Prerequisite: approval of a departmental faculty member.

HIST 3097. Independent Study. 1-3 Credits.
Permission of instructor required.

HIST 3101. Topics: Europe. 0-3 Credits.

HIST 3101W. Topics: Europe. 3 Credits.

HIST 3103. European Intellectual History I. 3 Credits.
The "Century of Genius" and the Enlightenment; God, nature, man, and society, from Descartes to the French Revolution.

HIST 3104. European Intellectual History II. 3 Credits.
Continuation of HIST 3103. Responses to the French Revolution and the Enlightenment; historicism, evolution; nihilism, psychoanalysis; communism; fascism; existentialism, structuralism, postmodernism, and neo-orthodoxy.

HIST 3104W. European Intellectual History II. 3 Credits.
Continuation of HIST 3103. Responses to the French Revolution and the Enlightenment; historicism, evolution; nihilism, psychoanalysis; communism; fascism; existentialism, structuralism, postmodernism, and neo-orthodoxy.

HIST 3111. Topics in Ancient History. 3 Credits.
May be repeated for credit provided the topic differs. Same as CLAS 3111.

HIST 3118. The Middle Ages: 500–1500. 3 Credits.
The evolution of European society from the end of the Roman Empire to the Renaissance. The nature of political power, role of religion, place of gender, cultural production, and changing social structures.

HIST 3126. European Integration: A History. 3 Credits.
An examination of the origins and development of the European Union.

HIST 3130. History of England I. 3 Credits.
Development of English civilization and its impact on Western culture. To 1689.

HIST 3132. Tudor England. 3 Credits.
Aspects of the constitutional, social, intellectual, economic, and religious development of England, 1485-1603.

HIST 3132W. Tudor England. 3 Credits.
Aspects of the constitutional, social, intellectual, economic, and religious development of England, 1485–1603.

HIST 3134. Stuart England. 3 Credits.
The civil wars, Restoration, and Glorious Revolution. Political, religious, socioeconomic, and intellectual developments in England, 1603-1714.

HIST 3135. Victorian Britain. 3 Credits.
Major themes in 19th-century British history: industrialism, democratization, urbanization, imperial expansion, class and gender schisms.

HIST 3137. The British Empire. 3 Credits.
The British Empire from its rise in the 17th century to its demise in the 20th century.

HIST 3139. Twentieth Century Britain. 3 Credits.
Major themes of 20th-century British history: industrial decline, imperialism and decolonization, the making of a welfare state, the cataclysm of global war, integration with Europe.

HIST 3139W. 20th-Century Britain. 3 Credits.
Major themes of 20th-century British history: industrial decline, imperialism and decolonization, the making of a welfare state, the cataclysm of global war, integration with Europe.

HIST 3140. History of France I. 3 Credits.
Old Regime: monarchy and social classes; the Church; the Enlightenment; the 1789 revolution; Napoleon.

HIST 3140W. History of France to 1814. 3 Credits.
Old Regime: monarchy and social classes; the Church; the Enlightenment; the 1789 revolution; Napoleon.

HIST 3145. The French Revolution. 3 Credits.
Social, political, economic, and cultural history of the decade of revolution, 1789-1799. Attention to its structural consequences in France and in Europe at large.

HIST 3145W. The French Revolution. 3 Credits.
Social, political, economic, and cultural history of the decade of revolution, 1789–1799. Attention to its structural consequences in France and in Europe at large.

HIST 3148. El Camino de Santiago. 3 Credits.
Walking the Camino de Santiago is a cultural phenomenon that has lasted over a thousand years. An important part of Spain's cultural and political history, the Camino has affected the structures that form Spain's political and institutional systems, society, economy, and ideology as well as artistic forms of expression. Students may earn their Pilgrim´s passport by walking the last 100 kilometers of the Camino after the formal classes have ended. Offered at GW Madrid Study Center.

HIST 3150. Spain and Its Empire, 1492–1700. 3 Credits.
Major transformations of the period: from cultural pluralism to ethnic homogeneity, from medieval fragmentation to imperial expansion in Europe and America; from religious reform to Catholic Reformation, from global dominance to decline.

HIST 3168. Divided and United Germany Since 1945. 3 Credits.
Why was Germany divided after World War II? Why did it stay divided for 45 years? How was it reunited in 1990? This course examines developments in East and West Germany, relations between the two Germanys during the Cold War, their foreign policies, and how other countries treated them.

HIST 3173. The Habsburgs in East Central Europe. 3 Credits.
History of the Habsburg monarchy in its East Central European context. Reformation and Counter-Reformation; conflict with the Ottoman Empire; great-power competition in Europe; response to the Enlightenment and the French Revolution; the rise of nationalism; and final dissolution in World War I.

HIST 3173W. The Habsburgs in East Central Europe. 3 Credits.
History of the Habsburg monarchy in its East Central European context. Reformation and Counter-Reformation; conflict with the Ottoman Empire; great-power competition in Europe; response to the Enlightenment and the French Revolution; the rise of nationalism; and final dissolution in World War I.

HIST 3178. The Making of the Modern Balkans. 3 Credits.
States of the Balkan peninsula—Slovenia, Croatia, Serbia and Montenegro, Bosnia, Albania, Macedonia, Greece, Bulgaria, and Romania—including developments since the decline of the Ottoman Empire and the emergence of Balkan nationalist movements, and continuing through the collapse of the Soviet bloc.

HIST 3180. Russia to 1801. 3 Credits.
Survey of Russian history from the rise of the Kievan confederation in the ninth century to the establishment of Imperial Russia as a European great power. Attention will be given to the political, socioeconomic, and cultural history of the East Slavs, especially the Russians.

HIST 3181. Russia Since 1801. 3 Credits.
Survey of Russian and Soviet history from the reign of Alexander I to the Stalin era. Attention will be given to the contending forces of revolution, reform, and conservatism; diplomatic relations; economic development; and social change.

HIST 3301. Topics: U.S. History. 0-3 Credits.

HIST 3301W. Topics: U.S. History. 3 Credits.

HIST 3302. America before 1764. 3 Credits.
An examination of prehistory, colonization, and the shifting dynamics among European Americans, African Americans, and Native Americans before 1764.

HIST 3303. Revolutionary America. 3 Credits.
The American revolutionary era from the movement for independence through the establishment of the new federal government under the Constitution. Emphasis on changes to the inhabitants of North America, including Native Americans, African Americans, and European Americans, as well as to the broader Atlantic world.

HIST 3304. George Washington and His World. 3 Credits.
George Washington's life as soldier, politician, entrepreneur, slave holder, and national icon. Emphasis on the interpretation of original sources, including historical documents and the material culture of Washington's Mount Vernon estate, with tours and lectures by curators and historians. Departmental permission is required for registration.

HIST 3311. The Jacksonian Era and the Rise of Mass Politics. 3 Credits.
Focus on 1824–1950 as a crucial era in American history. Popular impact of social and political changes caused by the growth of the market economy; emergence of two national political parties; and new reforms focused increasingly on slavery as the country's greatest problem.

HIST 3311W. The Jacksonian Era and the Rise of Mass Politics. 3 Credits.
Study of 1824-1850 as an era in American history marked by widespread change. Impact of social and political reforms caused by the growth of the market economy; emergence of two national political parties; and new reforms increasingly focused on slavery as America's greatest problem.

HIST 3322. The Modern American Presidency. 3 Credits.
Development of the modern American presidency from Theodore Roosevelt to Barack Obama. Examination of the lives of the presidents, revealing the intersection of personal and impersonal forces in the creation of modern politics and modern America.

HIST 3324. US Urban History. 3 Credits.
History of American urban life and culture from the colonial era to the present, focusing on transitions from pre-industrial to industrial and post-industrial forms. The social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as AMST 3324.

HIST 3332. History of American Foreign Policy Since World War II. 3 Credits.
Emphasis on American and Soviet strategy and foreign policy in the era of the Cold War. World War II to the Vietnam .

HIST 3333. History of American Foreign Policy Since World War II. 3 Credits.
Continuation of HIST 3332. Emphasis on American and Soviet strategy and foreign policy in the era of the Cold War. Vietnam to the "New World Order.".

HIST 3334. The Nuclear Arms Race. 3 Credits.
Political, military, diplomatic, scientific, and cultural consequences of the advent of nuclear weapons. The development and uses of the atomic bomb during World War II and the course and legacy of the U.S.-Soviet nuclear arms race during the Cold War.

HIST 3351. U.S. Social History. 3 Credits.
Survey of American society and social change from the Civil War to the present. Gender, sexuality, race, ethnicity, and class perspectives. (Same as AMST 3351).

HIST 3352. Women in the United States to 1865. 3 Credits.
Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. (Same as AMST 3352, WSTU 3352).

HIST 3352W. Women in the United States I. 3 Credits.
Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. Same as AMST 3352/ WSTU 3352.

HIST 3353. Women in the United States II. 3 Credits.
Continuation of HIST 3352. Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. (Same as AMST 3353, WSTU 3353).

HIST 3356. Epidemics in American History. 3 Credits.
Epidemics in American history.

HIST 3360. African American History to 1865. 3 Credits.
Major themes and concepts emerging from the early history of the African presence in the Americas and black experiences in the new nation of the United States. Focus on the emergence and evolution of the concept of race, the ways race evolved in concert with Atlantic slavery, and how race intersected with gender, economics, religion, and nationality. (Same as AMST 3360).

HIST 3361. African American History Since 1865. 3 Credits.
African American efforts to realize full freedom after emancipation from slavery. Gender politics, cultural expression, labor organizing, and radicalisms; dynamics of racism within major eras of African American activity from Reconstruction through the Great Migration; and the history of civil rights, Black Power, and black feminism. (Same as AMST 3361).

HIST 3362. African American Women's History. 3 Credits.
Addresses the history of African American women's labor, cultural expression, institution-building, activism and strategies to combat oppression from the antebellum period through the late 20th century. Investigates the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement and African American women's experiences. (Same as AMST 3362, WSTU 3362).

HIST 3362W. African American Women's History. 3 Credits.
Addresses the history of African American women's labor, cultural expression, institution-building, activism and strategies to combat oppression from the antebellum period through the late 20th century. Investigates the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement and African American women's experiences. (Same as WSTU 3362W, AMST 3362W).

HIST 3363. Race, Medicine & Public Health. 3 Credits.
Issues of race, medicine, and public health.

HIST 3366. Immigration, Ethnicity, and the American Experience. 3 Credits.
Immigrant life in America from 1607 to the present. Focus on the urban immigrant experience from 1840 to 1924, the ironic persistence of nativism in a "nation of immigrants," the origins of modern immigration law, and the similarities between today's immigrants and those from the past. Students write research papers on an immigrant found in their family tree.

HIST 3366W. Immigration, Ethnicity, and the American Experience. 3 Credits.
Immigrant life in America from 1607 to the present, focusing on the urban immigrant experience from 1840 to 1924, the ironic persistence of nativism in a "nation of immigrants," the origins of modern immigration law, and the similarities between today's immigrants and those from the past. Students write research papers on an immigrant found in their family tree.

HIST 3367. The American Jewish Experience. 3 Credits.
The study of the Jewish minority in America from colonial times to the present. Emphasis on the interaction between a powerful majority culture and that of protean minority people.

HIST 3370. US Constitutional History. 3 Credits.
Examination of the text and interpretation of the document that is the foundation of the American government, with special attention to the changing character of race and gender as constitutional classes.

HIST 3501. Topics: Africa. 0-3 Credits.
A survey of African history from 1880 to the present.

HIST 3510. African History to 1880. 3 Credits.
Survey of the history of the African continent with emphasis on the history of sub-Sahara Africa.

HIST 3520. Africans in the Making of the Atlantic World. 3 Credits.
The role of Africa and Africans in the Atlantic world with emphasis on links between Africa, Europe, and the Americas.

HIST 3530. Women in Africa. 3 Credits.
African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. Same as WSTU 3530.

HIST 3530W. Women in Africa. 3 Credits.
African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. Same as WSTU 3530.

HIST 3540. West Africa to Independence. 3 Credits.
A thematic survey of West African history, focusing on the diversity of African culture, West African kingdoms and empires, Islam, the trans-Saharan trade, African contact with Europe, slavery and the slave trade, and the colonization of Africa.

HIST 3601. Topics: Asian History. 0-3 Credits.

HIST 3610. China to 1800. 3 Credits.
Survey of Chinese civilization from its ancient beginnings to the last imperial dynasty.

HIST 3611. History of Modern China. 3 Credits.
China since 1840, with particular attention to political developments.

HIST 3614. Writing Modern Chinese History. 3 Credits.
Seminar. Students prepare a research paper on selected topics in the history of modern China.

HIST 3614W. Writing Modern Chinese History. 3 Credits.
Seminar. Students prepare a research paper on selected topics in the history of modern China.

HIST 3615. History of Chinese Communism. 3 Credits.
Survey of the leadership, ideology, structure, and foreign and domestic policies of the Chinese Communist Party from its inception to the present.

HIST 3621. History of Modern Japan. 3 Credits.
Japan's dramatic transformation from an isolated island country to Asia's only modern colonial empire, from unprecedented defeat to postwar "economic miracle." Emphasis on historical, political, economic, and cultural trends.

HIST 3630. History of Korea. 3 Credits.
An introduction to the history and culture of Korea from antiquity to the present.

HIST 3631. History of Modern Korea. 3 Credits.
Modern Korean history from 1876 to contemporary society. Emphasis on colonialism, nationalism, the division of peninsula, the Cold War, and globalization.

HIST 3640. History of Southeast Asia. 3 Credits.
An examination of Vietnam and its neighbors from the pre-colonial period to the present.

HIST 3650. Modern South Asia, 1750Present. 3 Credits.
The South Asian subcontinent, including Afghanistan, Pakistan, India, and Bangladesh, since the mid-18th century. The period of British rule, from the late 18th to the mid-20th century. The different trajectories of the independent nation-states of South Asia following decolonization.

HIST 3701. Topics in Latin American History. 0-3 Credits.

HIST 3710. History of Latin America I. 3 Credits.
Analysis of Spanish and Portuguese imperialism in the New World, 1492–1820.

HIST 3711. History of Latin America II. 3 Credits.
Continuation of HIST 3710. A problems approach to Latin America, 1820 to the present; thematic emphasis on neocolonialism, corporatism, liberalism, caudillismo, modernization, populism, and revolution.

HIST 3801. Topics in Middle Eastern History. 0-3 Credits.

HIST 3810. History of the Middle East to 1800. 3 Credits.
Byzantine, Arab, Persian, and Islamic backgrounds; rise and decline of the Ottoman Empire; action of European powers in the area; Ottoman breakup into the Turkish Republic and other states.

HIST 3811. The Middle East in the 20th Century. 0-3 Credits.
The state system established after World War I. Effects of colonialism, the rise of nationalism, the Cold War, and the oil industry. The modes of identification that accompanied these processes, including pan-Arabism and Islamism.

HIST 3811W. Middle East in 20th Century. 0-3 Credits.
The state system established after World War I. Effects of colonialism, the rise of nationalism, the Cold War, and the oil industry. The modes of identification that accompanied these processes, including pan-Arabism and Islamism.

HIST 3820. The History of Israel. 3 Credits.
Survey of the history of Israel from the origins of Zionism to the present. Topics include Zionism as an ideology and movement in the pre-state period; the relationship between state and religion; the impact of 1948 and 1967; immigration, colonization, and Israeli society; the Arab-Israeli conflict; and Israel's national identity as a Jewish and democratic state.

HIST 3820W. The History of Israel. 3 Credits.
Survey of the history of Israel from the origins of Zionism to the present. Topics include Zionism as an ideology and movement in the pre-state period; the relationship between state and religion; the impact of 1948 and 1967; immigration, colonization, and Israeli society; the Arab-Israeli conflict; and Israel's national identity as a Jewish and democratic state.

HIST 3830. History of Iraq. 3 Credits.
Modern Iraq's Ottoman background; its incorporation into a world market dominated by Europe, British influence and preconceptions in the creation of Iraq, and the emergence and survival of the Ba'ath dictatorship. Reforms in economic, political, and educational spheres.

HIST 3840. History of Central Asia. 3 Credits.
Introduction to the political, cultural, religious, and social history of the region, including Afghanistan, Kazakhstan, Tajikistan, Turkmenistan, and Uzbekistan.

HIST 3850. Modern Iran. 3 Credits.
Political, diplomatic, religious, and other developments in Iran from about 1800 to 1989.

HIST 4098. Thesis Seminar. 3 Credits.
For history majors only. Preparation of a research paper using primary sources.

HIST 4098W. Thesis Seminar. 3 Credits.
History majors identify an original research topic in an area of their interest and complete a major research paper based largely on primary sources.

HIST 4099. Senior Honors Thesis Tutorial. 3 Credits.
Required of and open only to undergraduate honors candidates in history. Restricted to Instructor approval required. Prerequisites: HIST 4098W.

HIST 4099W. Senior Honors Thesis Tutorial. 3 Credits.
Required of and open only to undergraduate honors candidates in history. Restricted to Open only to undergraduate honors candidates in history. Prerequisites: HIST 4098 or HIST 4098W.

HIST 4135. Folger Seminar. 3 Credits.
The history of books and early modern culture. Use of the archive at the Folger Shakespeare Library. Students must obtain departmental approval in the preceding semester. Same as ENGL 4135/ FREN 4135.

HIST 6001. Special Topics. 3-9 Credits.
Open to doctoral and master's candidates and qualified undergraduates. May be repeated for credit provided the topic differs.

HIST 6005. History and Historians. 3 Credits.
Historiography and historical method for graduate students. Readings and discussions on major trends in history; selections from classics of historical literature.

HIST 6006. Teaching History. 3 Credits.
Pedagogic techniques and strategies particular to the discipline. Admission by permission of instructor.

HIST 6011. Reading and Research in History and Public Policy. 3 Credits.
The use of historical insights and methods in policymaking, with emphasis on domestic issues.

HIST 6012. Internship in History and Public Policy. 3,6 Credits.
Supervised participation in an office or agency concerned with the formulation of public policy; terms of the internship are arranged with the director of the history and public policy program. Enrollment restricted to students in the history and public policy program.

HIST 6030. History and Its Uses in International Affairs. 3 Credits.
The multiple interconnections among history, politics, and international affairs, including how policymakers use or misuse "lessons" of history and how countries attempt to deal with difficult aspects of their past. Specific cases may vary.

HIST 6031. History of International Economic Systems. 3 Credits.
Development of arrangements and institutions designed to manage the international economy since the 19th century, with a focus on the period since World War II.

HIST 6032. Rdg/Rsch Sem:Strategy & Policy. 3 Credits.
A study of the historical development of strategy and the relationship of military thought to national policy.

HIST 6040. Topics in Modern Military and Naval History. 3 Credits.
Discussion, readings, and research in 20th-century European and American military and naval history.

HIST 6041. The Age of the Battleship: An Introduction to Modern Naval History. 3 Credits.
The rich and varied literature of naval history, with emphasis on interactions among technology, nationalism, and domestic political/social developments in the late 19th and early 20th century. The social history of navies is included.

HIST 6042. Seminar: World War II. 3 Credits.
Examination of statecraft and the management of force before, during, and after World War II. Special attention to broad aspects of military policy and strategy and their interaction with international politics and diplomacy.

HIST 6050. Modernization, Imperialism, Globalization. 3 Credits.
Readings seminar in classic and recent theories of modernization, imperialism, and globalization.

HIST 6051. Re-thinking Cold War History. 3 Credits.
A reading and research course that relies heavily on documents from formerly closed communist archives and recently declassified Western materials. Various issues and events of the Cold War; old and new historiographical controversies. Students write a primary-source research paper to elucidate one of the many aspects of the Cold War about which new evidence is available.

HIST 6097. Independent Readings/Research. 3 Credits.
Written permission of instructor required. May be repeated for credit with permission.

HIST 6101. Topics: Europe. 3 Credits.

HIST 6105. Sem:European Intellectual Hist. 3 Credits.
Topics in 18th- and 19th-century European thought, with an emphasis on France. Specific topic announced in the Schedule of Classes.

HIST 6120. Sem:Early Modern European Hist. 3 Credits.
Topics selected from Western European history of the 14th through 17th centuries.

HIST 6121. Rdg/Rsch Sem:Mod European Hist. 3 Credits.

HIST 6122. Rdg/Rsrch Sem:20th C History. 3 Credits.
Research or readings on selected topics.

HIST 6128. Europe and the World, 1500–Present. 3 Credits.
An introduction to some of the key debates and scholarship concerning European imperialism.

HIST 6130. Early Modern Britain. 3 Credits.
Analysis of some current issues in early modern historiography; contextualization of recent works in the field; consideration of different methodologies and the types of evidence on which they rely or that they illuminate.

HIST 6133. English People and Institutions. 3 Credits.
Selected topics in the political, social, intellectual, and economic history of England. Focus upon one time period and special area of interest. May be taken for research credit with instructor's approval.

HIST 6135. British Imperialism. 3 Credits.
Research seminar. Major debates and schools of thought on the history of British imperialism.

HIST 6138. Folger Institute Seminars I. 3 Credits.
Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the chair of the department before registration.

HIST 6139. Folger Institute Seminars II. 3 Credits.
Continuation of HIST 6138. Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the chair of the department before registration.

HIST 6170. Eastern European History I. 3 Credits.
1772–1918.

HIST 6171. Eastern European History II. 3 Credits.
Continuation of HIST 6170. 1919–1945.

HIST 6180. History of Modern Russia and the Soviet Union. 3 Credits.
Selected topics in the domestic history of modern Russia and Soviet Union. May be taken as a readings seminar or, with instructor's approval, as a research seminar.

HIST 6181. Research Seminar: Russian and Soviet Empires. 3 Credits.

HIST 6185. Sem: Russian & Soviet Thought. 3 Credits.
Selected topics in the intellectual and cultural history of 18th- to 20th-century Russia and Soviet Union. May be taken as a readings seminar or, with instructor's approval, as a research seminar. Admission by permission of instructor.

HIST 6188. The Soviet Union and the World, 1917–1991. 3 Credits.
Concepts and perceptions guiding Soviet relations with the outside world. From the blockade and intervention, through years of isolation, World War II, the Cold War, to "peaceful coexistence.".

HIST 6301. Topics: U.S. History. 3 Credits.

HIST 6302. Colonial North America. 3 Credits.
The complex and turbulent world of colonial North America from the late 16th to the late 18th century. Inter-cultural negotiations, Atlantic world connections, imperial conflict, gender construction, and race consciousness.

HIST 6303. Revolutionary America. 3 Credits.
The political and social conditions of the revolutionary era: the spiral of events that led to the American independence movement, the various meanings of the war to its participants, and the consequences of victory for the nation, its various subgroups, and other peoples of the colonial Atlantic world.

HIST 6304. American Indian History to 1890. 3 Credits.
North American Indian history from indigenous societies on the eve of first contact with Europeans until the conclusion of the Great Plains Wars of the late 19th century.

HIST 6310. Readings in 19th-Century American History. 3 Credits.
Important trends in historical writing about 19th-century America.

HIST 6311. The Era of the Civil War, 1850–1877. 3 Credits.
Consideration of how and why the issue of slavery led to the American Civil War. Conflict on the battlefield and the political and social impact of the war in both the North and the South. Examination of the Reconstruction period as a means of understanding how the conflict and its aftermath continue to shape American politics and race relations to the present.

HIST 6312. The Law of Race and Slavery. 3 Credits.
The role of legal norms and processes in developing patterns of slavery and race relations in the United States and other societies. Admission by permission of instructor. Same as SOC 6286 and LAW 6596.

HIST 6320. Readings/Research Seminar: Recent U.S. History. 3 Credits.
Prerequisite: 6 credit hours of upper-level undergraduate American history courses. Research or readings, depending on students' interests and curricular needs.

HIST 6321. Readings/Research Seminar: Recent U.S. History. 3 Credits.
Continuation of HIST 6320. Prerequisite: 6 credit hours of upper-level undergraduate American history courses. Research or readings, depending on students' interests and curricular needs.

HIST 6322. American Business History. 3 Credits.
The history of American business institutions in manufacturing, distribution, transportation, and finance. Particular attention will be given to the period since industrialization, with consideration of business institutions in their economic, legal, governmental, and social contexts. Same as SMPP 6293.

HIST 6330. Modern U.S. Foreign Policy. 3 Credits.
Readings, lectures, discussion on major developments in the conduct of American diplomacy from 1898 to 9/11.

HIST 6350. American Social Thought Since World War II. 3 Credits.
Consideration of C. Wright Mills, Daniel Bell, Abraham Maslow, Christopher Lasch, Paul Goodman, Martin Luther King, Jr., Barbara Ehrenreich, and other major social critics.

HIST 6360. Immigration and Ethnicity in the United States. 3 Credits.
The history of immigrant life in the United States; focus on the mass migration from Europe that began with the Irish Potato Famine of the 1840s and ended with the immigration restrictions of the 1920s that created the concept of the illegal immigrant.

HIST 6370. US Legal History. 3 Credits.
The legal history of the United States from the 17th century to the present. The course examines legal change within the broader context of political, social, and economic change. Admission by permission of instructor. Same as LAW 6591.

HIST 6410. Readings in American Cultural History. 3 Credits.
Studies in the cultural history of the United States, focusing on major historiographic debates and interventions. Examples of possible topics include cultural contact, the public sphere, and systems of religious and political belief. Same as AmSt 6410.

HIST 6420. Religion & American Culture. 3 Credits.
Interdisciplinary analysis of religious beliefs, practices, and representations in the United States, as well as intersections of the religious and the secular. Relationships of religion to race, gender, capitalism, science, mass media, and material culture. Same as AMST 6420.

HIST 6430. Gender, Sexuality, and American Culture. 3 Credits.
The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. Pre-Columbian settlement to 1876. Same as AMST 6430/ WSTU 6430.

HIST 6431. Gender, Sexuality, and American Culture. 3 Credits.
Continuation of HIST 6430. The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. 1877 to present. Same as AMST 6431/WSTU 6431.

HIST 6435. Readings on Women in American History. 3 Credits.
Important works in American women's history; evolution of the field in historiographical context. Same as AMST 6435/WSTU 6435.

HIST 6450. Race in America. 3 Credits.
Interdisciplinary analysis of the history of race and its changing political, social, and cultural meanings in the United States. Transnational racial formations, struggles for and against civil rights, multiracialism, and interracialism. Same as AMST 6450.

HIST 6455. American Social Movements. 3 Credits.
The history of social movements in the United States, with emphasis on civil rights, feminism, conservatism, and labor in local, national, and transnational contexts; the historical rise and fall of these movements and their larger impact on American life. Same as AMST 6455.

HIST 6470. Cityscapes. 3 Credits.
Interdisciplinary examination of the American city, including urban theory, history, planning, architecture, urban politics, and cultural representations of the city. Same as AMST 6470.

HIST 6475. US Urban History. 3 Credits.
History of American urban life and culture from the Colonial era to the present, focusing on the transitions from pre-industrial to industrial and post-industrial forms, the social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as AMST 6475.

HIST 6480. Theory and Practice of Public History. 3 Credits.
Theoretical and practical dimensions of public history, as illustrated by recent controversies surrounding public exhibitions and debates on revisionist history as well as more traditional means of presenting the past in public forums. Same as AMST 6480.

HIST 6495. Historic Preservation: Principles and Methods. 3 Credits.
The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as AMST 6495.

HIST 6496. Historic Preservation: Principles and Methods. 3 Credits.
Continuation of HIST 6495. The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as AMST 6496.

HIST 6501. Topics: Africa. 3 Credits.

HIST 6502. Western Representations of Africa. 3 Credits.
Representations of Africa by non-Africans from the earliest contact to more recent encounters.

HIST 6601. Topics: Asian History. 3 Credits.

HIST 6602. Asia: History, Memory, and Violence. 3 Credits.
Violence has been a defining experience for many of the populations and polities of Asia over the past century and a half. Focusing on the themes of violence and historical memory, the course takes a comparative approach, looking at how these issues have played out in different arenas throughout East, Southeast, and South Asia.

HIST 6610. Readings Seminar: Late Imperial China. 3 Credits.
Selected topics in the history of modern China in the late imperial period, with a particular focus on the internal and external challenges to the last Chinese dynasty in the 19th century.

HIST 6611. Readings Seminar: 20th-Century China. 3 Credits.
Selected topics in the history of modern China from the 1911 Revolution to the Cultural Revolution.

HIST 6621. Readings Seminar: Modern Japanese History. 3 Credits.
Selected topics in modern Japanese history from the Meiji Restoration of 1868 to the present. Research or readings depending on students' interests. Emphasis on how interpretations of the past are shaped by the present.

HIST 6625. Japan's Empire and Its Legacies. 3 Credits.
History of modern Japan's overseas expansion and empire building. Focus on issues including colonial modernity, resistance and collaboration, and postwar legacies such as politics of memory and prospects of reconciliation.

HIST 6630. Spec Topics in Korean History. 3 Credits.
Intensive exploration of the history of Korea in modern times (1850–present). Korean identity and the challenges of foreign imperialism, industrialization, modernization, and globalization.

HIST 6641. Modern Southeast Asia. 3 Credits.
The modern history of Southeast Asia from the 1800s to 1975. Colonialism, rise of postcolonial states, revolutions and persistence of the past.

HIST 6701. Topics in Latin American History. 3 Credits.

HIST 6801. Topics in Middle Eastern History. 3 Credits.

HIST 6811. Rsearch Sem:Modern Middle East. 3 Credits.
Readings, discussion, and research in selected political, economic, social, cultural, and intellectual trends.

HIST 6821. Islam and Social Movements. 3 Credits.
An examination of the relationship of religion and religious symbols to social and political movements in the Islamic world.

HIST 6822. Nationalism in the Middle East. 3 Credits.
Different interpretations of nationalism and their applicability to nationalism in the Middle East.

HIST 6823. Imperialism in the Middle East. 3 Credits.
An exploration of the process of European and American expansion in the Middle East.

HIST 6824. Rdg/RsrchSem: Modern Iran. 3 Credits.

HIST 6998. Thesis Research. 3 Credits.

HIST 6999. Thesis Research. 3 Credits.

HIST 8998. Advanced Reading & Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

HIST 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

BACHELOR OF ARTS WITH A MAJOR IN HISTORY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

A minimum of thirteen (13) history (HIST) courses, including one to three introductory courses, one Majors' Introductory Seminar, eight to ten upper-level courses, and a thesis or capstone project, as described below:

Introductory courses

Code	Title	Credits
At least one, but no more than three, History (HIST) courses at the 1000 level; these may include, but are not limited to, the following:		
HIST 1011	World History, 1500-Present	
HIST 1020	Approaches to Women's History	
HIST 1110	European Civilization in Its World Context	
HIST 1121	The War of Ideas in European and International History, 1750–Present	
HIST 1310	Introduction to American History	
HIST 1311	Introduction to American History	
The introductory course requirement may be fulfilled by scoring 4 or 5 on Advanced Placement examinations: U.S. history AP (6 credits for HIST 1310 and HIST 1311), European history AP (3 credits for HIST 1120), and world history AP (3 credits for HIST 1011); or scoring 7 or above in an appropriate international baccalaureate program. Alternatively, requirement can be fulfilled by scoring 650 or above on the SAT II world history (HIST 1011) or U.S. history (HIST 1310 and HIST 1311).		
Students should consult the Director of Undergraduate Studies for more detailed information regarding this requirement.		

Majors' Introductory Seminar

Code	Title	Credits
To complete requirements for the major, a student must take a Majors' Introductory Seminar, preferably early in their program of study.		
HIST 2005	Majors' Introductory Seminar	
or HIST 2005W	Majors' Introductory Seminar	
HIST 2105	Majors' Introductory Seminar: Europe	
or HIST 2105W	Majors' Introductory Seminar: Europe	
HIST 2305W	Majors' Introductory Seminar: United States	
or HIST 2305W	Majors' Introductory Seminar: United States	
HIST 2505	Majors' Introductory Seminar: Africa	
HIST 2605	Majors' Introductory Seminar: Asia	
or HIST 2605W	Majors' Introductory Seminar: Asia	
HIST 2705	Majors² Introductory Seminar: Latin America	
or HIST 2705W	Majors' Introductory Seminar: Latin America	
HIST 2805	Majors' Introductory Seminar: Middle East	
or HIST 2805W	Majors' Introductory Seminar: Middle East	
Topics vary annually and are announced in the Schedule of Classes.		
Students should consult the Director of Undergraduate for more detailed information regarding this requirement.		

Upper-level courses

Code	Title	Credits
Eight to ten additional courses numbered from HIST 2000 to HIST 3999 (upper-level courses). The number of upper-level courses must be sufficient, when combined with the required introductory course(s), the Majors' Introductory Seminar, and the thesis or capstone project, to produce a total of thirteen history (HIST) courses.		
One or more of the upper-level courses, including for this purpose the Majors' Introductory Seminar, must be from each of at least three of the following categories:		
Europe: HIST 2100-2900 and HIST 3100-3199 groupings.		
United States: HIST 2300-2399 and HIST 3300-3399 groupings.		
World—the following regions combined count as one category:		
Africa: HIST 2500-2599 and 3500-3599 groupings		
Asia: HIST 2600-2699 and 3600-3699 groupings.		
Latin America: HIST 2700-2799 and 3700-3799 groupings.		
Middle East: HIST 2800-2899 and 3800-3899 groupings		
At least one upper-level course must focus on the period before 1750.		
Dean's Seminars, Honors (HONR) courses taught by members of the Department of History, Majors' Introductory Seminars, and special topics courses taught under HIST 3001 may be used to fulfill this requirement on a case-by-case basis.		
Students should consult the Director of Undergraduate Studies for more detailed information regarding this requirement.		

Thesis or capstone project

Code	Title	Credits
HIST 4098	Thesis Seminar	
or HIST 4098W	Thesis Seminar	
or		
HIST 4099	Senior Honors Thesis Tutorial	
or HIST 4099W	Senior Honors Thesis Tutorial	
Students fulfill this requirement in their junior or senior year. The requirement may be satisfied by a suitable alternative (e.g., a digital history project or a documentary film) with the permission of the thesis instructor.		
Students should consult the Director of Undergraduate Studies for more detailed information regarding this requirement.		

Optional specialization

Students may choose to pursue an area of specialization by taking two courses beyond the thirteen required, with the expectation that a minimum of six courses will contribute to the student's knowledge of a specific field; these may include a geographic region, chronological period, special topic (e.g., women's history, legal history, or military history), or a combination thereof. The title of the specialization and proposed curriculum must be approved by the Director of Undergraduate Studies or other departmental delegate. A maximum of two courses counting toward the specialization may be taken in other departments of the University.

Foreign language

While there is no foreign language requirement, students are strongly encouraged to take at least two semesters of a foreign language, particularly if they plan to pursue a graduate degree in history.

GENERAL EDUCATION

In addition to the University General Education Requirement, undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two writing-in-the-disciplines (WID) approved courses;
- Humanities—one approved course in the humanities that involves critical thinking skills;
- Mathematics or Statistics—one approved course in either mathematics or statistics;
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry; and,
- Social Sciences—two approved courses in the social sciences

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context;

- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries;
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement);
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action;
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement; and,
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC may also be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

University General Education and G-PAC Courses

- Arts (p. 264)
- Global or Cross-Cultural (p. 264)
- Humanities (p. 267)
- Local/Civic Engagement (p. 270)
- Mathematics or Statistics (p. 271)
- Natural or physical laboratory sciences (p. 271)
- Oral Communication (p. 272)
- Social Sciences (p. 273)
- Writing (p. 274)

Arts

Code	Title	Credits
AH 1031	Survey of Art and Architecture I	
AH 1032	Survey of Art and Architecture II	
AH 2071	Introduction to the Arts in America	
AH 2154	American Architecture I	
AH 2155	American Architecture II	
AMST 1100	Politics and Film	
AMST 2071	Introduction to the Arts in America	
AMST 2520	American Architecture I	
AMST 2521	American Architecture II	
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts	
CHIN 3173	Chinese Drama and Theatre	
ENGL 1210	Introduction to Creative Writing	
ENGL 2210	Techniques in Creative Writing	
FA 1401	Painting: Visual Thinking	
FA 1501	Black & White Photography	
FA 1502	Color Photography	
FA 1601	New Media: Digital Art	
ITAL 4183	History of Italian Film	
MUS 1103	Music in the Western World	
MUS 1104	Topics in Music	
MUS 1105	Introduction to Musical Thought and Practice	
MUS 2101	Harmony	
MUS 2122	Music in the US	
or MUS 2122W	Music in the US	
SLAV 2785	Introduction to Russian Cinema I	
SLAV 2786	Introduction to Russian Cinema II	
TRDA 1020	Women and the Creative Process	
TRDA 1214	Beginning Acting	
TRDA 2191	Dance History	
or TRDA 2191W	Dance History	
TRDA 2195	Global Dance History	
TRDA 3245	History of the Theatre I	
or TRDA 3245W	History of the Theatre I	
TRDA 3246	History of the Theatre II	
or TRDA 3246W	History of the Theatre II	

Global or Cross-Cultural

Code	Title	Credits
AMST 1200	The Sixties in America	

AMST 2010	Early American Cultural History (same as HIST 2010)
AMST 2011	Modern American Cultural History (same as HIST 2011)
AMST 2120W	Freedom in American Thought and Popular Culture (same as PSC 2120W)
AMST 2210	The African American Experience
AMST 2320	U.S. Media and Cultural History (same as HIST 2320)
AMST 2350	U.S. Religion and Politics (same as HIST 2350)
AMST 2380	Sexuality in US History (same as HIST 2380/HIST 2380W)
AMST 2410	20th-Century U.S. Immigration (same as HIST 2410)
AMST 2440	The American City (same as HIST 2440)
AMST 2710	The United States in Global Context, 1898–Present (same as HIST 2710)
AMST 2730	World War II in History and Memory (same as HIST 2730/HIST 2730W)
or AMST 2730W	World War II in History and Memory
AMST 2750W	Latinos in the United States (same as HIST 2750/HIST 2750W)
AMST 3352	Women in the United States to 1865 (same as HIST 3352/HIST 3352W and WSTU 3352/WSTU 3352W)
or AMST 3352W	Women in the United States to 1865
ANTH 1002	Sociocultural Anthropology
or ANTH 1002W	Sociocultural Anthropology
ANTH 1003	Archaeology
ANTH 1004	Language in Culture and Society
ANTH 2008	Foundations of Anthropological Thought
or ANTH 2008W	Foundations of Anthropology
ANTH 2750	Latinos in the United States (same as AMST 2750W)
or ANTH 2750W	Latinos in the United States
ANTH 3838	Theory and Practice in Archaeology
or ANTH 3838W	Theory and Practice in Archaeology
CHIN 3111	Chinese Literature in Translation
CHIN 3112	Chinese Literature in Translation
CHIN 3123	Introduction to Chinese Linguistics
CHIN 3124	Introduction to Chinese Linguistics
CHIN 3163	Taiwanese Literature and Film
CHIN 3173	Chinese Drama and Theatre
CLAS 2113	The Roman World to 337 A.D. (same as HIST 2113)
EALL 3811	Confucian Literature in East Asia (same as REL 2811)
EALL 3814	Religion and Philosophy in East Asia (same as REL 2814)
or EALL 3814W	Religion and Philosophy in East Asia
ENGL 1330	Myths of Britain
or ENGL 1330W	Myths of Britain
ENGL 1340	Essential Shakespeare
or ENGL 1340W	Essential Shakespeare
ENGL 1610	Introduction to Black American Literature I
or ENGL 1610W	Introduction to Black American Literature I
ENGL 1611	Introduction to Black American Literature II
or ENGL 1611W	Introduction to Black American Literature II
ENGL 1710	Introduction to Postcolonial Literature and Film I
or ENGL 1710W	Introduction to Postcolonial Literature and Film I
ENGL 1711	Introduction to Postcolonial Literature and Film II
or ENGL 1711W	Introduction to Postcolonial Literature and Film II
FREN 2006	Language, Culture & Society II
FREN 3020	Contemporary France
FREN 3100	Introduction to French Literature
or FREN 3100W	Introduction to French Literature
FREN 4540	19th-Century French Literature and Culture

GEOG 1001	Introduction to Human Geography
GER 2091	Introduction to German Literature—in English I
GER 2092	Introduction to German Literature—in English II
GER 2161	German Culture—in English I
GER 2162	German Culture—in English II
GREK 1001	Beginning Classical Greek I
HIST 1011	World History, 1500-Present
HIST 1110	European Civilization in Its World Context
HIST 1120	European Civilization in Its World Context
or HIST 1120W	European Civilization in its World Context
HIST 1121	The War of Ideas in European and International History, 1750–Present
HIST 1310	Introduction to American History
HIST 1311	Introduction to American History
HIST 2010	Early American Cultural History (same as AMST 2010)
HIST 2011	Modern American Cultural History (same as AMST 2011)
HIST 2050	History of Jewish Civilization: From the Bible to Modernity
HIST 2124	19th-Century Europe
HIST 2125	20th-Century Europe
HIST 2131	History of England Since 1689
HIST 2141	History of France Since 1814
HIST 2160	History of Germany
HIST 2312	The American Civil War and Reconstruction, 1850-1877
HIST 2313	History of the American West
HIST 2320	U.S. Media and Cultural History (same as AMST 2320)
HIST 2321	U.S. History, 1890-1945
HIST 2322	U.S. History since 1945
HIST 2350	U.S. Religion and Politics (same as AMST 2350)
HIST 2380	Sexuality in US Cultural Hist (same as AMST 2380 and WSTU 2380)
HIST 2410	20th-Century U.S. Immigration (same as AMST 2410)
HIST 2440	The American City (same as AMST 2440)
HIST 2710	The United States in Global Context, 1898–Present (same as AMST 2710)
HIST 2730	World War II in History and Memory (same as AMST 2730/2730W)
or HIST 2730W	World War II History & Memory
HIST 3044W	The Price of Freedom: Normandy 1944
HIST 3352	Women in the United States to 1865 (same as AMST 3352/AMST 3352W and WSTU 3352/3352W)
or HIST 3352W	Women in the United States I
HIST 3360	African American History to 1865 (same as AMST 3360)
HIST 3361	African American History Since 1865 (same as AMST 3361)
HIST 3811	The Middle East in the 20th Century
or HIST 3811W	Middle East in 20th Century
ITAL 4380	Italian Journeys Medieval to Postmodern
JAPN 3111	Japanese Literature in Translation
JAPN 3112	Japanese Literature in Translation
KOR 3111	Korean Literature in Translation
KOR 3112	Korean Literature in Translation
KOR 3123	Introduction to Korean Linguistics
KOR 3124	Introduction to Korean Linguistics
PHIL 2125	Philosophy of Race and Gender
or PHIL 2125W	Philosophy of Race and Gender
PHIL 2134	Philosophy of Human Rights
PSC 1001	Introduction to Comparative Politics
or PSC 1001W	Intro to Comparative Politics

PSC 1012W	Introduction to Politics II
PSC 2120W	Freedom in American Thought and Popular Culture (same as AMST 2120W)
PSTD 1010	Introduction to Peace Studies and Conflict Resolution
REL 1010	The New Testament
or REL 1010W	The New Testament
REL 2165	The Gospels
REL 2169	Lost Gospels
REL 2562	Mythologies of India
REL 2811	Confucian Literature in East Asia (same as EALL 2811)
REL 2814	Religion and Philosophy in East Asia (same as EALL 2814/EALL 2814W)
REL 2981	Women in Western Religion (same as WSTU 3981)
REL 3149	Biblical Issues
or REL 3149W	Biblical Issues
REL 3151	The Historical Jesus
or REL 3151W	The Historical Jesus
REL 3161	The Life and Thought of Paul
or REL 3161W	The Life and Thought of Paul
REL 3923	Violence and Peace in Judaism, Christianity, and Islam
SPAN 2005	Advanced Spanish I
SPAN 2006	Advanced Spanish II
SPAN 2056	Intensive Advanced Spanish
SPAN 3100	Readings in Spanish and Latin American Literature
SPHR 1071	Foundations of Human Communication
or SPHR 1071W	Foundations of Human Communication
SPHR 1084	Perspectives in Deaf Culture
WSTU 2380	Sexuality in US Cultural Hist (same as AMST 2380 and HIST 2380)
WSTU 3352	Women in the United States I (same as AMST 3352/3352W and HIST 3352/3352W)
WSTU 3981	Women in Western Religion (same as REL 2981)

Note: Global or Cross-Cultural courses can double count with an analysis/communication requirement.

Humanities

Code	Title	Credits
AMST 1050	Explorations in American Culture	
AMST 1160	Race, Gender and Law	
AMST 1200	The Sixties in America	
AMST 2010	Early American Cultural History (same as HIST 2010)	
AMST 2011	Modern American Cultural History (same as HIST 2011)	
AMST 2020	Washington, D.C.: History, Culture, and Politics (same as HIST 2020/ HIST 2020W)	
or AMST 2020W	Washington, D.C.: History, Culture, and Politics	
AMST 2120W	Freedom in American Thought and Popular Culture (same as PSC 2120W)	
AMST 2210	The African American Experience	
AMST 2320	U.S. Media and Cultural History (same as HIST 2320)	
AMST 2350	U.S. Religion and Politics (same as HIST 2350)	
AMST 2380	Sexuality in US History (same as HIST 2380 and WSTU 2380)	
AMST 2410	20th-Century U.S. Immigration (same as HIST 2410)	
AMST 2440	The American City (same as HIST 2440)	
AMST 2710	The United States in Global Context, 1898–Present (same as HIST 2710)	
AMST 2730	World War II in History and Memory (same as HIST 2730/HIST 2730W)	
or AMST 2730W	World War II in History and Memory	
AMST 2750W	Latinos in the United States (same as ANTH 2750/ANTH 2750W)	
AMST 3352	Women in the United States to 1865 (same as HIST 3352/HIST 3352W and WSTU 3352 and WSTU 3352W)	
or AMST 3352W	Women in the United States to 1865	

ANTH 2750	Latinos in the United States (same as AMST 2750W)
or ANTH 2750W	Latinos in the United States
CHIN 3111	Chinese Literature in Translation
CHIN 3112	Chinese Literature in Translation
CHIN 3123	Introduction to Chinese Linguistics
CHIN 3124	Introduction to Chinese Linguistics
CHIN 3163	Taiwanese Literature and Film
CLAS 2107	Greek and Roman Drama
CLAS 2113	The Roman World to 337 A.D. (same as HIST 2113)
EALL 3811	Confucian Literature in East Asia (same as REL 2811)
EALL 3814	Religion and Philosophy in East Asia (same as REL 2814)
or EALL 3814W	Religion and Philosophy in East Asia
ENGL 1050	Introduction to Literary Studies
ENGL 1315	Literature and the Financial Imagination
ENGL 1320	Literature of the Americas
or ENGL 1320W	Literature of the Americas
ENGL 1330	Myths of Britain
or ENGL 1330W	Myths of Britain
ENGL 1340	Essential Shakespeare
or ENGL 1340W	Essential Shakespeare
ENGL 1351	Shakespeare Seminar
ENGL 1410	Introduction to English Literature I
or ENGL 1410W	Introduction to English Literature I
ENGL 1411	Introduction to English Literature II
or ENGL 1411W	Introduction to English Literature II
ENGL 1510	Introduction to American Literature I
or ENGL 1510W	Introduction to American Literature I
ENGL 1511	Introduction to American Literature II
or ENGL 1511W	Introduction to American Literature II
ENGL 1610	Introduction to Black American Literature I
or ENGL 1610W	Introduction to Black American Literature I
ENGL 1611	Introduction to Black American Literature II
or ENGL 1611W	Introduction to Black American Literature II
ENGL 1710	Introduction to Postcolonial Literature and Film I
or ENGL 1710W	Introduction to Postcolonial Literature and Film I
ENGL 1711	Introduction to Postcolonial Literature and Film II
or ENGL 1711W	Introduction to Postcolonial Literature and Film II
ENGL 3446	Shakespearean London
ENGL 3910	Disability Studies
FREN 2006	Language, Culture & Society II
FREN 3020	Contemporary France
FREN 3100	Introduction to French Literature
or FREN 3100W	Introduction to French Literature
FREN 4540	19th-Century French Literature and Culture
GER 2091	Introduction to German Literature–in English I
GER 2092	Introduction to German Literature–in English II
GER 2161	German Culture–in English I
GER 2162	German Culture–in English II
GREK 1001	Beginning Classical Greek I
HIST 1011	World History, 1500-Present
HIST 1110	European Civilization in Its World Context
HIST 1120	European Civilization in Its World Context
or HIST 1120W	European Civilization in its World Context
HIST 1121	The War of Ideas in European and International History, 1750–Present
HIST 1310	Introduction to American History

HIST 1311	Introduction to American History
HIST 2010	Early American Cultural History (same as AMST 2010)
HIST 2011	Modern American Cultural History (same as AMST 2011)
HIST 2020	Washington, D.C.: History, Culture, and Politics (same as AMST 2020/ AMST 2020W)
or HIST 2020W	Washington, D.C.: History, Culture, and Politics
HIST 2050	History of Jewish Civilization: From the Bible to Modernity
HIST 2124	19th-Century Europe
HIST 2125	20th-Century Europe
HIST 2131	History of England Since 1689
HIST 2141	History of France Since 1814
HIST 2160	History of Germany
HIST 2312	The American Civil War and Reconstruction, 1850-1877
HIST 2320	U.S. Media and Cultural History (same as AMST 2320)
HIST 2321	U.S. History, 1890-1945
HIST 2322	U.S. History since 1945
HIST 2350	U.S. Religion and Politics (same as AMST 2350)
HIST 2380	Sexuality in US Cultural Hist (same as AMST 2380 and WSTU 2380)
HIST 2410	20th-Century U.S. Immigration (same as AMST 2410)
HIST 2440	The American City (same as AMST 2440)
HIST 2710	The United States in Global Context, 1898–Present (same as AMST 2710)
HIST 2730	World War II in History and Memory (same as AMST 2730/2730W)
or HIST 2730W	World War II History & Memory
HIST 3044W	The Price of Freedom: Normandy 1944
HIST 3352	Women in the United States to 1865 (same as AMST 3552/AMST 3552W and WSTU 3552/3552W)
or HIST 3352W	Women in the United States I
HIST 3360	African American History to 1865 (same as AMST 3360)
HIST 3361	African American History Since 1865 (same as HIST 3661)
HIST 3611	History of Modern China
HIST 3630	History of Korea
HIST 3811	The Middle East in the 20th Century
or HIST 3311W	The Jacksonian Era and the Rise of Mass Politics
HONR 1016	Honors Proseminar: Origins and Evolution of Modern Thought
HONR 2053	Honors Proseminar: Arts and Humanities
or HONR 2053W	Honors Proseminar: Arts and World Cultures
ITAL 4380	Italian Journeys Medieval to Postmodern
JAPN 3111	Japanese Literature in Translation
JAPN 3112	Japanese Literature in Translation
KOR 3111	Korean Literature in Translation
KOR 3112	Korean Literature in Translation
KOR 3123	Introduction to Korean Linguistics
KOR 3124	Introduction to Korean Linguistics
LATN 2001	Intermediate Latin
LATN 3001	Major Latin Authors I
or LATN 3001W	Major Latin Authors I
LATN 3002	Major Latin Authors II
or LATN 3002W	Major Latin Authors II
PHIL 1051	Introduction to Philosophy
PHIL 1153	The Meaning of Mind
PHIL 2124	Philosophies of Disability
or PHIL 2124W	Philosophies of Disability
PHIL 2125	Philosophy of Race and Gender
or PHIL 2125W	Philosophy of Race and Gender
PHIL 2131	Ethics: Theory and Applications

PHIL 2132	Social and Political Philosophy
PHIL 2133	Philosophy and Nonviolence
PHIL 2134	Philosophy of Human Rights
PHIL 2136	Contemporary Issues in Ethics
PHIL 2281	Philosophy of the Environment
PHIL 3142	Philosophy of Law
or PHIL 3142W	Philosophy of Law
PHIL 3151	Philosophy and Science
PHIL 3153	Mind, Brain, and Artificial Intelligence
PSC 2120W	Freedom in American Thought and Popular Culture (same as AMST 2120W)
PSTD 1010	Introduction to Peace Studies and Conflict Resolution
REL 1010	The New Testament
or REL 1010W	The New Testament
REL 2165	The Gospels
REL 2169	Lost Gospels
REL 2201	Judaism
REL 2301	Christianity
REL 2314	Contemporary Philosophy of Religion
REL 2401	Islam
REL 2501	Hinduism
REL 2562	Mythologies of India
REL 2811	Confucian Literature in East Asia (same as EALL 2811)
REL 2814	Religion and Philosophy in East Asia (same as EALL 2814/EALL 2814W)
REL 2981	Women in Western Religion (same as WSTU 3981)
REL 3149	Biblical Issues
or REL 3149W	Biblical Issues
REL 3151	The Historical Jesus
or REL 3151W	The Historical Jesus
REL 3161	The Life and Thought of Paul
or REL 3161W	The Life and Thought of Paul
REL 3405	Shi'ite Islam
REL 3614	Buddhist Philosophy
REL 3923	Violence and Peace in Judaism, Christianity, and Islam
SPAN 2005	Advanced Spanish I
SPAN 2006	Advanced Spanish II
SPAN 2056	Intensive Advanced Spanish
SPAN 3100	Readings in Spanish and Latin American Literature
WLP 1020	WLP Humanities Seminar
WSTU 2380	Sexuality in US Cultural Hist (same as AMST 2380 and HIST 2380)
WSTU 3352	Women in the United States I (same as AMST 3352/AMST 3352W and HIST 3352/HIST 3352W)
or WSTU 3352W	Women in the United States I
WSTU 3981	Women in Western Religion (same as REL 2981)

Language courses require placement tests.

Local/Civic Engagement

Code	Title	Credits
AMST 2020	Washington, D.C.: History, Culture, and Politics (same as HIST 2020/ HIST 2020W)	
or AMST 2020W	Washington, D.C.: History, Culture, and Politics	
BISC 1007	Food, Nutrition, and Service	
BISC 1008	Understanding Organisms through Service Learning	
CHEM 1003	Contemporary Science for Nonscience Majors	
GEOG 1003	Society and Environment	
HIST 2020	Washington, D.C.: History, Culture, and Politics (same as AMST 2020/ AMST 2020W)	
or HIST 2020W	Washington, D.C.: History, Culture, and Politics	
PHIL 2133	Philosophy and Nonviolence	
PHIL 2136	Contemporary Issues in Ethics	

PHIL 2281	Philosophy of the Environment
PHIL 3142	Philosophy of Law
or PHIL 3142W	Philosophy of Law
PSC 1002	Introduction to American Politics and Government
or PSC 1002W	Intro-American Politics & Govt
PSC 1011	Introduction to Politics I
SOC 1002	The Sociological Imagination
SOC 2169	Urban Sociology
SUST 1001	Introduction to Sustainability

Note: Local/civil engagement courses can double count with an analysis/communication requirement.

Mathematics or Statistics

Code	Title	Credits
MATH 1007	Mathematics and Politics	
MATH 1009	Mathematical Ideas I	
MATH 1010	Mathematical Ideas II	
MATH 1051	Finite Mathematics for the Social and Management Sciences	
MATH 1221	Calculus with Precalculus II *	
MATH 1231	Single-Variable Calculus I *	
MATH 1232	Single-Variable Calculus II	
MATH 1252	Calculus for the Social and Management Sciences *	
MATH 2233	Multivariable Calculus	
STAT 1051	Introduction to Business and Economic Statistics *	
STAT 1053	Introduction to Statistics in Social Science *	
STAT 1111	Business and Economic Statistics I *	
STAT 1127	Statistics for the Biological Sciences *	
STAT 2112	Business and Economic Statistics II	
STAT 2118	Regression Analysis	

*MATH 1221, 1231, and 1252 are equivalent courses. STAT 1051, 1053, 1111, and 1127 are equivalent courses. Credit cannot be earned for more than one in either group.

Natural or Physical Laboratory Sciences

Code	Title	Credits
ANTH 1001	Biological Anthropology	
ANTH 3412	Hominin Evolution	
ASTR 1001	Stars, Planets, and Life in the Universe	
ASTR 1002	Origins of the Cosmos	
BISC 1005	The Biology of Nutrition and Health *	
BISC 1006	The Ecology and Evolution of Organisms *	
BISC 1007	Food, Nutrition, and Service *	
BISC 1008	Understanding Organisms through Service Learning *	
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
CHEM 1003	Contemporary Science for Nonscience Majors	
CHEM 1004	Contemporary Science for Nonscience Majors	
CHEM 1111	General Chemistry I	
CHEM 1112	General Chemistry II	
CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I **	
CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II **	
GEOG 1002	Introduction to Physical Geography	
GEOL 1001	Physical Geology ***	
GEOL 1002	Historical Geology	
GEOL 1005	Environmental Geology ***	
GEOL 1006	Science & the Environment	
HONR 1033	Honors Proseminar: Scientific Reasoning and Discovery	
HONR 1034	Honors Proseminar: Scientific Reasoning and Discovery	

PHYS 1003	Physics for Future Presidents
PHYS 1007	Music and Physics
PHYS 1011	General Physics I
PHYS 1012	General Physics II
PHYS 1021	University Physics I
PHYS 1022	University Physics II
PHYS 1025	University Physics I with Biological Applications
PHYS 1026	University Physics II with Biological Applications

*BISC 1005 and 1007 are equivalent courses; BISC 1006 and BISC 1008 are equivalent courses. Credit cannot be earned for both.

**To fulfill the G-PAC requirement, CHEM 2151 and CHEM 2153 must both be taken; same applies to CHEM 2152 and CHEM 2154.
***GEOL 1001 and GEOL 1005 are equivalent courses; credit cannot be earned for both.

Oral Communication

Code	Title	Credits
AMST 2010	Early American Cultural History (same as HIST 2010)	
ANTH 1004	Language in Culture and Society	
ANTH 2008	Foundations of Anthropological Thought	
or ANTH 2008W	Foundations of Anthropology	
ANTH 2502	Anthropology of Science and Technology: 21st-Century Brave New Worlds	
ANTH 3838	Theory and Practice in Archaeology	
or ANTH 3838W	Theory and Practice in Archaeology	
COMM 1040	Public Communication	
COMM 1041	Interpersonal Communication	
ECON 4198W	Proseminar in Economics	
ENGL 1510	Introduction to American Literature I	
or ENGL 1510W	Introduction to American Literature I	
ENGL 1710	Introduction to Postcolonial Literature and Film I	
or ENGL 1710W	Introduction to Postcolonial Literature and Film I	
ENGL 1711	Introduction to Postcolonial Literature and Film II	
or ENGL 1711W	Introduction to Postcolonial Literature and Film II	
ENGL 3481	The Eighteenth Century II	
or ENGL 3481W	The Eighteenth Century II	
ENGL 3620	American Poetry I	
FREN 2005	Language, Culture & Society I	
FREN 2006	Language, Culture & Society II	
FREN 3020	Contemporary France	
GER 2091	Introduction to German Literature—in English I	
GER 2092	Introduction to German Literature—in English II	
GER 2161	German Culture—in English I	
HIST 1110	European Civilization in Its World Context	
HIST 2010	Early American Cultural History (same AMST 2010)	
HIST 2050	History of Jewish Civilization: From the Bible to Modernity	
HIST 3044W	The Price of Freedom: Normandy 1944	
ITAL 4380	Italian Journeys Medieval to Postmodern	
MUS 2122	Music in the US	
or MUS 2122W	Music in the US	
PHIL 2124	Philosophies of Disability	
or PHIL 2124W	Philosophies of Disability	
PHIL 2133	Philosophy and Nonviolence	
PHIL 2134	Philosophy of Human Rights	
PHIL 4198	Proseminar	
or PHIL 4198W	Proseminar in Philosophy	
PSTD 1010	Introduction to Peace Studies and Conflict Resolution	
REL 1010	The New Testament	

or REL 1010W	The New Testament
SPAN 2006	Advanced Spanish II
SPAN 2056	Intensive Advanced Spanish
SPAN 3022	Advanced Oral Proficiency: Environmental and Social Sustainability in Latin America
SPAN 3100	Readings in Spanish and Latin American Literature

Note: Oral Communications courses can count toward analytic, perspective, WID, and major requirements.

Social Sciences

Code	Title	Credits
ANTH 1002	Sociocultural Anthropology	
or ANTH 1002W	Sociocultural Anthropology	
ANTH 1003	Archaeology	
ANTH 1004	Language in Culture and Society	
ANTH 2008	Foundations of Anthropological Thought	
or ANTH 2008W	Foundations of Anthropology	
ANTH 2502	Anthropology of Science and Technology: 21st-Century Brave New Worlds	
ANTH 3838	Theory and Practice in Archaeology	
or ANTH 3838W	Theory and Practice in Archaeology	
COMM 1025	Introduction to Communication Studies	
COMM 1040	Public Communication	
COMM 1041	Interpersonal Communication	
ECON 1011	Principles of Economics I	
ECON 1012	Principles of Economics II	
GEOG 1001	Introduction to Human Geography	
GEOG 1003	Society and Environment	
HONR 2043	Honors Microeconomics	
HONR 2044	Honors Macroeconomics	
HONR 2047	Honors Proseminar: Social and Behavioral Sciences	
or HONR 2047W	Honors Proseminar: Social and Behavioral Science	
PSC 1001	Introduction to Comparative Politics	
or PSC 1001W	Intro to Comparative Politics	
PSC 1002	Introduction to American Politics and Government	
or PSC 1002W	Intro-American Politics & Govt	
PSC 1011	Introduction to Politics I	
PSC 1012W	Introduction to Politics II	
PSYC 2011	Abnormal Psychology *	
or PSYC 2011W	Abnormal Psychology	
PSYC 2012	Social Psychology *	
PSYC 2013	Developmental Psychology *	
PSYC 2014	Cognitive Psychology *	
PSYC 2015	Biological Psychology *	
SMPA 1050	Media in a Free Society	
SMPA 2101	Journalism: Theory & Practice	
SMPA 2102	Introduction to Political Communication	
SOC 1002	The Sociological Imagination	
SOC 2101	Social Research Methods	
SOC 2102	Techniques of Data Analysis	
SOC 2103	Classical Sociological Theory	
or SOC 2103W	Classical Sociological Theory	
SOC 2104	Contemporary Sociological Theory	
or SOC 2104W	Contemporary Sociological Theory	
SOC 2169	Urban Sociology	
SPHR 1071	Foundations of Human Communication	
or SPHR 1071W	Foundations of Human Communication	
SPHR 1084	Perspectives in Deaf Culture	
SUST 1001	Introduction to Sustainability	

*PSYC 1001 is a prerequisite for all Psychology courses.

Writing

Code	Title	Credits
UW 1020	University Writing	
or HONR 1015	Honors Proseminar: UW 1020: Origins and Evolution of Modern Thought	

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must have an overall GPA of 3.3 and a GPA of 3.5 in the major at the time of graduation; and complete HIST 4099 Senior Honors Thesis Tutorial with a grade of *A* or *A–*.

MINOR IN HISTORY

REQUIREMENTS

Undergraduate students who select a minor in history must declare their intention to a departmental advisor no later than the beginning of their senior year.

Code	Title	Credits
Required		
One of the following:		
HIST 1011	World History, 1500-Present	
HIST 1110	European Civilization in Its World Context	
HIST 1120	European Civilization in Its World Context	
HIST 1121	The War of Ideas in European and International History, 1750–Present	
HIST 1310	Introduction to American History	
HIST 1311	Introduction to American History	
At least five upper-division history courses numbered 2000 and higher		

MASTER OF ARTS IN THE FIELD OF HISTORY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The program consists of a minimum of 36 credits of upper-division undergraduate and graduate-level courses, including at least six graduate-level courses. Students choosing the thesis option take HIST 6998 Thesis Research and HIST 6999 Thesis Research as part of the 36 credits but in addition to the required six graduate-level courses. Students choosing the nonthesis option must write two research papers in the course of completing their program. See the Undergraduate Programs Bulletin for a listing of upper-level undergraduate courses offered by the department. A maximum of 6 credits may be in approved courses outside the History Department. To receive graduate credit for undergraduate courses, master's candidates must arrange for extra work with the instructors. Each student completes a major field in which at least 9 credits of course work must be taken. Major fields are listed below, under the Doctor of Philosophy in the field of history. Students in all history Master of Arts programs must maintain a GPA of at least 3.3 both to remain in good standing and to earn the degree.

Concentration in historic preservation

This 36-credit degree program combines courses in United States history and historic preservation. It includes at least 18 credits of U.S. social history, U.S. urban history, man-made America, and the seminar sequence in historic preservation.

Concentration in imperial and colonial studies

This 36-credit degree program emphasizes the comparative study of empires. HIST 6128 Europe and the World, 1500–Present and HIST 6050 Modernization, Imperialism, Globalization are required, along with a 15-credit major regional field and a minor regional field of 6 to 9 credits. Up to 9 credits may be chosen in related disciplines within the University.

Concentration in public policy

This 36-credit degree program emphasizes the study of history as it relates to the analysis and conduct of public policy. HIST 6011 Rdg/Rsch:History/Public Policy and an internship done in conjunction with HIST 6012 Internship in History and Public Policy are required. One-third of the course work is taken outside the History Department in a discipline relevant to the student's policy interests.

Concentration in U.S. legal history

This 36-credit degree program combines a major field in U.S. history with a focus in U.S. legal history. Students may take up to 9 credits of legal history offered by the Law School.

DOCTOR OF PHILOSOPHY IN THE FIELD OF AMERICAN RELIGIOUS HISTORY

REQUIREMENTS

This program is offered in cooperation with the Department of Religion.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73), and the specific requirements of the Doctor of Philosophy in the field of history (p. 275).

Of the three fields required for the General Examination, one field must come from the list of major American fields noted below and one from the Department of Religion (typically history of religion in America). Major fields in American history include: Early America (to 1815), 19th-century America (1815–1900), and 20th-century America (1900–). The third field will normally be topical (e.g. U.S. Cultural History, Historic Preservation, Gender and Women's History).

All candidates may choose to be examined in one minor field other than history if it is relevant to the program of study.

DOCTOR OF PHILOSOPHY IN THE FIELD OF HISTORY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73), including the satisfactory completion of the General Examination.

The requirements for the Doctor of Philosophy Program (p. 82).

All students must take HIST 6005 History and Historians. Some students must pass language exams appropriate to their field and dissertation topic. Students must maintain a GPA of at least 3.5 to remain in the program.

Candidates in American history must select two major fields from early America (to 1815), 19th-century America (1815–1900), and 20th-century America (1900–). The minor field will normally be topical (e.g., U.S. social, U.S. diplomatic, historic preservation).

Candidates in imperial and colonial history take HIST 6128 Europe and the World, 1500–Present and HIST 6050 Modernization, Imperialism, Globalization and select two major and one minor field. Fields can include, but are not limited to, such combinations as Europe and the Americas (1500–1900), Europe and Asia, Europe and the Middle East, Europe and Africa, the U.S. and Asia, and China and Japan.

Candidates in Asian history select two major fields from modern China, modern Japan, modern Korea, and modern Southeast Asia. The minor field is chosen in consultation with the advisor.

Candidates concentrating in areas other than those outlined above must select one major and two minor fields. Major fields are early modern Europe, modern Europe, Latin America, modern Middle East, modern Eastern Europe, modern Russia, and military history. The minor fields may be either topical (e.g., European intellectual) or chronological (e.g., Tudor and Stuart England, colonial Latin America).

All candidates may choose to be examined in one minor field other than history if it is relevant to the program of study.

HUMAN PALEOBIOLOGY

The Columbian College of Arts and Sciences offers an interdisciplinary program leading to the doctor of philosophy in the field of hominid paleobiology. The program features training in molecular and developmental biology, evolutionary anatomy, hominid paleontology, and archaeology. It emphasizes problem-based learning and training and internships. Participating faculty are drawn from the Departments of Anthropology, Speech and Hearing Science, Biological Sciences, and Anatomy and Regenerative Biology at GW; the Departments of Anthropology and Paleobiology at the National Museum of Natural History, Smithsonian Institution; the Department of Physiology and Biophysics at Howard University; and the National Institutes of Health.

GRADUATE

Master's program

- Master of Science in the field of human paleobiology (p. 276)

Doctoral program

- Doctor of Philosophy in the field of human paleobiology (p. 276)

FACULTY

Committee on Hominid Paleobiology B. Wood (*Chair*), K. Behrensmeyer, D. Braun, A. Brooks, S. McFarlin, C. Murray, D. Piperno, R. Potts, B. Richmond, C. Sherwood, F. Subiaul, M. Zeder

MASTER OF SCIENCE IN THE FIELD OF HUMAN PALEOBIOLOGY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

36 credits in a program developed in consultation with the advisor.

Code	Title	Credits
Required		
HOMP 6202	Lab Techniques: Paleoanthro	
ANTH 6413	Analytical Methods in Human Evolutionary Studies	
6 credits in thesis:		
HOMP 6998	Thesis Research	
HOMP 6999	Thesis Research	
Three of the following:		
HOMP 6201	Hominid Paleobiology	
ANTH 3411	Primatology	
ANTH 6491	Topics in Biological Anthropology	
ANTH 6801	Paleolithic Archaeology	
Two additional laboratory or field research courses in different disciplines.		
Electives		
Elective courses selected in consultation with the faculty from a list of relevant courses in anatomy (ANAT), anthropology (ANTH), biological sciences (BISC), geography (GEOG), geology (GEOL), hominid paleobiology (HOMP), psychology (PSYC), and speech and hearing science (SPHR), or relevant courses from the Consortium of Universities of the Washington Metropolitan Area.		

DOCTOR OF PHILOSOPHY IN THE FIELD OF HUMAN PALEOBIOLOGY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy program (p. 82).

72 credits.

Recommended Preparatory Courses

Code	Title	Credits
Advanced undergraduate courses in biology, including courses in evolution and any two of the following: genetics, developmental biology/embryology, anatomy, physiology, ethology, ecology, and paleontology. GW courses that correspond to these subjects are:		
BISC 2207	Genetics	
BISC 2208	Genetics Laboratory	
BISC 2214	Developmental Biology	
BISC 2322	Human Physiology	
BISC 2323	Human Physiology Laboratory	
BISC 2332	Comparative Vertebrate Anatomy	
BISC 2450	Organic Evolution	
BISC 2451	History of Life	
BISC 2452	Animal Behavior	
BISC 2454	General Ecology	
Advanced undergraduate courses in anthropology, including courses in any two of the following: osteology, human biology, paleoanthropology, primatology, and Paleolithic archaeology corresponding to:		
ANTH 3832	Paleoanthropological Field Program	
ANTH 3401	Human Functional Anatomy	
ANTH 3402	Human Evolutionary Anatomy	
ANTH 3403	Forensic Anthropology Laboratory	

ANTH 3404	Human Variation
ANTH 3412	Hominin Evolution
ANTH 3411	Primatology
ANTH 3491	Topics in Biological Anthropology
ANTH 3801	African Roots from Australopithecus to Zimbabwe
ANTH 3802	Human Cultural Beginnings
One course in statistics corresponding to:	
STAT 1127	Statistics for the Biological Sciences
One course in mathematics, including precalculus, corresponding to:	
MATH 1220	Calculus with Precalculus I
MATH 1221	Calculus with Precalculus II
Advanced undergraduate courses in one or more of the following subjects: chemistry, biochemistry, physics, geoscience, and calculus	

Doctoral Program

Code	Title	Credits
The following requirements must be fulfilled: a minimum of 48 credits in a program developed in consultation with the advisor.		
Required		
HOMP 6201	Hominid Paleobiology	
HOMP 6202	Lab Techniques: Paleoanthro	
HOMP 6203	Ethics & Professnl Practice I	
HOMP 8301	Problem-Based Learning Seminar	
HOMP 8302	Public Undrstand Of Scie Intrn	
HOMP 8303	Paleobiology Lab Rotation	
ANTH 6801	Paleolithic Archaeology	
HOMP 8999	Dissertation Research	
Additional requirements		
One course from each of the areas below. These additional requirements can be fulfilled by any number of different courses, chosen in consultation with the advisor. One exemption is allowed depending upon prior education. The most common courses taken by Human Paleobiology students are listed below.		
Genetics or molecular evolution core		
BISC 6225	Molecular Phylogenetics	
BISC 6228	Population Genetics	
BISC 6230	Human Genetics	
BISC 6251	Evolutionary Developmental Biology	
Geoscience or vertebrate paleontology core		
BISC 6215	Vertebrate Phylogeny	
GEOL 3126	Sedimentology and Stratigraphy	
Animal behavior or ecology core		
ANTH 6404	The Evolution of Primate Life Histories	
BISC 6206	Current Topics in Evolutionary Ecology	
Statistical methods core		
ANTH 6413	Analytical Methods in Human Evolutionary Studies	
Electives		
The remainder of credits are selected from among various interdisciplinary courses, including but not limited to the following:		
ANAT 6210	Gross Anatomy	
ANAT 6212	Neurobiology	
ANTH 2406	Human Evolutionary Genetics	
ANTH 3411	Primatology	
ANTH 3401	Human Functional Anatomy	
ANTH 3404	Human Variation	
ANTH 3406	Advanced Human Osteology	
ANTH 3408	The Evolution of Human Families	
ANTH 3411	Primatology	
ANTH 3413	Evolution of the Human Brain	
ANTH 3801	African Roots from Australopithecus to Zimbabwe	
ANTH 3802	Human Cultural Beginnings	
ANTH 6406	Human Genetic Variation	
ANTH 6412	Paleoanthropology	
ANTH 6491	Topics in Biological Anthropology	

BISC 2214	Developmental Biology
BISC 2332	Comparative Vertebrate Anatomy
BISC 6210	Methods of Study of Evolution
BISC 6216	Morphological Systematics
BISC 6228	Population Genetics
BISC 6230	Human Genetics
BISC 6249	Seminar: Developmental Biology
GEOL 3140	Geochemistry

For detailed requirements, consult the chair of the program committee.

INTERIOR ARCHITECTURE AND DESIGN

The goal of the Department of Interior Architecture and Design is to foster an environment that encourages creativity and pushes the boundaries of design with an emphasis on conceptual thinking and the design process. The studio-based curriculum, the core of the program, is where students learn to design three-dimensional space through the use of dynamic concepts, leading-edge materials, and innovative methods and techniques.

UNDERGRADUATE

Bachelor's program

- Bachelor of Fine Arts with a major in interior architecture and design (p. 280)

GRADUATE

Master's program

- Master of Fine Arts in the field of interior architecture and design (p. 281)

FACULTY

Associate Professor S. Travis *(Director)*

Assistant Professors E. Speck, N. Evans, C. Anderson, N. Volchansky

Adjunct Professors M. Abrams

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: Enrollment in interior architecture and design courses requires candidacy in the degree program or permission of the program director. A course fee is charged for all IAD courses.

IAD 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

IAD 2200. Studio 1. 6 Credits.
Introduction to the design process through consideration of the theory and application of design principles and elements to specific studies of the built environment. Restricted to Major: 1206 - Interior Architecture and Design, Level: 01-Undergraduate. (Same as IAD 6200).

IAD 2210. Sketching Architecture and Interiors. 3 Credits.
Free-hand sketching developed and applied as a tool in all phases of the creative design process. Restricted to Major: 1206- Interior Architecture and Design, Level: 01-Undergraduate. Recommended background: FA 1021.

IAD 2987. Internship. 0 Credits.
Candidates for the B.F.A. in Interior Architecture and Design degree enroll in this course in order to complete the program's 120-hour internship requirement. The internship must be pre-approved by the departmental undergraduate advisor and must be completed while the student remains enrolled in the degree program.

IAD 3300. Studio 2. 6 Credits.
All phases of design, beginning with development of a concept through producing a complete presentation. How a project evolves from program requirements to a creative and functional interior. Prerequisites: IAD 2200. Restricted to majors only.

IAD 3304. Interior Materials. 3 Credits.
All phases of textile production, including standards, testing, and specifications. Properties, regulations, and installation of interior finish materials. Restricted to Major: 1206 - Interior Architecture and Design, Level: 01- Undergraduate. Prerequisites: IAD 2200. (Same as IAD 6304).

IAD 3304W. Interior Materials. 3 Credits.
All phases of textile production, including standards, testing, and specifications. Properties, regulations, and installation of interior finish materials. Restricted to Major: 1206-Interior Architecture and Design, Level: 01-Undergraduate. Prerequisites: IAD 2200. (Same as IAD 6304).

IAD 3305. Graphic Communications. 3 Credits.
Development of multimedia techniques in rendering. Advanced three-dimensional drawing using rapid visualization techniques, sketching, and constructed drawings. Prerequisites: IAD 2200. Restricted to Major: Interior Architecture and Design, Level: 01- Undergraduate.

IAD 3310. Digital Drafting & Modeling. 3 Credits.
Introduction to CAD technology, two-dimensional drawings, plotting and enhancement of presentations. Use of CAD for the production of construction drawings. Restricted to Major: Interior Architecture and Design, Level: 01-Undergraduate.

IAD 3400. Studio 3. 6 Credits.
Multifaceted and complex problems in commercial design, including codes and regulations pertaining to commercial interiors; development of collaborative learning. Prerequisites: IAD 3300. Restricted to majors only.

IAD 3405. History of Modern Architecture and Design. 3 Credits.
Overview of 20th and 21st century architecture, interiors, and furniture of significant and unique houses and smaller commercial buildings. Students may not earn credit for both IAD 3405 and IAD 1000 if similar material is covered. Restricted to Major: Interior Architecture and Design, Level: 01-undergraduate. Prerequisites: IAD 3300. (Same as IAD 6405).

IAD 3410. Sustainability and LEED for Architecture and Design. 3 Credits.
Consideration of the process by which structures and spaces can be awarded LEED (Leadership in Energy and Environmental Design) certification and the examination that enables individuals to become LEED-accredited professionals. Restricted to Major: Interior Architecture and Design, Level: 01-Undergraduate. Prerequisites: Studio 2 IAD 3300.

IAD 4500. Studio 4. 6 Credits.
Continuation and refinement of the design process to further advance conceptual thinking for development of larger-scaled and more complex design problems.Prerequisites: IAD 3400. Restricted to majors only.

IAD 4505. Lighting & Acoustics. 3 Credits.
Terminology, concepts, and principles of lighting design. Light and energy, incandescent and gaseous discharge lamps, luminaries, task requirements, measurement and calculations, human factors, and design applications. Acoustic principles as they relate to building design. Restricted to Major: Interior Architecture and Design, Level: 01-Undergraduate. Prerequisites: IAD 3400.

IAD 4510. Pre-Design for Studio 5. 3 Credits.
Application of advanced topics in design theory; research methodology applied to development of the senior project. Restricted to Major: Interior Architecture and Design, Level- 01: Undergraduate. Prerequisites: IAD 3400.

IAD 4600. Studio 5. 6 Credits.
Culmination of skills and knowledge accumulated through the program as demonstrated by development of an interior design project covering all aspects from conception through presentation. Restricted to Major: Interior Architecture and Design, Level: 01-Undergraduate. Prerequisites: IAD 4500.

IAD 4605. Professional Practice. 3 Credits.
A service-learning course that combines classroom instruction with practical learning. Students work with interior designers, architects, or industry-related professionals to provide a creative and realistic solution to the challenges of a pro-bono design project within the local community. Course concepts cover issues related to the practice of a professional interior designer, including business procedures, legal implications, ethics, trade relations, and designer-client-contractor relations. Restricted to Major: Interior Architecture and Design, Level: 01-Undergraduate. Prerequisites: IAD 4500.

IAD 4605W. Professional Practice. 3 Credits.
A service-learning course that combines classroom instruction with practical learning. Students work with interior designers, architects, or industry-related professionals to provide a creative and realistic solution to the challenges of a pro-bono design project within the local community. Course concepts cover issues related to the practice of a professional interior designer, including business procedures, legal implications, ethics, trade relations, and designer-client-contractor relations. Prerequisite: IAD 4500. Restricted to majors only.

IAD 4610. Structures & Building Systems. 3 Credits.
Organization and preparation of construction documents; methods and materials; and application of codes. Building systems (mechanical, electrical, plumbing) as related to function and design of interior spaces. Restricted to Major: Interior Architecture and Design, Level: 01-Undergraduate. Prerequisites: Studio IAD 4500.

IAD 6200. Studio I. 6 Credits.
Introduction to the theory and application of design principles and elements in the built environment while establishing a thorough understanding of the design process. Restricted to Graduate level Interior Architecture and Design majors.

IAD 6204. Graphic Communications. 3 Credits.
Development of multimedia and digital techniques to express design concepts and intent. Restricted to Major: 1206- Interior Architecture and Design, Level: 02 - Graduate.

IAD 6210. Sketching Architecture and Interiors. 3 Credits.
Free-hand sketching developed and applied as a tool in all phases of the creative design process. Materials fee. Restricted to interior architecture and design majors.

IAD 6300. Studio 2. 6 Credits.
Applying design fundamentals from Studio 1 to small-scale interior architectural spaces. Prerequisites: IAD 6200. Restricted to Major: 1206 - Interior Architecture and Design, Level: 02-Graduate.

IAD 6304. Interior Materials. 3 Credits.
Introduction to building materials with an emphasis on detailing and construction. Restricted to Major: 1206 - Interior Architecture and Design, Level: 02- Graduate. Prerequisites: IAD 6200.

IAD 6310. Digital Drafting & Modeling. 3 Credits.
Introduction to CAD technology, two-dimensional drawings, plotting and enhancement of presentations. Use of CAD for the production of construction drawings. Prerequisites: IAD 6200. Restricted to Major: 1206-Interior Architecture and Design, Level: 02- Graduate.

IAD 6400. Studio 3. 6 Credits.
Continued exploration of the design process as applied to medium scale projects. Prerequisites: IAD 6300. Restricted to Major: 1206 - Interior Architecture and Design, Level: 02- Graduate.

IAD 6405. History of Modern Architecture and Design. 3 Credits.
Overview of 20th and 21st Century architecture, interiors, and furniture. Prerequisites: IAD 6300. Restricted to Major: 1206- Interior Architecture and Design, Level: 02- Graduate.

IAD 6410. Sustainability/LEED: Arch&Des. 3 Credits.
Application of sustainable design as well as introduction to the United States Green Building Council's LEED Rating System. Prerequisites: IAD 6300. Restricted to Major: 1206-Interior Architecture and Design, Level: 02-Graduate.

IAD 6500. Studio 4. 6 Credits.
Continuation and refinement of the design process to further advance conceptual Thinking for development of larger-scaled and more complex design problems. Prerequisites: IAD 6400. Restricted to Major: 1206 - Interior Architecture and Design, Level: 02-Graduate.

IAD 6505. Lighting & Acoustics. 3 Credits.
Terminology, concepts, and principles of lighting design; acoustic principles as they relate to building design. Prerequisites: IAD 6400. Restricted to Major: 1206 - Interior Architecture and Design, Level: 02-Graduate.

IAD 6510. Pre-Design for Studio 5. 3 Credits.
Investigation and research of several topics to inform capstone project in Studio 5. Prerequisites: IAD 6400. Restricted to Major: 1206-Interior Architecture and Design, Level: 02-Graduate.

IAD 6600. Studio 5. 6 Credits.
Culmination of skills and knowledge from the program in the development of a capstone project specific to each student. Prerequisites: IAD 6500. Restricted to Major: 1206- Interior Architecture and Design, Level: 02- Graduate.

IAD 6605. Professional Practice. 3 Credits.
Students work with professional interior designers, architects, or related professionals as they participate in a project-based setting. Roles and responsibilities of the professional interior designer: business procedures, legal implications, ethics, trade relations, designer-client-contractor relations. Students select a pro-bono design project within the local community and work together to provide a creative and realistic solution. Prerequisites: IAD 6500. Restricted to majors only.

IAD 6610. Structures and Building Systems. 3 Credits.
Organization and preparation of construction documents; methods and materials; and application of codes. Mechanical, electrical, and plumbing building systems as related to function and design of interior spaces. Restricted to Major: 1206-Interior Architecture and Design, Level: 02-Graduate. Prerequisites: IAD 6500.

IAD 6987. Internship. 0 Credits.
Candidates for the MFA in Interior Architecture and Design degree enroll in this course in order to complete the program's 120-hour internship requirement. The internship must be pre-approved by the departmental graduate advisor and must be completed while the student remains enrolled in the degree program. Restricted to students in the MFA in IAD program.

BACHELOR OF FINE ARTS WITH A MAJOR IN INTERIOR ARCHITECTURE AND DESIGN

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Required (60 credits):		
IAD 2200	Studio 1	
IAD 2204	Graphic Communications	
IAD 2210	Sketching Architecture and Interiors	
IAD 2987	Internship	
IAD 3300	Studio 2	
IAD 3304	Interior Materials	
or IAD 3304W	Interior Materials	
IAD 3310	Digital Drafting & Modeling	
IAD 3400	Studio 3	

IAD 3405	History of Modern Architecture and Design
IAD 3410	Sustainability and LEED for Architecture and Design
IAD 4500	Studio 4
IAD 4505	Lighting & Acoustics
IAD 4510	Pre-Design for Studio 5
IAD 4600	Studio 5
IAD 4605	Professional Practice
or IAD 4605W	Professional Practice
IAD 4610	Structures & Building Systems
Electives (12 credits)	
Two art history (AH) courses (6 credits)	
Two fine arts (FA) courses (6 credits)	

Please view departmental website (http://iad.columbian.gwu.edu) for a detailed plan of study.

MASTER OF FINE ARTS IN THE FIELD OF INTERIOR ARCHITECTURE AND DESIGN

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

60 credits in required courses.

Required	
IAD 6200	Studio I
IAD 6204	Graphic Communications
IAD 6210	Sketching Architecture and Interiors
IAD 6300	Studio 2
IAD 6304	Interior Materials
IAD 6310	Digital Drafting & Modeling
IAD 6400	Studio 3
IAD 6405	History of Modern Architecture and Design
IAD 6410	Sustainability/LEED: Arch&Des
IAD 6500	Studio 4
IAD 6505	Lighting & Acoustics
IAD 6510	Pre-Design for Studio 5
IAD 6600	Studio 5

Please see departmental website (http://iad.columbian.gwu.edu) for a detailed plan of study.

JUDAIC STUDIES

At the undergraduate level, the Department of Judaic Studies offers the bachelor of arts with a major in Judaic Studies. The purview of the program extends from the ancient Near East to modern-day America, and showcases and interprets the artistic expression, history, languages, literatures, philosophy, politics, and religion of the Jews over time and place. A minor in the field is also offered.

At the graduate level, students may opt for the master of arts in the field of Jewish cultural arts or master of arts in the field of experiential education and Jewish cultural arts.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in Judaic studies (p. 282)

Minor

- Minor in Judaic studies (p. 283)

GRADUATE

Master's programs

- Master of Arts in the field of Jewish cultural arts (p. 284)
- Master of Arts in education and human development in the field of experiential education and Jewish cultural arts (p. 528) (partner program with the Graduate School of Education and Human Development)

FACULTY

Committee on Judaic Studies J. Weissman Joselit, T. Anbinder, S. Ben-Gad, N. Brown, E. Cline, J. Cohen, P. Duff, R. Eisen, E. Friedland, B. Hill, L. Jacobson, S. Marcus, F. Moskowitz, W. Reich, D. Schwartz (*Director*), S. Waisman, G. Wald

Professor J. Weissman Joselit

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

A full list of courses for the Judaic Studies Program may be found on the Judaic Studies website (http://bulletin.gwu.edu/arts-sciences/judaic-studies/%20http://go.gwu.edu/JSTD) **and under the designations of CLAS, ENGL, HEBR, HONR, HIST and REL.**

JSTD 2001. Topics in Judaic Studies: Pre-modern. 3 Credits.
Focus on the pre-1650 period. Topics vary by semester. See the Schedule of Classes for details.

JSTD 2002. Topics in Judaic Studies: Modern. 3 Credits.
Focus on the post-1650 period. Topics vary by semester. See the Schedule of Classes for details.

JSTD 4018. Senior Thesis. 1 Credit.
For Judaic studies majors. Students choose a topic in any major subfield of Judaic studies, select a faculty advisor who specializes in the subfield, conduct research, and produce an annotated bibliography and a proposal that previews the main arguments of the thesis.

JSTD 4019. Senior Thesis. 3 Credits.
Continuation of JSTD 4018. For Judaic studies majors. Completion of the thesis and oral presentation before Judaic studies students and faculty.

JSTD 6001. Topics in Judaic Studies. 3 Credits.

JSTD 6097. Independent Readings/Research. 1-3 Credits.
Written permisison of instructor required. May be repeated for credit with permission.

JSTD 6154. Internship. 1-6 Credits.
Elective internship in areas related to Jewish cultural study.

JSTD 6201. Jewish Life in Contemporary America. 3 Credits.

JSTD 6211. Displaying Jewish Culture: Landmark Exhibitions on Judaism and the Jewish Experience. 3 Credits.

JSTD 6298. Capstone Seminar in Jewish Cultural Arts. 3 Credits.
The culminating experience for graduate students in the Jewish Cultural Arts program, the capstone synthesizes the skills and knowledge gained in the course of the degree program. Students conceptualize, develop, and execute a public cultural event of their own devising. Taken in the final spring semester of the student's program.

BACHELOR OF ARTS WITH A MAJOR IN JUDAIC STUDIES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Foreign language requirement	
Two semesters of study in a single foreign language (or the equivalent)	
Required courses (9 credits):	
REL 2201	Judaism
HIST 2050	History of Jewish Civilization: From the Bible to Modernity
JSTD 4019	Senior Thesis
One course (3 credits) from the following:	
ANTH 3805	Archaeology of Israel and Neighboring Lands
CLAS 2803	The Ancient Near East and Egypt to 322 B.C.
CLAS 2804	History of Ancient Israel
REL 1009	The Hebrew Scriptures
JSTD 2001	Topics in Judaic Studies: Pre-modern
REL 2211	Rabbinic Thought and Literature
REL 3141	Second Temple/Hellenistic Judaism
REL 3149W	Biblical Issues
REL 3211	Rabbinic Thought and Literature

REL 3923	Violence and Peace in Judaism, Christianity, and Islam
WSTU 3281	Women in Judaism
One course (3 credits) from the following:	
ENGL 3970	Jewish American Literature
HEBR 3101	Modern Hebrew Literary Classics
HEBR 3301	Modern Hebrew Fiction
HEBR 3302	The Israeli Media
HIST 3060	Modern Jewish History
HIST 3367	The American Jewish Experience
HIST 3820	The History of Israel
JSTD 2002	Topics in Judaic Studies: Modern
PSC 2379	Politics and Foreign Policy of Israel
REL 3221	Issues in Jewish Ethics
REL 3291	Modern Jewish Thought
REL 3292	Seminar: Issues in Jewish Thought
Five additional courses (15 credits) from the two lists above:	

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors in Judaic Studies, a candidate must attain a GPA of at least 3.7 in courses counted toward the major in Judaic Studies and 3.3 overall, and earn a grade of *A* both for JSTD 4018 Senior Thesis–JSTD 4019 Senior Thesis and for the senior thesis. Having fulfilled these requirements, the student may be recommended for graduation with Special Honors.

MINOR IN JUDAIC STUDIES

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including one 3-credit required course and 15 credits in elective courses.

Code	Title	Credits
Required		
HIST 2050	History of Jewish Civilization: From the Bible to Modernity	
or REL 2201	Judaism	

Electives

Five of the following:	
ANTH 3805	Archaeology of Israel and Neighboring Lands
CLAS 2803	The Ancient Near East and Egypt to 322 B.C.
CLAS 2804	History of Ancient Israel
ENGL 3970	Jewish American Literature
HEBR 3101	Modern Hebrew Literary Classics
HEBR 3301	Modern Hebrew Fiction
HEBR 3302	The Israeli Media
HIST 2050	History of Jewish Civilization: From the Bible to Modernity
HIST 3060	Modern Jewish History
HIST 3367	The American Jewish Experience
HIST 3820	The History of Israel
JSTD 2001	Topics in Judaic Studies: Pre-modern
JSTD 2002	Topics in Judaic Studies: Modern
PSC 2379	Politics and Foreign Policy of Israel
PSC 2476	The Arab-Israeli Conflict
REL 1009	The Hebrew Scriptures
REL 2201	Judaism
REL 2211	Rabbinic Thought and Literature
REL 3141	Second Temple/Hellenistic Judaism
REL 3149W	Biblical Issues
REL 3221	Issues in Jewish Ethics
REL 3291	Modern Jewish Thought
REL 3292	Seminar: Issues in Jewish Thought
REL 3923	Violence and Peace in Judaism, Christianity, and Islam
WSTU 3281	Women in Judaism

MASTER OF ARTS IN THE FIELD OF JEWISH CULTURAL ARTS

The Columbian College of Arts and Sciences offers a master of arts degree program in Jewish cultural arts. The program prepares students for careers in the management of museums, theaters, Young Men's Hebrew Associations, Jewish community centers, and foundations, as well as Jewish film, dance, literary, and music festivals. The degree is also designed to enhance the skills of professionals already in the field. The program combines the practical with the academic, providing students with the hands-on skills and intellectual capital to respond in innovative ways to new opportunities in the field of Jewish culture.

Visit the Judaic Studies webpage (http://judaic.columbian.gwu.edu/master-arts-jewish-cultural-arts) for more information about the program.

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

36 credits, including 18 credits in required courses and 18 credits in elective courses.

Code	Title	Credits
Required		
JSTD 6201	Jewish Life in Contemporary America	
JSTD 6211	Displaying Jewish Culture: Landmark Exhibitions on Judaism and the Jewish Experience	
JSTD 6298	Capstone Seminar for the MA in Jewish Cultural Arts	
MSTD 6102	NonProfit Fiscal Management	
PPPA 6032	Managing Fund Raising and Philanthropy	
MKTG 6255	Strategic Brand Management	
Electives		

18 credits of approved elective courses. These electives must include two internships, which may be drawn from programs, departments, and schools including American Studies, Educational Leadership, English, History, Law, Media and Public Affairs, Museum Studies, and Theatre and Dance.

MATHEMATICS

The Department of Mathematics, part of the natural and mathematical sciences discipline in the Columbian College of Arts and Sciences, offers the bachelor of arts in mathematics and bachelor of science in mathematics degrees. The undergraduate mathematics major has three concentrations: pure, applied, and interdisciplinary. Each concentration is designed to give students a solid background in the theory and practice of modern mathematics. A minor in mathematics is also available to undergraduate students.

At the graduate level, the department offers the master of arts in mathematics, master of science in applied mathematics, and doctor of philosophy in the field of mathematics. Course offerings are complemented by a generous selection of research seminars and by the department colloquium series. Faculty expertise covers a wide range of research specialties, allowing students to choose from a rich array of potential dissertation areas.

In addition, graduate certificates in mathematics and in financial mathematics are offered for those who seek to strengthen their mathematical backgrounds in order to better position themselves in their careers or to prepare themselves for graduate work in quantitative disciplines.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in mathematics (p. 289)
- Bachelor of Science with a major in mathematics (p. 290)

Minor

- Minor in mathematics (p. 291)

GRADUATE

Master's programs

- Master of Arts in the field of mathematics (p. 292)
- Master of Science in the field of applied mathematics (p. 292)

Doctoral program

- Doctor of Philosophy in the field of mathematics (p. 292)

CERTIFICATE

- Graduate certificate in financial mathematics (p. 292)
- Graduate certificate in mathematics (p. 293)

FACULTY

Professors F.E. Baginski, J. Bonin, J. Dwyer, M.M. Gupta (*Chair*), V. Harizanov, H.D. Junghenn, J.H. Przytycki, X. Ren, E.A. Robinson, Y. Rong, D.H. Ullman

Associate Professors L. Abrams, M. Alekseyev, M. Moses, S. Roudenko, H. Wu

Assistant Professors M. Gualdani, A. Shumakovitch, Y. Zhao

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: MATH 1220 Calculus with Precalculus I and MATH 1221 Calculus with Precalculus II each cover one-half the material of MATH 1231 Single-Variable Calculus I. Because MATH 1221 Calculus with Precalculus II, MATH 1231 Single-Variable Calculus I, and MATH 1252 Calculus for the Social and Management Sciences are related in their subject matter, credit for only one of the three may be applied toward a degree. The placement exam, which is one option for placing into Math 1051, 1220, 1231, or 1252 is at: http://math.columbian.gwu.edu/gw-mathematics-placement-test

MATH 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

MATH 1007. Mathematics and Politics. 3 Credits.
A mathematical treatment of fair representation, voting systems, power, and conflict. The impossibility theorems of Balinsky and Young and of Arrow. The electoral college. The prisoner's dilemma.

MATH 1008. History of Mathematics. 3 Credits.
The history of mathematics, with emphasis on its importance in the evolution of human thought. Students learn some useful mathematics from areas such as geometry, number theory, and probability and develop an appreciation of the mathematical endeavor.

MATH 1009. Mathematical Ideas I. 3 Credits.
Elementary mathematical models of growth and decay, scaling, chaos, and fractals.

MATH 1010. Mathematical Ideas II. 3 Credits.
Continuation of MATH 1009. Elementary graph theory, scheduling, probability theory.

MATH 1051. Finite Mathematics for the Social and Management Sciences. 3 Credits.
Systems of linear equations, matrix algebra, linear programming, probability theory, and mathematics of finance. Prerequisite: the placement examination or a score of 560 or above on the SAT II in mathematics.

MATH 1220. Calculus with Precalculus I. 3 Credits.
An introduction to single-variable calculus (differentiation and integration of algebraic and trigonometric functions with applications), with the concepts and techniques of precalculus developed as needed. Prerequisite: the placement examination or a score of 560 or above on the SAT II in mathematics.

MATH 1221. Calculus with Precalculus II. 3 Credits.
Continuation of MATH 1220. An introduction to single-variable calculus (differentiation and integration of algebraic and trigonometric functions with applications), with the concepts and techniques of precalculus developed as needed. Prerequisites: MATH 1220.

MATH 1231. Single-Variable Calculus I. 3 Credits.
Limits and continuity. Differentiation and integration of algebraic and trigonometric functions with applications. Prerequisite: the placement examination or a score of 720 or above on the SAT II in mathematics.

MATH 1232. Single-Variable Calculus II. 3 Credits.
The calculus of exponential and logarithmic functions. L'Hopital's rule. Techniques of integration. Infinite series and Taylor series. Polar coordinates. Prerequisite: MATH 1221 or MATH 1231.

MATH 1252. Calculus for the Social and Management Sciences. 3 Credits.
Differential and integral calculus of functions of one variable; applications to business and economics. Prerequisite: the placement examination or a score of 560 or above on the SAT II in mathematics.

MATH 2020. Joint Math and Physics Seminar. 1 Credit.

MATH 2184. Linear Algebra I. 3 Credits.
Linear equations, matrices, inverses, and determinants. Vector spaces, rank, eigenvalues, and diagonalization. Applications to geometry and ordinary differential equations. Credit cannot be earned for both MATH 2184 and MATH 2185. Prerequisites: MATH 1221 or MATH 1231 or MATH 1051; and MATH 1252; or permission of the instructor.

MATH 2185. Linear Algebra I for Math Majors. 3 Credits.
For current or prospective math majors. Introduction to theory and computations involving linear equations, matrices, inverses, determinants, vector spaces, rank, eigenvalues, diagonalization, inner products, norms, and orthogonality. Reading and writing proofs is required. Credit may not be earned for both Math 2184 and 2185. Prerequisites: MATH 1221 or MATH 1231 or permission of instructor; prerequisite or corequisite: MATH 2971.

MATH 2233. Multivariable Calculus. 3 Credits.
Partial derivatives and multiple integrals. Vector-valued functions. Topics in vector calculus, including line and surface integrals and the theorems of Gauss, Green, and Stokes. Prerequisite: MATH 1232.

MATH 2971. Introduction to Mathematical Reasoning. 3 Credits.
An introduction to the fundamental abstract concepts of modern mathematics as well as various proof techniques demonstrated on numerous examples taken from within discrete and continuous mathematics. Prerequisite or concurrent registration: Math 1232. Open to majors and to others with permission of instructor or the departmental undergraduate advisor.

MATH 2971W. Introduction to Mathematical Reasoning. 3 Credits.

MATH 2991. Introductory Special Topics. 1-3 Credits.
Admission by permission of instructor. May be repeated for credit.

MATH 3120. Elementary Number Theory. 3 Credits.
Divisibility of integers, prime numbers, greatest common divisor, the Euclidean algorithm, congruence, the Chinese remainder theorem, number theoretic functions, Möbius inversion, Euler's phi function, and applications to cryptography and primality testing. Prerequisites: MATH 2971 or MATH 2971W.

MATH 3125. Linear Algebra II. 3 Credits.
Advanced topics in linear algebra such as duality of vector spaces, normal and self-adjoint operators, the singular value decomposition theorem, the spectral theorem, bilinear and quadratic forms, the geometry of orthogonal operators, the Jordan canonical form, and minimal polynomials. Prerequisites: MATH 2971 and MATH 2184; or MATH 2185; or permission of instructor.

MATH 3257. Introduction to Complex Variables. 3 Credits.
Analytic functions and power series. Contour integration and the calculus of residues. Conformal mapping. Physical applications. Prerequisites: MATH 2233 and MATH 2971; and MATH 2184 or MATH 2185; or permission of instructor.

MATH 3342. Ordinary Differential Equations. 3 Credits.
A first course in ordinary differential equations with an emphasis on mathematical modeling: solution curves, direction fields, existence and uniqueness, approximate solutions, first and second order linear equations, linear systems and phase portraits. Prerequisites: MATH 2233 and MATH 2184 or MATH 2185 or permission of the instructor.

MATH 3343. Partial Differential Equations. 3 Credits.
A first course in partial differential equations: Fourier series and separation of variables, vibrations of a string, Sturm–Liouville problems, series solutions, Bessel's equation, linear partial differential equations, wave and heat equations, separation of variables. Prerequisites: MATH 3342 or permission of instructor.

MATH 3359. Introduction to Mathematical Modeling. 3 Credits.
An introduction to the fundamental modeling ideas of dimensional analysis, scaling, and elementary approximations of curves and functions. Applications to development of models from science and engineering. Prerequisite: MATH 2572 and MATH 3342.

MATH 3410. Mathematics of Finance. 3 Credits.
A mathematical development and analysis of realistic models for financial option pricing. Mathematical underpinnings and financial concepts will be developed in parallel. Prerequisites: MATH 2233 and MATH 2971 or permission of instructor.

MATH 3411. Stochastic Calculus Methods in Finance. 3 Credits.
Review of probability theory, Brownian motion, Ito integrals, Ito's formula, martingales, stochastic differential equations, boundary value problems, the Dirichlet problem, the Black-Scholes equation, optimal stopping, and American options. Prerequisites: MATH 2184 or MATH 2185; MATH 3410.

MATH 3553. Introduction to Numerical Analysis. 3 Credits.
Accuracy and precision. Linear systems and matrices. Direct and iterative methods for solution of linear equations. Sparse matrices. Solution of nonlinear equations. Interpolation and approximate representation of functions, splines. Prerequisites: MATH 2184 or MATH 2185, and MATH 2233, and one of CSCI 1011, CSCI 1041, CSCI 1111, CSCI 1121 or CSCI 1131.

MATH 3613. Introduction to Combinatorics. 3 Credits.
Introduction to combinatorial enumeration. Basic counting techniques, inclusion–exclusion principle, recurrence relations, generating functions, pigeonhole principle, bijective correspondences. Prerequisite: MATH 2971 or permission of instructor.

MATH 3632. Introduction to Graph Theory. 3 Credits.
Fundamental concepts, techniques, and results of graph theory. Topics include trees, connectivity, traversability, matchings, coverings, colorability, planarity, networks, and Polya enumeration. Prerequisite: MATH 2971 or permission of instructor.

MATH 3710. Introduction to Mathematical Logic. 3 Credits.
Symbolic logic as a precise formalization of deductive thought. Logical correctness of reasoning. Formal languages, interpretations, and truth. Propositional logic and first-order quantifier logic suited to deductions encountered in mathematics. Goedel's completeness theorem; compactness. Prerequisite: MATH 2971 or permission of instructor.

MATH 3720. Axiomatic Set Theory. 3 Credits.
Cantor's theory of sets. Russell's paradox. Axiomatization of set theory as a framework for a contradiction-free mathematics. The Zermelo–Fraenkel axioms and the axiom of choice. Finite, countable, and uncountable sets; ordinal and cardinal arithmetic. The continuum hypothesis. Prerequisite: MATH 2971 or permission of instructor.

MATH 3730. Computability Theory. 3 Credits.
The unlimited register machine as a model of an idealized computer. Computable and partial computable functions; Church–Turing thesis. Kleene's recursion theorem. Algorithmic enumerability. Unsolvability of the halting problem and other theoretical limitations on what computers can do. Discussion of Goedel's incompleteness theorem. Prerequisite: MATH 2971 or permission of instructor.

MATH 3740. Computational Complexity. 3 Credits.
Automata and languages. Deterministic and nondeterministic Turing machines. Space and time complexity measures and classes. The P versus NP problem. The traveling salesman problem and other NP-complete problems. Intractability. Circuit complexity. Introduction to probabilistic and quantum algorithms. Prerequisite: MATH 2971 or permission of instructor.

MATH 3806. Introduction to Topology. 3 Credits.
Metric spaces: completeness, compactness, continuity. Topological spaces: continuity, bases, subbases, separation axioms, compactness, local compactness, connectedness, product and quotient spaces. Prerequisite: MATH 2971 or permission of instructor.

MATH 3848. Differential Geometry. 3 Credits.
Curves in space, regular surfaces, tensors, fundamental forms of a surface, Gauss–Bonnet theory, minimal surfaces. The geometry of the Gauss map. Prerequisites: MATH 2184 or MATH 2185, MATH 2233, MATH 2971, or permission of instructor.

MATH 4121. Introduction to Abstract Algebra I. 3 Credits.
Study of groups and associated concepts, including Lagrange's theorem, Cayley's theorem, the fundamental theorem of homomorphisms, and applications to counting. Prerequisites: MATH 2971 and MATH 2184 or MATH 2185 or permission of instructor.

MATH 4122. Introduction to Abstract Algebra II. 3 Credits.
Study of rings, through maximal and prime ideals, and the study of fields, through Galois theory. Prerequisite: MATH 4121 or permission of instructor.

MATH 4158. Introduction to Mathematical Statistics II. 3 Credits.
Continuation of STAT 4157. Inference procedures, including estimation, hypothesis testing, regression analysis, and experimental design. Prerequisites: MATH 1232.

MATH 4239. Real Analysis I. 3 Credits.
A rigorous study of differentiation, integration, and convergence. Topics include sequences and series, continuity and differentiability of real-valued functions of a real variable, the Riemann integral, sequences of functions, and power series. Prerequisites: MATH 1232 and MATH 2971 or permission of instructor.

MATH 4239W. Real Analysis I. 3 Credits.
A rigorous study of differentiation, integration, and convergence. Topics include sequences and series, continuity and differentiability of real-valued functions of a real variable, the Riemann integral, sequences of functions, and power series. Prerequisite: MATH 1232 and MATH 2971 or permission of the instructor.

MATH 4240. Real Analysis II. 3 Credits.
Continuation of MATH 4239. Topics include: topology of Rn, derivatives of functions of several variables, inverse and implicit function theorems, multiple integrals, generalized Stokes's theorem. Prerequisites: MATH 2233, MATH 2184 or MATH 2185, and MATH 4239; or permission of instructor.

MATH 4981. Seminar: Topics in Mathematics. 3 Credits.
Past topics have included computational mathematics, fractals, network flows and combinatorial optimization, information theory and coding theory, dynamical systems, queuing theory, wavelets and Fourier analysis, complex networks, classical and quantum complexity. Credit may not be earned for both MATH 2184 and 2185. Prerequisites: MATH 2233 and MATH 2184 or MATH 2185 or permission of instructor.

MATH 4991. Special Topics. 1-12 Credits.
Admission by permission of instructor. May be repeated for credit.

MATH 4995. Reading and Research. 1-6 Credits.
Under the personal direction of an instructor. Limited to majors with demonstrated capability. Prior approval of instructor required. May be repeated for credit.

MATH 6101. Algebra I. 3 Credits.
Group theory including symmetric groups, free abelian groups, finitely generated abelian groups, group actions, Sylow theorems, solvable groups. Ring theory including factorization in commutative rings, rings of polynomials, chain conditions.

MATH 6102. Algebra II. 3 Credits.
Continuation of MATH 6101. Theory of modules, including modules over a principal idea domain and tensor product of modules. Theory of fields, including finite fields and Galois theory.

MATH 6120. Topics in Algebra. 3 Credits.
Topics may include, but are not limited to, Lie groups and Lie algebras, non-associative algebras, abelian groups, classical groups, algebraic number theory, representation theory, algebraic geometry, and ring theory. May be repeated for credit with permission. Prerequisites: MATH 6101 and MATH 6102.

MATH 6201. Real Analysis I. 3 Credits.
A rigorous study of the real number system, metric spaces, topological spaces, product topology, convergence, continuity and differentiation. Topics include Dedekind's cuts, Tychonoff's theorem, sequences and series, Abel's theorem, continuity and differentiability of real-valued functions of a real variable. Credit may not be earned for both MATH 6201 and MATH 4239.

MATH 6202. Real Analysis II. 3 Credits.
Continuation of MATH 6201. Topics include Riemann–Stieltjes integrals, equicontinuity, Arzela–Ascoli theorem, Stone–Weierstrass theorem, derivatives of functions of several variables, contraction mapping theorem, inverse and implicit function theorems, differential forms, exterior differentiation, Stoke's theorem, differentiable manifolds. Credit may not be earned for both MATH 6202 and MATH 4240.

MATH 6214. Measure and Integration Theory. 3 Credits.
Lebesgue measure and integration in abstract spaces. Probability measures. Absolute continuity, the Radon–Nikodym theorem, measures on product spaces, and the Fubini theorem. LP spaces and their properties. Prerequisite: MATH 4239 .

MATH 6215. Introduction to Functional Analysis. 3 Credits.
Topological and metric spaces; Tychonoff theorem; Banach spaces; linear functionals and operators; Hahn–Banach, closed graph, and open-mapping theorems; uniform boundedness; Hilbert spaces; eigenvalues, projections. Prerequisite: MATH 6214 .

MATH 6225. Ergodic Theory. 3 Credits.
Ergodicity, mixing, the K-property and the Bernoulli property. Poincaré recurrence, the Rohlin lemma, the ergodic theorem, and entropy theory. Additional topics from isomorphism theory, spectral theory, the theory of joinings, and coding theory. Prerequisite: MATH 6214 or permission of instructor.

MATH 6226. Dynamical Systems and Chaos. 3 Credits.
Linear and nonlinear systems, flows, Poincaré maps, structural stability. Examples of chaotic systems in the physical sciences. Local bifurcations, center manifold theory, normal forms, the averaging theorem. Hyperbolic invariant sets, strange attractors, the Smale horseshoe, symbolic dynamics. Prerequisite: MATH 2184 and MATH 4240 or permission of instructor.

MATH 6230. Complex Analysis. 3 Credits.
Topology of the complex plane; complex differentiation and integration; Cauchy's theorem and its consequences; Taylor and Laurent series; classification of singularities; residue theory; conformal mapping; the Riemann mapping theorem. Prerequisite: Math 4239 .

MATH 6240. Topics in Real and Functional Analysis. 3 Credits.
Possible topics include Banach algebras, function algebras, spectral theory for bounded and unbounded operators, harmonic analysis on topological groups and semigroups, topological vector spaces and operator algebras. Prerequisite: permission of instructor. May be repeated for credit with permission.

MATH 6318. Applied Mathematics I. 3 Credits.
Boundary value problems in one dimension, first order equations, method of characteristics, shock waves, linear elliptic and evolution equations, calculus of variations. Prerequisite: MATH 2184.

MATH 6319. Applied Mathematics II. 3 Credits.
Stability and bifurcation, perturbation methods, Sobolev spaces, wave equation, nonlinear partial differential equations. Prerequisite: MATH 2184.

MATH 6330. Ordinary Differential Equations. 3 Credits.
Existence and uniqueness of solutions, continuity and differentiability of solutions with respect to initial conditions. Properties of linear systems, phase portraits, planar systems and Poincaré–Bendixson theory. Prerequisite: MATH 4240.

MATH 6340. Modern Partial Differential Equations. 3 Credits.
Emphasis on modern theory and analytical techniques applied to the solution of partial differential equations. Topics include Sobolev spaces, generalized solutions, strong solutions and regularity; Sobolev imbedding theorem; Rellich–Kondrachov theorem; Leray–Schauder fixed-point theorems; nonlinear eigenvalue problems. Prerequisite: MATH 6319 or permission of instructor.

MATH 6350. Topics in Applied Mathematics. 3 Credits.
Possible topics include, but are not limited to, the calculus of variations, control theory, nonlinear partial differential equations, and mathematical programming. May be repeated for credit with permission.

MATH 6441. Introduction to Financial Mathematics. 3 Credits.
Elementary finance. Basic probability. Discrete random variables. Forwards, futures, and options. Options and arbitrage. The binomial model. Cox–Ross– Rubenstein formula. Martingales. Continuous random variables. The continuous model as a limit of the binomial model. Prerequisite: MATH 2184, MATH 2233.

MATH 6442. Stochastic Calculus Methods in Finance. 3 Credits.
Review of finance and probability theory. Brownian motion. Ito's formula. Martingales. Stochastic differential equations. The Black–Scholes equation. Optimal stopping. American options. Prerequisites: MATH 2184, MATH 2233.

MATH 6522. Introduction to Numerical Analysis. 3 Credits.
Computer arithmetic and round-off errors. Solution of linear and nonlinear systems. Interpolation and approximations. Numerical differentiation and integration. Eigenvalues and eigenvectors. Prerequisite: MATH 1232 and MATH 2184 and knowledge of a programming language.

MATH 6523. Numerical Solution of Ordinary and Partial Differential Equations. 3 Credits.
Initial and boundary value problems for ordinary differential equations. Error propagation, convergence and stability. Finite difference and finite element methods for partial differential equations. Prerequisite: MATH 3342 and knowledge of a programming language.

MATH 6540. Topics in Numerical Analysis. 3 Credits.
Numerical methods and software. Introductions to the methods, tools, and ideas of numerical computation. Problem solving using standard mathematical software. Interpolation; linear and nonlinear equations. Differential equations. Prerequisite: MATH 3342; knowledge of a programming language.

MATH 6610. Combinatorics. 3 Credits.
An introduction to fundamental methods and current research problems in partially ordered sets and enumeration. Prerequisite: undergraduate modern algebra and linear algebra or permission of instructor.

MATH 6620. Graph Theory. 3 Credits.
Graphical enumeration, factors, planarity and graph coloring, algebraic graph theory, extremal graph theory, applications. Prerequisite: undergraduate modern algebra and linear algebra or permission of instructor.

MATH 6630. Topics in Combinatorial Mathematics. 3 Credits.
Topics selected from a wide range of research subjects in combinatorics, its relations with other areas of mathematics, and applications. Recent selections have included matroid theory, topological methods in ordered sets, algebraic methods in combinatorics, fractional graph theory, combinatorics of polytopes, the symmetric group. May be repeated for credit with permission.

MATH 6710. Mathematical Logic. 3 Credits.
Model theory: the relation between a formal language (syntax) and its interpretations (semantics). Consistency, completeness, and compactness. Tarski's theorem on the inexpressibility of truth. Godel's incompleteness theorem and its impact on mathematics.

MATH 6720. Topics in Logic. 3 Credits.
Topics selected from a broad spectrum of areas of logic and applications, based on students' suggestions and interests. Recent selections have included computable mathematics, computable model theory, computability theory, set theory, and algorithmic learning theory. May be repeated for credit with permission.

MATH 6810. General Topology. 3 Credits.
Topological spaces, bases and subbases, open sets and closed sets; continuous maps and homeomorphisms; connectedness and compactness; metric topology, product topology, and quotient topology; separation axioms; finite topological spaces, covering spaces, and fundamental groups.

MATH 6820. Algebraic Topology. 3 Credits.
Fundamental groups and the Van Kampen theorem; simplicial complexes, simplicial homology, and Euler characteristic; singular homology, Mayer–Vietoris sequences. Topics may include cohomology, cup products, and Poincaré duality; classification of surfaces; knots and their fundamental groups. Prerequisite: MATH 6810 or permission of instructor.

MATH 6850. Knot Theory and Low Dimensional Topology. 3 Credits.
Introduction to fundamental methods and current research in knot theory and 3-dimensional topology. Topics include Reidemeister moves, Alexander invariants, Jones-type invariants, skein modules, Khovanov homology, incompressible surfaces, and torus decomposition. Prerequisite: MATH 6810 or permission of instructor.

MATH 6860. Topics in Knot Theory and Low Dimensional Topology. 3 Credits.
Possible topics include, but are not limited to, topology of 3-manifolds and work of Perelman, quantum invariants and their categorizations, topology of 4-manifolds after Freedman and Donaldson, computational complexity in topology, and applications in biology, chemistry, and physics. Prerequisite: MATH 6850 or permission of instructor. May be repeated for credit with permission.

MATH 6890. Topics in Topology. 3 Credits.
Topics may include hyperbolic structures on surfaces and 3-manifolds; knot theory; topology of 3-manifolds; topology of 4-manifolds. Prerequisite: MATH 6820 or permission of the instructor. May be repeated for credit with permission.

MATH 6991. Graduate Student Experience. 0 Credits.
Introduction to the experience of studying mathematics as a graduate student at GW. Topics include understanding University rules and regulations, handling the literature in the subject, conducting research and delivering presentations, and pursing a successful career as a mathematician. Restricted to graduate students in the Department of Mathematics.

MATH 6995. Reading and Research. 0-12 Credits.
May be repeated for credit.

MATH 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

BACHELOR OF ARTS WITH A MAJOR IN MATHEMATICS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Required		
MATH 1231	Single-Variable Calculus I (or equivalent)	
MATH 1232	Single-Variable Calculus II	
MATH 2233	Multivariable Calculus	

MATH 2971	Introduction to Mathematical Reasoning
One course (3 credits) from the following:	
CSCI 1011	Introduction to Programming with Java
CSCI 1041	Introduction to FORTRAN Programming
CSCI 1111	Introduction to Software Development
CSCI 1121	Introduction to C Programming
CSCI 1131	Introduction to Programming with C
Students in the pure mathematics concentration may substitute an additional elective, approved by the department, for the CSCI course.	

Students select one of the following three concentrations:

Pure Mathematics Concentration

Code	Title	Credits
Required		
MATH 2185	Linear Algebra I for Math Majors	
or MATH 2184 & MATH 3125	Linear Algebra I and Linear Algebra II	
MATH 4121	Introduction to Abstract Algebra I	
MATH 4239	Real Analysis I	
MATH 4240	Real Analysis II	
MATH 4122	Introduction to Abstract Algebra II	
or MATH 3125	Linear Algebra II	
Three additional mathematics (MATH) courses (9 credits) numbered 3000 or above		

Applied Mathematics Concentration

Code	Title	Credits
Required		
MATH 2185	Linear Algebra I for Math Majors	
or MATH 2184	Linear Algebra I	
MATH 3342	Ordinary Differential Equations	
MATH 3343	Partial Differential Equations	
MATH 3553	Introduction to Numerical Analysis	
MATH 3359	Introduction to Mathematical Modeling	
MATH 4239	Real Analysis I	
Two additional mathematics (MATH) courses (6 credits) numbered 3000 or above		

Interdisciplinary Mathematics Concentration

Code	Title	Credits
Required		
MATH 2185	Linear Algebra I for Math Majors	
or MATH 2184	Linear Algebra I	
MATH 3342	Ordinary Differential Equations	
MATH 3553	Introduction to Numerical Analysis	
MATH 3359	Introduction to Mathematical Modeling	
Four additional mathematics (MATH) courses (12 credits) numbered 3000 or above		
A minor or second major in statistics, economics, physics, finance, or any department in the School of Engineering and Applied Science.		

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must maintain a grade-point average of at least 3.5 in courses in the major; complete 3 credits of MATH 4995 Reading and Research in addition to the other required courses in the major; and present an oral defense of a senior thesis prepared for MATH 4995 Reading and Research.

BACHELOR OF SCIENCE WITH A MAJOR IN MATHEMATICS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Required		
MATH 1231	Single-Variable Calculus I (or the equivalent)	
MATH 1232	Single-Variable Calculus II	
MATH 2233	Multivariable Calculus	
MATH 2971	Introduction to Mathematical Reasoning	
One course (3 credits) from the following:		

CSCI 1011	Introduction to Programming with Java
CSCI 1041	Introduction to FORTRAN Programming
CSCI 1111	Introduction to Software Development
CSCI 1121	Introduction to C Programming
CSCI 1131	Introduction to Programming with C
Students in the pure mathematics concentration may substitute an additional elective, approved by the department, for the CSCI course.	

Students select one of the following three concentrations:

Pure Mathematics Concentration

Code	Title	Credits
Required		
MATH 2185	Linear Algebra I for Math Majors	
or MATH 2184 & MATH 3125	Linear Algebra I and Linear Algebra II	
MATH 4121	Introduction to Abstract Algebra I	
MATH 4239	Real Analysis I	
MATH 4240	Real Analysis II	
MATH 4122	Introduction to Abstract Algebra II	
or MATH 3125	Linear Algebra II	
Five additional mathematics (MATH) courses (15 credits) numbered 3000 or above		

Applied Mathematics Concentration

Code	Title	Credits
Required		
MATH 2185	Linear Algebra I for Math Majors	
or MATH 2184 & MATH 3125	Linear Algebra I and Linear Algebra II	
MATH 3342	Ordinary Differential Equations	
MATH 3343	Partial Differential Equations	
MATH 3553	Introduction to Numerical Analysis	
MATH 3359	Introduction to Mathematical Modeling	
MATH 4239	Real Analysis I	
Four additional mathematics (MATH) courses (12 credits) numbered 3000 or above		
If MATH 3125 is paired with MATH 2184, then MATH 3125 also counts toward these additional credits.		

Interdisciplinary Mathematics Concentration

Code	Title	Credits
Required		
MATH 2185	Linear Algebra I for Math Majors	
or MATH 2184 & MATH 3125	Linear Algebra I and Linear Algebra II	
MATH 3342	Ordinary Differential Equations	
MATH 3553	Introduction to Numerical Analysis	
MATH 3359	Introduction to Mathematical Modeling	
Six additional mathematics (MATH) courses (18 credits) numbered 3000 or above		
A minor or double major in statistics, economics, physics, finance, or any department in the School of Engineering and Applied Science		
If MATH 3125 is paired with MATH 2184, MATH 3125 counts towards these additional credits.		

SPECIAL HONORS

To graduate with Special Honors, a student must meet the general requirements stated under University Regulations; maintain a grade-point average of at least 3.5 in courses in the major; complete 3 credits of MATH 4995 Reading and Research in addition to the other required courses in the major; and present an oral defense of a senior thesis prepared for MATH 4995 Reading and Research.

MINOR IN MATHEMATICS

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including one 3-credit required course and 15 credits in elective courses.

Code	Title	Credits
Required		
MATH 2184	Linear Algebra I	
or MATH 2185	Linear Algebra I for Math Majors	
Electives		

15 credits in elective courses with a minimum of 9 credits taken at the 3000 level or above. Courses are selected in consultation with a departmental advisor.

MASTER OF ARTS IN THE FIELD OF MATHEMATICS

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p.).

30 credits in approved courses in mathematics.

Code	Title	Credits
Required		
30 credits of approved graduate course work in mathematics.		

Up to 6 of the required credits may be satisfied through approved upper-level undergraduate courses.

For additional information, visit the Department of Mathematics Graduate Academic Programs (http://math.columbian.gwu.edu/graduate-academic-programs) website.

MASTER OF SCIENCE IN THE FIELD OF APPLIED MATHEMATICS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (http://bulletin.gwu.edu/arts-sciences/#Graduate_Degree_Requirement).

30 credits in approved courses divided between mathematics and one of the following areas of application: physics, computer science, statistics, operations research, economics, engineering (civil, electrical, mechanical, or systems). No more than 12 credits may be in non-MATH courses. Students must petition and obtain the approval of the graduate committee in order to register for courses outside the department.

Subject to the approval of the graduate committee (requested via petition) and the agreement of the instructor, mathematics graduate students may take the following undergraduate courses for graduate credit: MATH 3710 Introduction to Mathematical Logic, MATH 3720 Axiomatic Set Theory, MATH 3730 Computability Theory, MATH 3740 Computational Complexity, MATH 3613 Introduction to Combinatorics, MATH 3632 Introduction to Graph Theory, MATH 4239 Real Analysis I, MATH 4240 Real Analysis II, MATH 3848 Differential Geometry, and MATH 4981 Seminar: Topics in Mathematics. Graduate students in such courses must be assigned appropriate additional work to bring the courses up to the graduate level. No more than 6 credits may be satisfied through approved upper-level undergraduate courses.

Students must petition and obtain the approval of the graduate committee in order to register for MATH 6995 Reading and Research.

Up to one-quarter of the work required for the degree may be taken via courses offered by other institutions in the Consortium of Universities of the Washington Metropolitan Area. (https://registrar.gwu.edu/consortium) Students wishing to take such courses must petition and obtain the approval of the graduate committee.

For a detailed description of the program, visit the Department of Mathematics Graduate Academic Programs website (http://math.columbian.gwu.edu/graduate-academic-programs).

DOCTOR OF PHILOSOPHY IN THE FIELD OF MATHEMATICS

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy Program (p. 82).

Required: The General Examination consists of a preliminary examination in two to four subjects selected from algebra, analysis, topology, and applied math, and a specialty examination in a research area approved by the department.

For a detailed description of the program, visit the departmental web page (http://math.columbian.gwu.edu/phd-program).

GRADUATE CERTIFICATE IN FINANCIAL MATHEMATICS

REQUIREMENTS

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
MATH 6201	Real Analysis I	
MATH 6441	Introduction to Financial Mathematics	
MATH 6442	Stochastic Calculus Methods in Finance	
One of the following:		
MATH 6202	Real Analysis II	
MATH 6214	Measure and Integration Theory	
MATH 6318	Applied Mathematics I	
MATH 6330	Ordinary Differential Equations	
MATH 6522	Introduction to Numerical Analysis	

Alternate courses may be selected in consultation with the certificate program advisor. More information can be found on the mathematics certificate programs (http://math.columbian.gwu.edu/certificate-programs) website.

GRADUATE CERTIFICATE IN MATHEMATICS

REQUIREMENTS

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following requirements must be fulfilled: 12 credits, including 6 credits in required courses and 6 credits in elective courses.

Required:	
MATH 6201	Real Analysis I
MATH 6202	Real Analysis II
Two of the following:	
MATH 6214	Measure and Integration Theory
MATH 6215	Introduction to Functional Analysis
MATH 6318	Applied Mathematics I
MATH 6319	Applied Mathematics II
MATH 6810	General Topology

Alternate courses may be selected in consultation with the certificate advisor. More information can be found on the mathematics certificate programs (http://math.columbian.gwu.edu/certificate-programs) website.

MEDIA AND PUBLIC AFFAIRS

The School of Media and Public Affairs (SMPA), part of the Columbian College of Arts and Sciences, is dedicated to the study of media, journalism, and political communication with a focus on the connections between ideas and information and how the media inform and influence policy and politics in a democracy. Students have the opportunity for internships and access to decision makers, community leaders, and power brokers. SMPA offers programs of study leading to the bachelor of arts degree with majors in journalism and mass communication, and in political communication. Entering freshmen may be admitted to majors within SMPA through a highly selective application process. In addition, a limited number of students are admitted through a competitive application process that begins after the student is accepted to the University. Visit the SMPA (http://smpa.gwu.edu/transfer-admissions) website for information about admissions and program requirements.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in journalism and mass communication (p. 298)
- Bachelor of Arts with a major in political communication (p. 300)
- Combined programs (p. 301)

Minor

- Minor in journalism and mass communication (p. 303)

GRADUATE

Master's program

- Master of Arts in the field of media and strategic communication (p. 304)

CERTIFICATE

A graduate certificate in documentary filmmaking is offered by the School of Media and Public Affairs. Information is available at The Documentary Center (https://documentarycenter.columbian.gwu.edu).

FACULTY

Professors R.M. Entman, L. Huebner, S.L. Livingston, S.V. Roberts, N. Seavey (*Research*), F. Sesno (*Director*), S. Waisbord

Associate Professors S. Aday, C.S. Bailard, K.A. Gross, K. Harvey, M. Hindman, P.F. Phalen, R. Russell, J.E. Steele, C.W. Thompson

Assistant Professors I.M. Cheers, D.A. Karpf, J. Osder, , N. Usher, W.L. Youmans

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SMPA 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

SMPA 1050. Media in a Free Society. 3 Credits.
The role of mass communication in democratic political systems: informational requirements of democracy, sources of political information and the role of news media and other channels in creating and disseminating it; issues relating to propaganda and public information; and the interaction between information flows and democratic political culture. Not open to SMPA majors.

SMPA 1225. Forensics Practice (Debate). 1 Credit.

SMPA 2101. Journalism: Theory & Practice. 3 Credits.
An overview of theories and key issues in journalism in the United States. News and democracy, the historical and social evolution of journalism, news values, journalism as occupation/profession, technologies and changes in journalistic practices. Open only to SMPA majors.

SMPA 2102. Introduction to Political Communication. 3 Credits.
Basic concepts and theories of political communication; development of a framework for analyzing political communication; applications in the United States, other countries, and the international system. Open only to SMPA majors. Prerequisite: PSC 1002.

SMPA 2110W. Introduction to News Writing and Reporting. 0-3 Credits.
Fundamentals of news reporting and writing, with emphasis on the print media. News judgment, information gathering skills, and crafting news and feature stories. Regular in-class and outside reporting and writing exercises. Directly admitted freshmen may enroll in their second semester; all other freshmen need departmental permission. Laboratory fee.

SMPA 2111W. Advanced News Reporting. 4 Credits.
Reporting, writing, and computer skills for covering beats and developing in-depth news stories. Techniques in researching, observing, and interviewing to frame stories of public interest; outside and in-class reporting and writing assignments. Restricted to Journalism and Mass Communication majors or permission of instructor required. Prerequisite: SMPA 2110. Laboratory fee.

SMPA 2112. Digital Media I: Introduction to Video Production. 3 Credits.
Foundational introduction to digital media production. Videography and non-linear editing, with emphasis on use in journalism and political communication. Laboratory fee. Restricted to Political Communication and Journalism & Mass Communication majors only.

SMPA 2113. Digital Media II: Introduction to Web Production and Social Media. 3 Credits.
Foundational introduction to digital media production. Web content and design; photography and audio applied to the web; and using social media. Emphasis on use in journalism and political communication. Laboratory fee. Restricted to Political Communication and Journalism & Mass Communication majors only.

SMPA 2120. Public Opinion. 3 Credits.
Key aspects of the literature on public opinion, with emphasis on the role of media in opinion formation and change. Topics include the meaning of public opinion in a democratic society, a review of methods used to measure opinions, and media effects on opinion.

SMPA 2151. Research Methods. 3 Credits.
Processes of inquiry within mediated communication. The concepts of framing research questions, conducting literature reviews, developing a research design, and interpreting results of cultural and social science research within a societal framework. Prerequisites: STAT 1053 or STAT 1051 or STAT 1111 or STAT 1127.

SMPA 2152. Data Analysis for Journalism and Political Communication. 3 Credits.
Understanding, critiquing, and performing analysis of data sets with applications to journalism and political communication; using data to tell stories and answer questions. Analyzing A/B tests and field experiments; basics of visualizing data; regression. Laboratory fee. Prerequisites: STAT 1051 or STAT 1053 or STAT 1111 or STAT 1127.

SMPA 2173. Media Law. 3 Credits.
Freedom of the press. Changing laws of journalism and mass communication, including defamation, privacy, reporting access, obscenity and indecency, media ownership, intellectual property, advertising, and electronic communication.

SMPA 2177. Media History. 3 Credits.
American media from colonial times to the present, set against a backdrop of ongoing political, social, and economic developments. The development of press, radio, television, cable, satellite, and the Internet; government regulation and media relations; journalistic rights and responsibilities.

SMPA 3150. Journalism Ethics. 3 Credits.
Principles of media ethics; application to contemporary and developing issues and challenges in journalism. Restricted to juniors and seniors only. Prerequisites: SMPA 2111 or SMPA 2111W.

SMPA 3193. Selected Topics in Journalism and Mass Communication Skills. 3-4 Credits.
Topics announced in Schedule of Classes. May be repeated for credit if the topic differs.

SMPA 3194. Selected Topics in Political Communication. 3-4 Credits.
Topic announced in the Schedule of Classes. May be repeated if the topic differs, but may only count once toward the political communication major.

SMPA 3195. Selected Topics in Journalism and Mass Communication. 3-4 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit if the topic differs.

SMPA 3195W. Selected Topics in Journalism and Mass Communication. 3-4 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit if the topic differs.

SMPA 3196. Independent Study. 1-3 Credits.
Students pursue a program of directed reading, research, and writing under the direction of a faculty advisor. Limited to seniors.

SMPA 3197. Internship. 1-3 Credits.
Students spend at least five hours per week per credit with an approved news organization, agency, or office under the general guidance of a faculty advisor. Guidelines are available in the SMPA office and online. May be taken P/NP only. Restricted to SMPA majors and minors in the junior and senior year. May be repeated for up to 6 credits.

SMPA 3230. Reporting in the Digital Age. 3 Credits.
Understanding the emerging tools and developing the technological skills needed to analyze data for news. Students learn to find reliable information through social media and other online tools, use spreadsheets as a reporting tool, and download data for analysis, to create graphics, and to report and write stories based on the analysis. Prerequisite: SMPA 2110. Laboratory fee.

SMPA 3232. Online Journalism Workshop. 4 Credits.
Capstone production experience for SMPA majors. Provides advanced journalism and multimedia production skills needed to produce and report for a news website. Prerequisite: SMPA 2110, SMPA 2112. Laboratory fee.

SMPA 3233. Photojournalism. 3 Credits.
Elements of effective news and feature photos, including study and evaluation of slides taken by students. Picture selection, cropping, captions. Student costs include film and developing. Laboratory fee.

SMPA 3234. Editing and Design for Print and Web. 3 Credits.
Editing, design, layout, and photo selection for newspapers, magazines, and web. Selecting and editing stories; writing headlines and photo captions; sizing and cropping graphic materials; laying out pages. Ethics of editing. Prerequisites: SMPA 2110W.

SMPA 3235W. Broadcast News Writing. 3 Credits.
Introduction to writing television news scripts based on actual events. Using workshop techniques, scripts are evaluated for content, structure, and use of words, pictures, and sound. Extensive writing and rewriting using streaming video from professional newscasts. Prerequisite: SMPA 2110.

SMPA 3236W. Broadcast News Reporting. 3 Credits.
Advanced techniques in television news reporting and editing. Students produce, shoot, and edit news packages by teaming up to report in the field. Prerequisite: SMPA 2110, SMPA 2112.

SMPA 3239. Television News Practicum. 4 Credits.
Capstone production experience for SMPA majors. Students report, produce, direct, and edit GW student news broadcast. Laboratory fee. Prerequisites: SMPA 3235 and SMPA 3236.

SMPA 3240W. Washington Reporting. 3 Credits.
Examination of reporting and writing techniques employed in news coverage of the national government, with an emphasis on serving a regional readership or audience. Using Washington as a laboratory, students focus on contemporary issues and news makers in the legislative and executive branches of government. Prerequisite: SMPA 2110.

SMPA 3241W. Campaign Reporting. 3 Credits.
Development of news gathering and writing skills needed for the coverage of political campaigns. Using in-class exercises and outside assignments, students acquire reporting and writing proficiency to illuminate how campaigns work and how politics affects the lives of citizens. Prerequisite: SMPA 2110.

SMPA 3242. Investigative Reporting. 3 Credits.
Hands-on intensive training in reporting and writing in-depth enterprise news stories that expose hidden problems or wrong-doing. Prerequisite: SMPA 2110.

SMPA 3243W. Feature Writing. 3 Credits.
Learn to frame, research, and write a wide range of feature articles, including profiles, interviews and personal memoirs. Weekly writing assignments and a major final project are discussed and scrutinized in a workshop setting. Prerequisite: SMPA 2110.

SMPA 3244W. Narrative Journalism. 3 Credits.
The narrative or story-telling tradition in journalism. Students experiment with narrative techniques in a series of written exercises and a final project. Enrollment limited to 15 students with preference given to upper-class SMPA majors and graduate students. Prerequisite: SMPA 2110.

SMPA 3245W. Editorial & Persuasive Writing. 3 Credits.
Techniques of editorial and column writing; editorial page and public affairs programming; function of commentary in a free press. Prerequisite: SMPA 2110.

SMPA 3246. Specialized Reporting. 3 Credits.
Advanced reporting in specialized fields, such as business, science, medicine. Topics and instructors vary each semester. Prerequisite: SMPA 2110.

SMPA 3246W. Specialized Reporting. 3 Credits.
Advanced reporting in specialized fields, such as business, science, medicine. Topics and instructors vary each semester. Prerequisite: SMPA 2110.

SMPA 3247. Documentary Production. 4 Credits.
Advanced techniques in writing, researching, producing, and editing long-form documentaries. Prerequisite: SMPA 2112 and SMPA 3479 or permission of instructor.

SMPA 3350. Public Diplomacy. 3 Credits.
The theory and practice of public diplomacy: informing, influencing, and establishing dialogue with international publics and institutions. A conceptual and historical examination of public diplomacy, current practices, and contemporary issues, including international information dissemination, educational and cultural exchange, and international broadcasting.

SMPA 3352. Principles of Public Relations. 3 Credits.
Principles, problems, ethics, and law of public relations for government, private concerns, educational and other public institutions.

SMPA 3353. Strategic Political Communication. 3 Credits.
Origins of strategic approaches to political communication; techniques. Use of strategic communication by individuals, groups, organizations, and governments in both domestic politics and policymaking and in the international system. Prerequisite: SMPA 2102 or permission of instructor.

SMPA 3354. Political Campaign Communication. 3 Credits.
Communication aspects of political campaigns for candidates and ballot issues. Examination of techniques and channels of communication, role of communication in campaign strategy, ethics and implications of campaign decision making.

SMPA 3355. Campaign Advertising. 3 Credits.
Introduction to the theory and practice of campaign advertising. Emphasis on televised political campaign spots, but a range of campaign advertising media are included: radio, direct mail, and the Internet. Prerequisite: SMPA 2112.

SMPA 3357W. Political Speech Writing. 3 Credits.
Theory and practice of public speaking in the context of mediated political communication. Students analyze, write, and give speeches.

SMPA 3358. Strategic Practicum. 3 Credits.
Working in small groups, students research and develop full-scale plans for hypothetical, reality-based, strategic communication campaigns that test and apply theoretical advances in the field. Prerequisite: SMPA 3353.

SMPA 3428. Media, Politics, and Government. 3 Credits.
The impact of mainstream media and online outlets on politics and the governing process. Topics include the role of social media, online advertising, comedy shows, and the changing ways that voters receive information. Same as PSC 2228.

SMPA 3450. Social Media. 3 Credits.
Practical and theoretical implications of social media; what it means to be social and how social media has changed how individuals interact and do business; birth and history of social media and why certain forms of social media flourish while others fail.

SMPA 3459. Language and Politics. 3 Credits.
Connections between language and the political world. Theory and practice of language in politics and the impact on the creation and consumption of politics.

SMPA 3460. Race, Media & Politics. 3 Credits.
Examination of the place of race in American society and politics, with attention to the role of media reporting in helping to shape understanding of race and racial matters, public opinion about race, and race and electoral politics.

SMPA 3461. Campaigns and Elections. 3 Credits.
The role of the news media in campaigns and elections. Offered in even-numbered years.

SMPA 3463. Media Bias. 3 Credits.
Exploration of empirical and theoretical understanding of media bias, its effects on power, and implications for democracy.

SMPA 3469. International Communication. 3 Credits.
A survey of theoretical themes in international communication and their practical applications: information production and circulation, global media industries, and cultures.

SMPA 3470. Comparative Media Systems. 3 Credits.
In-depth study of the developmental, regulatory, political, economic, and cultural dimensions of selected foreign communication systems.

SMPA 3471. Media in the Developing World. 3 Credits.
Contemporary views of media roles in developing nations. The role of the press and electronic media in economic, social, and national development, including media as agents of modernization, development journalism, and post-colonial responses to Western "cultural imperialism." Media and Islam; role of the Internet; and theories of media and globalization.

SMPA 3472. Media and Foreign Policy. 3 Credits.
The emerging role of news media in international affairs and diplomacy. Globalization of news media advances in digital information and communication technologies and consequences for the international system and diplomacy.

SMPA 3475. Media Management. 3 Credits.
Decision making, strategic planning, and daily operations of all types of media organizations. Sales strategies, promotion, and research.

SMPA 3476. Media, Technology, and Culture. 3 Credits.
Concepts, principles, and socio-political implications of new and changing media and related technologies. Focus on intersection of new technologies and the anthropology of everyday life, in particular self-governance, policy development, cultural rupture and cohesion, the tension between national security and individual privacy rights, and First Amendment issues.

SMPA 3477. Information Technology and Politics. 3 Credits.
The effect of new information technologies on the media, public discourse, and political life; ways in which politics has shaped the development of technology.

SMPA 3479. Documentary. 3 Credits.
Origins, genres, and analysis of documentary film. Power, reach, and conceptual frameworks of documentary filmmaking.

SMPA 3480. The Future of Journalism. 3 Credits.
Reasons behind the decline of traditional newspaper and broadcast journalism; the impact of the web and other digital tools on traditional journalism values; new business models for news.

SMPA 4180. Online Journalism Workshop. 4 Credits.
Capstone experience for journalism majors. Advanced journalism and multimedia production skills needed to produce and report for a news website. Prerequisites: SMPA 2112 and SMPA 2113 and SMPA 2111 or SMPA 2111W. Same as SMPA 3232.

SMPA 4181. Television News Workshop. 4 Credits.
Capstone production experience for SMPA majors. Students report, produce, direct, and edit GW student news broadcasts. Laboratory fee. Prerequisites: SMPA 2111 or SMPA 2111W, SMPA 2112, SMPA 2113, and SMPA 3236. Same as SMPA 3239.

SMPA 4182. Specialized Journalism Workshop. 4 Credits.
Capstone experience for journalism majors. In-depth study of advanced journalism skills or specific topic areas. Laboratory fee. Prerequisites: SMPA 2111 or SMPA 2111W, SMPA 2112, and SMPA 2113.

SMPA 4198. Special Honors Research Seminar. 3 Credits.
Open only to special honors candidates in political communication in the senior year. Prerequisite: SMPA 4199 and departmental approval.

SMPA 4199. Senior Seminar. 3 Credits.
Capstone course limited to SMPA majors.

SMPA 6201. Strategic Communications Skills. 1.5 Credit.
Specialized skills courses, such as writing for public affairs, video editing and production, political uses of social media, web development and strategy, speechwriting. Topics announced in the Schedule of Classes. May be repeated for credit, but up to a maximum of 6 credits.

SMPA 6202. Media Effects, Public Opinion, and Persuasion. 3 Credits.
Theories of media effects and persuasion. Institutional functions and individual effects of mediated communication. Impacts of different textual content and format on individual thinking and emotion; forces that shape content production.

SMPA 6203. Information, Technology, and Political Communication. 3 Credits.
Issues pertaining to the political uses of the Internet, social media, and other new media; the effect that new information technologies have on political life and the ways in which politics shape technology development.

SMPA 6204. Strategic Political Communication. 3 Credits.
Theory, techniques, and implications of strategic communication as employed by individuals, groups, organizations, and governments to advance their interests; applications to non-electoral politics and policymaking; use of political, psychological, sociological, and other processes; methodological considerations; domestic and international applications.

SMPA 6205. Media, Development, and Globalization. 3 Credits.
Theories of media and globalization. The changing role of communication media, including the Internet and other newer technologies as well as traditional books, film, newspapers, telephone, and satellite in establishing closer relationships and interdependencies among people, their cultures, and their organizations in various countries.

SMPA 6206. Advocacy Communication and Political Networks. 3 Credits.
Cross-disciplinary approaches to global changes in the nature of governance and collective action. The role of new technology, social movements, NGOs and transnational advocacy networks. Information campaigns and advocacy communication.

SMPA 6207. Political Persuasion and Public Opinion. 3 Credits.
Major theories and perspectives in public opinion and persuasion research. Information processing, psychological models applied to politics and media research (cognition, attitudes, resistance, heuristics), public opinion dynamics.

SMPA 6208. Politics and Public Relations Fundamentals. 3 Credits.
Basic knowledge of the skills to design, implement, and evaluate public relations activities. Case studies of public relations applied to politics. Techniques and tactics used by public relations professionals.

SMPA 6210. Media & Foreign Policy. 3 Credits.
The effects of U.S. media on U.S. and foreign governments, and of foreign media on the U.S.; effects of other countries' media on each other; the impact of the Internet, inexpensive global phoning, CNN, al Jazeera, and other newer technologies and networks on the stuff of international relations: diplomacy, military operations, trade negotiations.

SMPA 6220. Strategic Practicum. 3 Credits.
Design of strategy for an information and influence campaign. Research on issues and actors, identification of critical decision-making points and key constituencies, development of communication strategies more likely to achieve stated objectives of a campaign. Prerequisite: SMPA 6204. For students doing a strategic communication capstone project, this course replaces SMPA 6297.

SMPA 6230. Principles and Methods of Documentary Filmmaking. 6 Credits.
Analytical and practical exploration of the elements of documentary filmmaking. The genres of nonfiction filmmaking; fundamentals of film conceptualization, documentary screenwriting, story structure, and production theory; and basic practical elements of production. Admission by permission of instructor.

SMPA 6231. Documentary Filmmaking Practicum. 3 Credits.
Intensive practical experience in documentary film production. Students produce a 10–15-minute documentary film on a selected topic. Emphasis on major markers in film production: treatment and script writing, location shooting, Final Cut Pro editing, graphics, music, and final sound mix. Prerequisite: SMPA 6230 and permission of instructor.

SMPA 6241. Research Design. 3 Credits.
Design, applications, and limitations of quantitative research as applied to the field of media and strategic communication. Framing of research questions, identification of variables and formulation of hypotheses, measurement, sampling, data gathering techniques, and preparation of research reports. Brief exposure to qualitative research.

SMPA 6242. Analytics and Data Analysis for Strategic Communication. 3 Credits.
Familiarity with major data analytic and analysis techniques used by strategic communication practitioners. Topics covered include basic statistical analysis, multivariate regression, experiments, focus groups, and survey research. Prerequisites: an undergraduate statistics course.

SMPA 6250. Topics in Media Processes and Institutions. 3 Credits.
Topics address such issues as the history of media content, institutions, and process; impact of changing communication technology on culture; history and development of mass-produced culture; and professional ideology and practice of journalism. May be repeated for credit provided the topic differs.

SMPA 6270. Special Topics in Media and Public Affairs. 3 Credits.
Topics vary by semester. Consult the Schedule of Classes for more details.

SMPA 6272. Media Bias, Power, and Democracy. 3 Credits.
Consideration of the available scholarly evidence in order to develop a more sophisticated empirical and theoretical understanding of what constitutes media bias. How do we recognize and measure bias? Are there patterns in decisions about news coverage that indicate bias? Which political parties and economic interests benefit from patterns of news coverage?.

SMPA 6274. Media and War. 3 Credits.
Historic and contemporary examination of the media's role in wartime. Topics include covering war, the role of the media in generating support for foreign intervention, propaganda, effects of war coverage on public opinion, media and genocide, and public diplomacy. Ethical, philosophical and political implications of the media's role.

SMPA 6275. Public Diplomacy. 3 Credits.
The theory and practice of public diplomacy: informing, influencing, and establishing dialogue with international publics and institutions. A conceptual and historical examination of public diplomacy, current practices, and contemporary issues, including international information dissemination, educational and cultural exchange, and international broadcasting.

SMPA 6295. Internship. 3 Credits.
Students identify a suitable employer for an internship relevant to program themes and goals. Students must consult with the director of graduate studies before registering. Restricted to Permission of director of graduate studies required.

SMPA 6296. Directed Readings and Research. 3 Credits.
Independent research with SMPA faculty member. Must be approved in advance by supervising professor and director of graduate studies.

SMPA 6297. Capstone Project. 3 Credits.

SMPA 6298. Capstone Project. 3 Credits.

SMPA 6998. Thesis Research. 3 Credits.

SMPA 6999. Thesis Research. 3 Credits.

BACHELOR OF ARTS WITH A MAJOR IN JOURNALISM AND MASS COMMUNICATION

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Required courses (34 credits):		
PSC 1002	Introduction to American Politics and Government	
or PSC 1002W	Intro-American Politics & Govt	
STAT 1053	Introduction to Statistics in Social Science	
SMPA 2101	Journalism: Theory & Practice	
SMPA 2110W	Introduction to News Writing and Reporting (minimum grade of B required)	
SMPA 2111W	Advanced News Reporting	
SMPA 2112	Digital Media I: Introduction to Video Production	
SMPA 2113	Digital Media II: Introduction to Web Production and Social Media	
SMPA 2151	Research Methods	
SMPA 2152	Data Analysis for Journalism and Political Communication	
SMPA 2173	Media Law	
SMPA 3150	Journalism Ethics	
One required advanced writing/reporting course (3 credits) from the following:		
SMPA 3230	Reporting in the Digital Age	
SMPA 3235W	Broadcast News Writing	
SMPA 3242	Investigative Reporting	
Five additional courses (15-18 credits) from the advanced writing/reporting courses listed above or from the following:		
SMPA 2120	Public Opinion	
SMPA 2177	Media History	
SMPA 3193	Selected Topics in Journalism and Mass Communication Skills	
SMPA 3195	Selected Topics in Journalism and Mass Communication	
SMPA 3196	Independent Study	
SMPA 3197	Internship (Only one, three-credit internship can count toward the major)	
SMPA 3233	Photojournalism	
SMPA 3234	Editing and Design for Print and Web	
SMPA 3236W	Broadcast News Reporting	
SMPA 3240W	Washington Reporting	
SMPA 3241W	Campaign Reporting	
SMPA 3243W	Feature Writing	
SMPA 3244W	Narrative Journalism	
SMPA 3245W	Editorial & Persuasive Writing	
SMPA 3246	Specialized Reporting	
SMPA 3247	Documentary Production	
SMPA 3428	Media, Politics, and Government	
SMPA 3450	Social Media	
SMPA 3460	Race, Media & Politics	
SMPA 3463	Media Bias	
SMPA 3469	International Communication	
SMPA 3470	Comparative Media Systems	
SMPA 3471	Media in the Developing World	
SMPA 3472	Media and Foreign Policy	
SMPA 3475	Media Management	
SMPA 3476	Media, Technology, and Culture	
SMPA 3477	Information Technology and Politics	
SMPA 3479	Documentary	
SMPA 3480	The Future of Journalism	
SMPA 4198	Special Honors Research Seminar	
One capstone course (4 credits) from the following:		
SMPA 4180	Online Journalism Workshop	
SMPA 4181	Television News Workshop	
SMPA 4182	Specialized Journalism Workshop	

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must have attained a 3.7 GPA in all courses completed at GW and in all courses required for the major. Students intending to apply for Special Honors

must consult their advisor at the start of the senior year. Application must be made by the mid-point of the student's final semester (October 15 or March 15), and must include a letter of application and a portfolio of published or broadcast work. The journalism and mass communication faculty will evaluate the work on the basis of professional standards as outlined by the department. Students interested in pursuing Special Honors through writing a research thesis should consult their advisor.

BACHELOR OF ARTS WITH A MAJOR IN POLITICAL COMMUNICATION

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Required courses (30 credits):		
PSC 1001	Introduction to Comparative Politics	
or PSC 1003	Introduction to International Politics	
PSC 1002	Introduction to American Politics and Government	
STAT 1053	Introduction to Statistics in Social Science	
SMPA 2102	Introduction to Political Communication (which requires a minimum grade of C to remain in the major)	
SMPA 2110W	Introduction to News Writing and Reporting	
SMPA 2112	Digital Media I: Introduction to Video Production	
SMPA 2113	Digital Media II: Introduction to Web Production and Social Media	
SMPA 2151	Research Methods	
SMPA 2152	Data Analysis for Journalism and Political Communication	
SMPA 4199	Senior Seminar	
Electives		
Seven courses (21 credits) from the following:		
SMPA 2173	Media Law	
SMPA 3194	Selected Topics in Political Communication (May be repeated once for credit)	
SMPA 3196	Independent Study	
SMPA 3197	Internship (only one, 3-credit internship may be taken for credit toward the major)	
SMPA 3245W	Editorial & Persuasive Writing	
SMPA 3240W	Washington Reporting	
SMPA 3241W	Campaign Reporting	
SMPA 3350	Public Diplomacy	
SMPA 3352	Principles of Public Relations	
SMPA 3353	Strategic Political Communication	
SMPA 3354	Political Campaign Communication	
SMPA 3355	Campaign Advertising	
SMPA 3357	Political Speech Writing	
SMPA 3358	Strategic Practicum	
SMPA 3428	Media, Politics, and Government	
SMPA 3450	Social Media	
SMPA 3459	Language and Politics	
SMPA 3460	Race, Media & Politics	
SMPA 3461	Campaigns and Elections	
SMPA 3463	Media Bias	
SMPA 3469	International Communication	
SMPA 3470	Comparative Media Systems	
SMPA 3471	Media in the Developing World	
SMPA 3472	Media and Foreign Policy	
SMPA 3476	Media, Technology, and Culture	
SMPA 3477	Information Technology and Politics	
SMPA 4198	Special Honors Research Seminar	
Two political science (PSC) courses (6 credits) numbered 2000 or above		

Students must achieve specified grades in some courses. Consult the School of Media and Public Affairs (http://

smpa.gwu.edu) for particular grade and course sequencing requirements.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students with a 3.7 GPA in all courses completed at GW and in all courses required for the major may declare for Special Honors in political communication at the beginning of the senior year. Students take SMPA 4199 Senior Seminar in the first semester of the senior year and SMPA 4198 Special Honors Research Seminar in the second semester. To achieve Special Honors, the student must maintain the required GPA and present a successful oral defense of a research paper prepared for the Honors Research Seminar before a committee that includes the seminar instructor and two other faculty members nominated by the student and approved by the seminar instructor.

COMBINED BACHELOR OF ARTS AND MASTER OF ARTS AND BACHELOR OF ARTS AND MASTER OF PROFESSIONAL STUDIES

REQUIREMENTS

The combined bachelor of arts and master of arts (B.A./M.A.) and bachelor of arts and master of professional studies (B.A./M.P.S.) degree programs allow students to double-count a specified number of credits of graduate course work toward both the B.A. and the M.A. degrees. Interested students should consult their advisor.

Combined Bachelor of Arts in an SMPA major and Master of Arts in the field of media and strategic communication

Visit the program website (http://smpa.gwu.edu/combined-degree-programs) for additional information.

Combined Bachelor of Arts in an SMPA major and Master of Professional Studies in the field of political management

Visit the program website (http://smpa.gwu.edu/combined-degree-programs) for additional information.

DUAL BACHELOR OF ARTS AND MASTER OF ARTS DEGREE PROGRAMS

Combined Programs

Bachelor of Arts in SMPA major and Master of Arts in the field of Media and Strategic Communication

The School of Media and Public Affairs offers a combined degree for students who wish to pursue the study of strategic political communication in greater depth and attain a higher level of skill and credentials before entering the job market. The Master's in Media and Strategic Communication (http://smpa.gwu.edu/node/167) is designed for students interested in media and strategic political communication. Students gain a full understanding of how political actors use communication, as well as the history and theory behind how various forms of communication affect the operation of both governmental and non-governmental organizations.

SMPA undergraduate majors are able to accelerate the M.A. degree by double counting nine credits toward both the undergraduate and graduate degrees -- providing substantial tuition savings and reducing the necessary credits for a master's degree to 27 credits. This comes out to seven additional three credit classes, plus six credits towards a capstone project or thesis.

Applicants must have at least a 3.5 overall GPA and apply to the combined degree program in the second semester of their junior year.

Students do not need to take the GRE to apply for the combined degree program.

Taking additional M.A. courses as an undergraduate: In some cases, a student may have completed all undergraduate credit requirements (including double counted graduate level course work) as a result of AP or transfer credits. If such a student wants to take additional graduate level course work towards the graduate degree while still an undergraduate, a petition must be submitted to the Office of Undergraduate Studies (http://advising.columbian.gwu.edu) before enrolling in the additional graduate courses; no requests for retroactive credit will be approved. Please be aware that taking graduate level course work at the undergraduate level may affect the student's financial aid; student should address questions to the Office of Student Financial Assistance (http://financialaid.gwu.edu).

Bachelor of Arts in SMPA major and Master of Professional Studies in the field of Political Management

The School of Media and Public Affairs and The Graduate School of Political Management (GSPM) offer a dual degree B.A./M.P.S. program designed for high-quality undergraduate students who are interested in careers in the field of Political Management (http://gspm.gwu.edu/node/120). This combined degree program, by allowing the counting of credits for several courses towards both programs, permits both degrees to

be granted in a shorter time and at lower cost than if both programs were pursued separately. This option is available only to George Washington University students.

Application to the combined degree program may be made by a SMPA undergraduate student in the third year of study. Admission to the combined degree program allows the student to substitute two Political Management (https://gspm.gwu.edu/node/120) courses for the requirements of the SMPA undergraduate degree. The student will graduate from the Columbian College of Arts and Sciences with a B.A. in Political Communication or a B.A. in Journalism and Mass Communication, then continue to pursue a M.P.S. in Political Management (https://gspm.gwu.edu/node/120) at The Graduate School of Political Management.

REQUIREMENTS

There are special admission policies for the combined degree program and per CCAS policy, students must attain a minimum grade (B) in the graduate level courses in order for them to count toward the MA program. Students apply to the combined degree program in the second semester of their junior year and begin taking courses in their senior year. Interested students should consult their advisor and the director of graduate studies and apply to the dual degree program

Curricular Requirements for the completion of the Bachelor of Arts with a major in journalism and mass communication or the Bachelor of Arts with a major in political communication degree programs

In the last year of the Bachelor of Arts program, students in the combined degree program will take 9 credits as follows which will count toward the Bachelor of Arts and the Master of Arts:

SMPA 6204	Strategic Political Communication

Six additional elective credits chosen from the following:

SMPA 6208	Politics and Public Relations Fundamentals
SMPA 6201	Strategic Communications Skills
SMPA 6205	Media, Development, and Globalization
SMPA 6210	Media & Foreign Policy
SMPA 6203	Information, Technology, and Political Communication
SMPA 6206	Advocacy Communication and Political Networks
SMPA 6275	Public Diplomacy
SMPA 6250	Topics in Media Processes and Institutions
SMPA 6270	Special Topics in Media and Public Affairs
SMPA 6272	Media Bias, Power, and Democracy
SMPA 6274	Media and War

NOTE Students must choose the additional elective credits in consultation with their advisor and may not take a course that is substantially similar to one already taken at the undergraduate level. The elective options are basically any MA course except the research methods courses, practicum and capstone which must be taken once full time in the MA program.

Combined degree students do NOT take SMPA 6202. Instead they will take 15 credits of electives for the MA degree and 12 credits of core courses. It is assumed they have the information that is taught in SMPA 6202 as part of their undergraduate degree.

Curricular Requirements for the completion of the Master of Arts program in media and strategic communications

Core courses (12 credits)

SMPA 6204	Strategic Political Communication
SMPA 6208	Politics and Public Relations Fundamentals
SMPA 6241	Research Design
SMPA 6242	Analytics and Data Analysis for Strategic Communication

Strategic communication skills courses (3 credits)

SMPA 6201	Strategic Communications Skills

These 1.5 credit courses can be repeated with different topics to reach the required three credits. Additional SMPA 6201 courses can be taken for elective credit. Courses include classes such as: video production/using digital media; political use of social media; web development and strategy; speechwriting; editorial and persuasive writing, crisis communication.

Elective courses (15 credits)

Students complete 5 courses/15 credits of electives tailored to their individual interests. Electives can be taken in both SMPA and other departments. Examples of elective courses include:

SMPA 6205	Media, Development, and Globalization
SMPA 6210	Media & Foreign Policy

SMPA 6203	Information, Technology, and Political Communication
SMPA 6206	Advocacy Communication and Political Networks
SMPA 6275	Public Diplomacy
SMPA 6250	Topics in Media Processes and Institutions
SMPA 6220	Strategic Practicum
Capstone (6 credits)	
Students complete 6 additional credits in one of the following ways, as approved by the advisor:	
(1) Writing a research thesis	
SMPA 6998	Thesis Research
SMPA 6999	Thesis Research
(2) Completing a supervised in-depth media project	
SMPA 6297	Capstone Project
SMPA 6298	Capstone Project
or (3) Writing a supervised strategic communication project addressed to solving a client's communication-related problem	
SMPA 6220	Strategic Practicum
SMPA 6298	Capstone Project

MINOR IN JOURNALISM AND MASS COMMUNICATION

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Required

SMPA 1050	Media in a Free Society
SMPA 2110W	Introduction to News Writing and Reporting
9 credits from the following:	
SMPA 2111W	Advanced News Reporting
SMPA 3230	Reporting in the Digital Age
SMPA 3232	Online Journalism Workshop
SMPA 3233	Photojournalism
SMPA 3234	Editing and Design
SMPA 3235	Broadcast News Writing
SMPA 3235W	Broadcast News Writing
SMPA 3236W	Broadcast News Reporting
SMPA 3237W	Broadcast News Studio Production
SMPA 3238	Television Magazine
SMPA 3239	Television News Practicum
SMPA 3240W	Washington Reporting
SMPA 3241W	Campaign Reporting
SMPA 3242	Investigative Reporting
SMPA 3243W	Feature Writing
SMPA 3244W	Narrative Journalism
SMPA 3245W	Editorial & Persuasive Writing
SMPA 3246	Specialized Reporting
SMPA 3246W	Specialized Reporting
SMPA 3247	Documentary Production
SMPA 3193	Selected Topics in Journalism and Mass Communication Skills
SMPA 3197	Internship (Students are limited to 3 credits of SMPA 3197 toward the minor)
3 credits from the following:	
SMPA 2173	Media Law
SMPA 2177	Media History
SMPA 3428	Media, Politics & Government
SMPA 3450	Social Media
SMPA 3469	International Communication
SMPA 3470	Comparative Media Systems
SMPA 3471	Media in the Developing World
SMPA 3472	Media and Foreign Policy
SMPA 3474	Electronic Media Policy
SMPA 3475	Media Management
SMPA 3476	Media, Technology, and Culture

SMPA 3479	Documentary
SMPA 3480	The Future of Journalism
SMPA 3195	Selected Topics in Journalism and Mass Communication

MASTER OF ARTS IN THE FIELD OF MEDIA AND STRATEGIC COMMUNICATION

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

36 credits, including,18 credits in required courses, 12 credits in elective courses, and 6 credits in capstone courses.

Code	Title	Credits
Required*		
SMPA 6202	Media Effects, Public Opinion, and Persuasion	
SMPA 6204	Strategic Political Communication	
SMPA 6208	Politics and Public Relations Fundamentals	
SMPA 6241	Research Design	
SMPA 6242	Analytics and Data Analysis for Strategic Communication	
SMPA 6201	Strategic Communications Skills (taken twice for a total of three credits) **	
Electives†		
12 credits of elective courses selected with the approval of the advisor.		
Capstone††		
6 credits in one of three options selected with the approval of the advisor.		
Research thesis		
SMPA 6998 & SMPA 6999	Thesis Research and Thesis Research	
Media project		
SMPA 6297 & SMPA 6298	Capstone Project and Capstone Project	
Strategic communication project		
SMPA 6220 & SMPA 6298	Strategic Practicum and Capstone Project	

*On the basis of academic or professional preparation, students may petition to waive any required course with substitution of another approved course.

**Taken on different topics.

† Students may take an additional 3 credits of SMPA 6201 Strategic Communications Skills as electives. Students who select the strategic communication capstone option may not count SMPA 6220 Strategic Practicum as an elective.

With permission of the advisor, a limited number of upper-division undergraduate courses may be taken for graduate credit; additional course work is required.

††Students should consult with their advisor regarding the capstone in the second semester of the program.

MUSEUM STUDIES

Columbian College of Arts and Sciences offers an interdepartmental program leading to the degree of master of arts in the field of museum studies. Courses in museum studies are supplemented by additional courses offered by departments such as American Studies, Anthropology, History, Educational Leadership, Fine Arts and Art History, Interior Architecture and Design, and Theatre and Dance.

The program is designed for those who seek a deepening of their primary academic interest along with training in the broad range of talents required in the successful operation of museums. The goal of the program is to produce graduates who are prepared to assume museum positions that require both scholarship and functional skills.

Students whose career interests are primarily in museum education should refer to the Master of Arts in Teaching (p. 530) under the Graduate School of Education and Human Development.

Graduate certificates (http://bulletin.gwu.edu/arts-sciences/museum-studies/#certificatetext) in museum studies, exhibit design, and museum collections management and care are offered as well.

GRADUATE

Master's program

- Master of Arts in the field of museum studies (p. 306)

CERTIFICATE

- Graduate certificate in museum studies
- Graduate certificate in exhibit design
- Graduate certificate in museum collections management and care (p. 307)

FACULTY

Committee on Museum Studies M. Coughlin, M. Morris-Shannon, K.S. Rice (*Director*), L. Schiavo, J. Wetenhall

Associate Professors M. Morris-Shannon

Assistant Professors M. Coughlin, K.S. Rice, L.B. Schiavo

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MSTD 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details. Restricted to First-year students in CCAS.

MSTD 6101. Museum Management. 3 Credits.
Overall operation of the museum: legal status of the museum and its obligations to the public; governance, staffing, policymaking as a nonprofit organization. Theory applied to practical situations.

MSTD 6102. NonProfit Fiscal Management. 3 Credits.
Basic concepts of general accounting; fund accounting for nonprofit organizations; budgets and budget systems; use of the budget as a management tool; long-range planning; income sources; other financial management concepts.

MSTD 6103. Leading Change. 3 Credits.
Leadership challenges and styles as they relate to organizational change efforts. Case studies of museums undergoing change; best practices in leadership at all levels of the museum.

MSTD 6104. Managing People and Projects. 3 Credits.
Organizational development and modern management concepts as applied to museums. Managing people in the organization; the importance of project management systems to museum administration.

MSTD 6105. Museum Fundraising. 3 Credits.
Introductory topics in museum fundraising, including sources of funds, best practices and approaches, annual funds and capital campaigns, and the internal management of the fundraising effort. Restricted to graduate students.

MSTD 6201. Introduction to Museum Collections. 3 Credits.
Establishing collection management policies. Laws, regulations, conventions, and codes that affect acquisitions; deaccessions, loans, and collection care; accountability; and access problems.

MSTD 6202. Museum Collections Management. 3 Credits.
The implementation of collections policies: establishing and managing collections, management procedures and systems, documentation of collections, records preservation, collections access and storage, handling, packing and shipping, and inventory control.

MSTD 6203. Preventive Conservation Concepts. 3 Credits.
Historical development of preventive conservation in museums, conservation ethics, team approaches to conservation, interactions of various materials with agents of deterioration. Basics of materials testing, preparation of condition reports, choosing museum storage and exhibition materials, and risk assessment. Same as ANTH 6203 and AH 6286.

MSTD 6204. Preventive Conservation Techniques. 3 Credits.
Practical applications of preventive conservation of materials, monitoring environmental conditions, conducting risk assessments, evaluation of exhibit and storage areas; developing plans, policies, and procedures for collections care; grant proposal preparation for collections care initiatives. Same as ANTH 6204 and AH 6287.

MSTD 6205. Archival Practice. 3 Credits.
An introduction for museum professionals to the core ideas and practices of archivists and archival institutions. Restricted to graduate students.

MSTD 6301. Museum Exhibitions: Curatorial Research. 3 Credits.
Museum research from a curatorial point of view, with emphasis on exhibit theory and practice. Research techniques, information sources, and script production.

MSTD 6302. Museum Exhibition Design. 3 Credits.
The processes of research, conceptualization, planning, and evaluation from a designer's point of view. Focus is on individual projects with some group collaboration. The designer's vocabulary, visual thinking, design documentation, and specifications.

MSTD 6303. Advanced Exhibition Design. 3 Credits.
The processes of research, conceptualization, planning, and evaluation from a designer's point of view. Focus is on individual projects with some group collaboration. The designer's vocabulary, visual thinking, design documentation, and specifications.

MSTD 6304. MuseumExhibitDevelopment. 3 Credits.
Research techniques; information sources; script production from a content perspective.

MSTD 6305. Visitor Perspectives: Museum Evaluation in Exhibitions. 3 Credits.
Theory and practice of museum evaluation, especially as related to exhibition development. (Same as EDUC 6706).

MSTD 6306. Race, Gender, Sexuality, and the Museum. 3 Credits.
Exploration of the role that museums play in the construction, reification, and representation of ideas about race and gender. Restricted to graduate students.

MSTD 6403. Museums and Digital Technology. 3 Credits.
The history and impact of digital technology in modern museum practice; variety of uses and functions of digital technology in modern museums; effects of culture on technology adoption; basic digital strategy and user experience skills. Restricted to graduate students.

MSTD 6501. Museum Internship. 1-3 Credits.
Individual work experience in museums of the Washington area and possibly elsewhere. Each student should make arrangements with the Museum Studies Program staff. Museum internships are supervised by one or more members of the cooperating museum staff in the areas of museum management, object care and conservation, and exhibiting.

MSTD 6502. Directed Research. 3 Credits.
Individual research on special topics in the museum field. Topics must be approved by the director of the Museum Studies Program. May be repeated for credit.

MSTD 6601. Special Topics. 3 Credits.
May be repeated for credit provided the topic differs.

MSTD 6701. MuseumHist&Theory. 3 Credits.
Museums viewed from historical, philosophical, and practical perspectives. Examination and comparison of types of collecting organizations. Analysis of contemporary studies on the status of museums and their public programs.

MSTD 6702. Museums and the Public: Exhibiting Culture. 3 Credits.
An introduction to the wide range of problems, possibilities, and choices that are part of the cultural landscape of how museums interact with their audiences through public programs. (Same as ANTH 6202).

MASTER OF ARTS IN THE FIELD OF MUSEUM STUDIES

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

42 credits, including 6 credits in required courses and 36 credits in elective courses, and successful completion of a master's comprehensive examination.

Code	Title	Credits
Required		
MSTD 6101	Museum Management	
MSTD 6201	Introduction to Museum Collections	
Electives		
Elective courses must include the following:		
A minimum of 12 credits in an academic core discipline such as American studies, anthropology, biological sciences, hominid paleobiology, history, or an appropriate interdisciplinary combination.*		
A minimum of 15 credits of courses in museum studies that concern such functions as museum administration, collections management, exhibiting, and object care and conservation.		
A minimum of 6 credits in museum internships in the Washington, D.C. area or elsewhere.		
Other requirements		
Successful completion of a master's comprehensive examination.		

*A formal concentration in art history in the Department of Fine Arts and Art History is possible.

GRADUATE CERTIFICATE IN EXHIBIT DESIGN

The graduate certificate in exhibit design is offered by the Museum Studies Program in collaboration with the Department of Theatre and Dance and the Interior Architecture and Design Program.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the Museum Studies Program (http://museumstudies.columbian.gwu.edu) website for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in elective courses.

Code	Title	Credits
Electives		
IAD 6205	Interior Materials	
IAD 6210	Sketching Architecture and Interiors	
MSTD 6302	Museum Exhibition Design	
MSTD 6203	Preventive Conservation Concepts	
MSTD 6204	Preventive Conservation Techniques	
MSTD 6501	Museum Internship	
TRDA 1330	Basics of Production Design	
TRDA 6331	Intermediate Lighting Design	
TRDA 6335	Intermediate Scene Design	
TRDA 6340	Period Styles	
TRDA 6344	Production Drafting	
TRDA 6348	Techniques in Design Presentation	

GRADUATE CERTIFICATE IN MUSEUM COLLECTIONS MANAGEMENT AND CARE

The 12-credit graduate certificate in museum collections management and care is offered in a distance learning format to qualified domestic applicants who have museum experience and staff-level access to a museum and its collection.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the Museum Studies Program (http://museumstudies.columbian.gwu.edu) website for additional information.

REQUIREMENTS

The following requirements must be met: 12 credits in required courses.

Code	Title	Credits
Required		
MSTD 6201	Introduction to Museum Collections	
MSTD 6202	Museum Collections Management	
MSTD 6203	Preventive Conservation Concepts	
MSTD 6204	Preventive Conservation Techniques	

GRADUATE CERTIFICATE IN MUSEUM STUDIES

The 18-credit graduate certificate in museum studies is intended primarily for international museum professionals who wish to study museum administration, collections management, or exhibition development in the United States; this certificate is also available to U.S. students who hold at least a master's degree in an appropriate subject.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 12 credits in elective courses and a 6-credit internship.

Code	Title	Credits
Required		
12 credits from the following		
MSTD 6101	Museum Management	
MSTD 6102	NonProfit Fiscal Management	
MSTD 6103	Leading Change	
MSTD 6104	Managing People and Projects	
MSTD 6201	Introduction to Museum Collections	
MSTD 6202	Museum Collections Management	
MSTD 6203	Preventive Conservation Concepts	
MSTD 6204	Preventive Conservation Techniques	
MSTD 6301	Museum Exhibitions: Curatorial Research	
MSTD 6302	Museum Exhibition Design	
MSTD 6303	Advanced Exhibition Design	
MSTD 6304	MuseumExhibitDevelopment	
MSTD 6305	Visitor Perspectives: Museum Evaluation in Exhibitions	
MSTD 6701	MuseumHist&Theory	
MSTD 6702	Museums and the Public: Exhibiting Culture	
MSTD 6710	Museums and Technology	
Internship requirement:		
MSTD 6501	Museum Internship (taken for 6 credits)	

MUSIC

The music program within the Columbian College of Arts and Sciences offers a broad base for understanding music as an art form and as a social, economic, and political practice. All students, regardless of their major, may perform in vocal, instrumental jazz, and chamber music groups; in choruses, orchestras, and bands; and in opera and musical theater productions.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in music (p. 312)

Minors

- Minor in music (p. 313)
- Minor in jazz studies (p. 312)

FACULTY

Associate Professors K. Ahlquist, D. Boyce, B. Fritz

Assistant Professors R. Baker (*Chair*), E. Montague

Adjunct Professors J. Albertson (*Guitar*), R. Birch (*Trumpet*), F.B. Conlon (*Piano*), B. Dahlman (*Piano*), M. Findley (*Violin*), P. Fraize (*Jazz Performance/Saxophone*), S. Hilmy (*Electronic Studio*), T. Konstantinov (*Piano*), J.D. Levy (*Jazz*), C. Lornell, M. Peris (*Piano*), M. Scarlett (*Voice*)

Adjunct Instructor G. Becker (*Choral*)

Professorial Lecturers L. Barnet (*Cello*), G. Cho (Piano), N. D'Alimonte (*Orchestra*), M. Duhagon (Classical Guitar), G. Galvin (Voice), L. Helgert, C. Humphries (Voice), J. Krash (*Literature*), G. Luce (Viola), P. O'Donnell (Piano), M. Orlando (Piano), J. Ozment (Jazz Piano), B. Rice, B. Richardson (Cello), R. Shapiro (Violin), N. Tavani (Violin), M. Von Villas (*Opera*), J. Watson (Piano)

Lecturers H. Burney (*Jazz Bass*), J. Connell (Percussion), G. Corella (*Tuba*), A. Crockett (*Voice*), E. Dirksen (Bassoon), E. Drennen (*Jazz Violin*), S.M. Fearing (*French Horn*), L. Ferguson (*Clarinet*), E. Field (*Violin*), J. Gascho (*Harpsichord*), E. Guenther (*Pipe Organ*), D. Jones (*Clarinet*), J. Koczela (*Bass*), C. Stabile-Libelo (*Oboe*), A. Lucini (*Latin Percussion*), R. Ocampo (*Voice*), A. Reiff (*Voice*), D. Sciannella (*Trombone*), B.R. Seidman (*Harp*), S. Stang (*Flute*), U. Wassertzug (*Viola*), S. Wellman (*Voice*), T. Wilson (*Jazz Trumpet*)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Performance Study

Performance study courses are offered both fall and spring, and may be repeated for credit. Music majors and minors, Presidential Arts Scholarship (http://departments.columbian.gwu.edu/music/scholarships) students, and other students with skills or potential appropriate to the department's select ensembles are eligible for private lessons. Eligibility and placement for students new to private performance study are determined at a placement fair held at the beginning of each semester. For courses numbered in the 1500s, students may not register in the same semester for both the 1- and 2-credit course in the same instrument or in voice. Some performance study courses include individual lessons and require a supplementary fee. Supplementary fees for private performance courses are nonrefundable after the first two weeks of the fall and spring semesters; consult the Music Department (http://departments.columbian.gwu.edu/music) for details. The supplementary fee is waived during the fall and spring semesters for full-time music majors and minors and for music Presidential Scholars in the Arts (http://departments.columbian.gwu.edu/music/scholarships).

Required practice: a minimum of three hours a week for 1-credit courses and six hours a week for 2-credit courses.

MUS 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

MUS 1061. Instrumental Ensemble. 1 Credit.
Chamber ensemble groups are approved by audition. Section numbers are .11 guitar ensemble, .12 percussion ensemble, .13 jazz combo, .14 keyboard ensemble, .15 string ensemble, .16 woodwind ensemble, .17 brass ensemble, .18 Baroque ensemble, .19 Latin band, .20 blues band.

MUS 1071. Jazz Band. 1 Credit.
Preparation and performance of classic and contemporary "big band" literature. Prerequisite: audition before director.

MUS 1081. Orchestra. 0-1 Credits.
Preparation and performance of orchestral literature. Prerequisite: audition before director.

MUS 1083. University Band. 0-1 Credits.
Consisting of two ensembles: The University Symphonic Band and GW Colonial Brass. See schedule of classes for section information. Audition before director required.

MUS 1091. University Singers. 0-1 Credits.
Preparation and performance of choral literature. Prerequisite: audition before director. Section .10 is University Singers; Section .11 is Chamber Choir.

MUS 1093. University Singers/Chamber Choir. 1 Credit.
Preparation and performance of choral literature.Section .10 is University Singers; Section .11 is Chamber Choir. Prerequisite: audition before director.

MUS 1095. Vocal Theater Workshop. 1 Credit.
Development of body awareness for the stage, acting improvisations, and character development. Scenes chosen from the opera, operetta, and musical theater repertoire. Musical coaching, use of makeup, and audition preparation.

MUS 1101. Elements of Music Theory. 2 Credits.
Notation, scales, keys, intervals, terms, rhythms, and chord structure and progression. Introduction to music literature, with emphasis on rudimentary aural analysis.

MUS 1102. Comprehensive Musicianship I. 3 Credits.
Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard. Prerequisite: MUS 1101, MUS 1051.

MUS 1103. Music in the Western World. 3 Credits.
Introductory history of musical styles, related to listening; study of music materials and media. Not open to music majors.

MUS 1104. Topics in Music. 3 Credits.
A rotating set of classes; topics may include: American music, a composer, the opera, and musical life in Washington, D.C.

MUS 1105. Introduction to Musical Thought and Practice. 3 Credits.
Introduction to concepts, methods, and practices that guide the study and performance of music. Old and new paradigms of musical thought are subject to discussion and critical investigation.

MUS 1106. Introduction to Musical Performance and Experience. 3 Credits.
Through discussion, writing, and performance, students engage with issues such as the putative transcendent character of music, the false divisions between interpretation, improvisation, and composition, and the impact of modernity on expressive culture. Placing their own processes of musical decision making within these conceptual frames allows students to interrogate and develop their performative and social selves. Restricted to Register for this course in the Music department.

MUS 1107. Music of the World. 3 Credits.
Introduction to music in culture through comparative study of music from a variety of cultures worldwide.

MUS 1108. History of Jazz. 3 Credits.
Introduction to the styles, composers, and performers of jazz music from its origins to the present.

MUS 1151. Conducting. 3 Credits.
Technique of conducting, score reading, rehearsal procedures, analysis, and interpretation of selected musical literature; practice in conducting. Prerequisite: MUS 2101.

MUS 1511. Piano. 1 Credit.

MUS 1512. Piano. 2 Credits.

MUS 1513. Voice. 1 Credit.

MUS 1514. Voice. 2 Credits.

MUS 1515. Organ. 1 Credit.

MUS 1516. Organ. 2 Credits.

MUS 1517. Classical Guitar. 1 Credit.

MUS 1518. Classical Guitar. 2 Credits.

MUS 1519. Violin. 1 Credit.

MUS 1520. Violin. 2 Credits.

MUS 1521. Viola. 1 Credit.

MUS 1522. Viola. 2 Credits.

MUS 1523. Cello. 1 Credit.

MUS 1524. Cello. 2 Credits.

MUS 1525. Bass. 1 Credit.

MUS 1526. Bass. 2 Credits.

MUS 1527. Flute. 1 Credit.

MUS 1528. Flute. 2 Credits.

MUS 1529. Recorder. 1 Credit.

MUS 1530. Recorder. 2 Credits.

MUS 1531. Oboe. 1 Credit.

MUS 1532. Oboe. 2 Credits.

MUS 1533. Clarinet. 1 Credit.

MUS 1534. Clarinet. 2 Credits.

MUS 1535. Saxophone. 1 Credit.

MUS 1536. Saxophone. 2 Credits.

MUS 1537. Bassoon. 1 Credit.

MUS 1538. Bassoon. 2 Credits.

MUS 1539. French Horn. 1 Credit.

MUS 1540. French Horn. 2 Credits.

MUS 1541. Trumpet. 1 Credit.

MUS 1542. Trumpet. 2 Credits.

MUS 1543. Trombone. 1 Credit.

MUS 1544. Trombone. 2 Credits.

MUS 1545. Tuba. 1 Credit.

MUS 1546. Tuba. 2 Credits.

MUS 1547. Harp. 1 Credit.

MUS 1548. Harp. 2 Credits.

MUS 1549. Percussion. 1 Credit.

MUS 1550. Percussion. 2 Credits.

MUS 1555. Lute. 1 Credit.

MUS 1556. Lute. 2 Credits.

MUS 1557. Harpsichord. 1 Credit.

MUS 1558. Harpsichord. 2 Credits.

MUS 1571. Jazz Perf. Tech. 1 Credit.

MUS 1572. Jazz Performance Techniques. 2 Credits.

MUS 2012. Piano. 2 Credits.
Prerequisite: Open by examination.

MUS 2014. Voice. 2 Credits.
Prerequisite: Open by examination.

MUS 2016. Organ. 2 Credits.
Prerequisite: Open by examination.

MUS 2018. Classical Guitar. 2 Credits.
Prerequisite: Open by examination.

MUS 2020. Violin. 2 Credits.
Prerequisite: Open by examination.

MUS 2022. Viola. 2 Credits.
Prerequisite: Open by examination.

MUS 2024. Cello. 2 Credits.
Prerequisite: Open by examination.

MUS 2026. Bass. 2 Credits.
Prerequisite: Open by examination.

MUS 2028. Flute. 2 Credits.
Prerequisite: Open by examination.

MUS 2030. Recorder. 2 Credits.
Prerequisite: Open by examination.

MUS 2032. Oboe. 2 Credits.
Prerequisite: Open by examination.

MUS 2034. Clarinet. 2 Credits.
Prerequisite: Open by examination.

MUS 2036. Saxophone. 2 Credits.
Prerequisite: Open by examination.

MUS 2038. Bassoon. 2 Credits.
Prerequisite: Open by examination.

MUS 2040. French Horn. 2 Credits.
Prerequisite: Open by examination.

MUS 2042. Trumpet. 2 Credits.
Prerequisite: Open by examination.

MUS 2044. Trombone. 2 Credits.
Prerequisite: Open by examination.

MUS 2046. Tuba. 2 Credits.
Prerequisite: Open by examination.

MUS 2048. Harp. 2 Credits.
Prerequisite: Open by examination.

MUS 2050. Percussion. 2 Credits.
Prerequisite: Open by examination.

MUS 2058. Harpsichord. 2 Credits.
Prerequisite: Open by examination.

MUS 2071. Jazz Performance Techniques. 1-3 Credits.

MUS 2072. Jazz Performance Techniques. 2 Credits.
Prerequisite: Open by examination.

MUS 2101. Harmony. 3 Credits.
Study of tonal harmonic practice from Baroque, Classical, Romantic, and 20th-century repertoires. Concurrent registration in the weekly keyboard lab is required.
Prerequisite: MUS 1102.

MUS 2102. Comprehensive Musicianship II. 3 Credits.
Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard. Prerequisite: MUS 2101.

MUS 2105. Introduction to Ethnomusicology. 3 Credits.
Models of understanding music as a cultural endeavor. Application and critique of models in the design and execution of student independent field research. Same as ANTH 2505. Prerequisite: MUS 1101 or ANTH 1002 or ANTH 1004 or permission of instructor.

MUS 2105W. Introduction to Ethnomusicology. 3 Credits.
Models of understanding music as a cultural endeavor. Application and critique of models in the design and execution of student independent field research. Same as ANTH 2505. Prerequisite: MUS 1101 or ANTH 1002 or ANTH 1004 or permission of instructor.

MUS 2106. Music History III: 20th-Century Art Traditions. 3 Credits.
Western musical traditions and styles since Romanticism and approaches to music as art in contemporary society. Prerequisite: MUS 1101.

MUS 2122. Music in the US. 3 Credits.
History of music and musical life in the United States, emphasizing relationships among traditions of diverse origin. Prerequisite: MUS 1101 or permission of instructor.

MUS 2122W. Music in the US. 3 Credits.
History of music and musical life in the United States, emphasizing relationships among traditions of diverse origin. Prerequisite: MUS 1101 or permission of instructor. Same as MUS 2122.

MUS 2123. Musical Cultures of Black Americans. 3 Credits.
Musical genres and styles developed by African Americans since Reconstruction in their historical and cultural contexts. Emphasis on black musical contributions to the cultural life of Washington, D.C.

MUS 2134. Composition. 3 Credits.
Introduction to 21st-century compositional practice; concepts of post-tonal analysis; emphasis on style studies and original student works. May be repeated for credit. Prerequisite: MUS 2101.

MUS 2140. Pedagogy. 3 Credits.
Principles, materials, and methods of teaching in selected areas. Prerequisite: permission of instructor.

MUS 2173. Comprehensive Musicianship for Jazz. 2 Credits.
Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard, with emphasis given to skills associated with jazz performance. Prerequisite: MUS 1102.

MUS 2174. Introduction to Jazz Harmony. 3 Credits.
Analysis and composition of tunes in jazz/pop styles. Study of rhythmic characteristics, voice-leading, and chord/scale relationships within a jazz context. Prerequisite: MUS 1102.

MUS 2318. Orchestral Instrument. 2 Credits.
Prerequisite: Open by examination.

MUS 2661. Electronic and Computer Music I. 3 Credits.
Fundamental electronic and computer music concepts. Analog and digital sound synthesis techniques and theory, MIDI, studio recording techniques, signal processing, properties of sound, acoustics and psycho-acoustics, history and aesthetics. Laboratory fee.

MUS 2662. Electronic and Computer Music II. 3 Credits.
Continuation of MUS 2661. Fundamental electronic and computer music concepts. Analog and digital sound synthesis techniques and theory, MIDI, studio recording techniques, signal processing, properties of sound, acoustics and psycho-acoustics, history and aesthetics. Laboratory fee. MUS 2661 is prerequisite to MUS 2662.

MUS 3126. Music History I: Antiquity through Early Baroque. 3 Credits.
The development of Western European music from its earliest traceable roots to the end of the early, experimental Baroque period. Prerequisite: MUS 1102 and sophomore standing.

MUS 3127. Music History II: The Tonal Era. 3 Credits.
Styles, structures, social foundations and aesthetic change in European music of the late 17th through the late 19th centuries. Prerequisite: MUS 1102.

MUS 3127W. Music History II: Tonal Era. 3 Credits.
Styles, structures, social foundations and aesthetic change in European music of the late 17th through the late 19th centuries. Prerequisite: MUS 1102.

MUS 3139. Form and Analysis. 3 Credits.
Analysis of musical forms in representative musical literature. Prerequisite: MUS 2101 .

MUS 3139W. Form and Analysis. 3 Credits.
Analysis of musical forms in representative musical literature. Prerequisite: MUS 2101 .

MUS 3174. Topics in Music Theory and Composition. 3 Credits.
A seminar on variable topics in the discipline of music theory, analysis, and composition. Topics may include analysis of post-tonal music, advanced jazz arranging, analysis of 14th-century vocal music, developments in extended instrumental techniques since 1950. Prerequisites depend on the topic; consult the department.

MUS 3175. Topics in Music History and Literature. 3 Credits.
A seminar on variable topics in music history and literature in all traditions and styles. Topics may include German musical Romanticism, introduction to critical musicology, the music of Josquin des Prez, and vernacular music in Washington, D.C. Prerequisites depend on the topic; consult the department.

MUS 3175W. Topics in Music History & Lit. 3 Credits.
A seminar on variable topics in music history and literature in all traditions and styles. Topics may include German musical Romanticism, introduction to critical musicology, the music of Josquin des Prez, and vernacular music in Washington, D.C. Prerequisites depend on the topic; consult the department.

MUS 4085. Advanced Performance Study. 3 Credits.
Prerequisite: Open by examination.

MUS 4184. Advanced Composition. 3 Credits.
Private instruction in composition in tutorial format. Prerequisite: MUS 2134.

MUS 4198. Senior Seminar. 1 Credit.
Restricted to music majors in their final spring semester. Presentations of required senior projects in process; readings and discussion to place the projects in a broader musical and intellectual context. Corequisite: MUS 4199 or any upper-division private performance study course.

MUS 4199. Independent Research. 1-4 Credits.
Under the guidance of an assigned instructor. May be repeated for credit. Majors in their senior year take MUS 4198 as a corequisite.

MUS 4199W. Independent Research. 1-4 Credits.
Under the guidance of an assigned instructor. May be repeated for credit. Majors in their senior year take MUS 4198 as a corequisite.

BACHELOR OF ARTS WITH A MAJOR IN MUSIC

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Required courses in the major		
MUS 1102	Comprehensive Musicianship I	
MUS 2101	Harmony	
MUS 2106	Music History III: 20th-Century Art Traditions	
One of the following		
MUS 3126	Music History I: Antiquity through Early Baroque	
MUS 3127	Music History II: The Tonal Era	
Electives		
1) 15 credits in courses in the following groupings: MUS 1100-1199, MUS 2100-2199, MUS 3100-3199, and MUS 4100-4199. These are to include:		
a) A maximum of 6 credits in courses in the MUS 1100-1199 grouping.		
b) A minimum of 3 credits in the 3100-3199 or 4100-4199 groupings.		
2) 4 credits in courses selected from the following groupings: MUS 1000-1099 (ensembles), MUS 1500-1599, MUS 2000-2099, and MUS 2500-2599 (private study).		
3) 6 credits in unrestricted electives selected from courses offered by the Music Department.		
Senior Experience		
MUS 4198	Senior Seminar	
MUS 4085	Senior Capstone Project	

All majors are expected to attend departmental lectures, master classes, and concerts, as appropriate.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors in music, a student must maintain a 3.5 grade-point average in music courses and at least a 3.0 average overall. The student must complete the required senior independent project for at least 3 credits with a minimum grade of *A–*.

MINOR IN JAZZ STUDIES

REQUIREMENTS

The following requirements must be fulfilled: 23 credits, including 17 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
MUS 1101	Elements of Music Theory	
MUS 1102	Comprehensive Musicianship I	
MUS 1108	History of Jazz	
MUS 2173	Comprehensive Musicianship for Jazz	
MUS 1051	Class Piano for Music Majors and Minors	
MUS 2174	Introduction to Jazz Harmony	

MUS 2661	Electronic and Computer Music I
4 credits of jazz performance techniques from the following:	
MUS 1571	Jazz Perf. Tech
MUS 1572	Jazz Performance Techniques
MUS 2072	Jazz Performance Techniques
2 credits of ensemble participation:	
MUS 1061	Instrumental Ensemble
or MUS 1071	Jazz Band

All minors are expected to attend departmental lectures, master classes, and concerts, as appropriate.

MINOR IN MUSIC

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including one 3-credit required course and 15 credits in elective courses.

Code	Title	Credits
Required		
MUS 1102	Comprehensive Musicianship I	
Electives		
Two courses (5–6 credits) from among the MUS 1100, MUS 2100, and MUS 3100 groupings; only one course in the 1100 grouping may be counted toward this requirement.		
Additional electives selected from among all Music (MUS) courses, including academic, performance study, and ensemble courses.		

All minors are expected to attend departmental lectures, master classes, and concerts, as appropriate.

ORGANIZATIONAL SCIENCES AND COMMUNICATION

The Department of Organizational Sciences and Communication provides a multidisciplinary home for faculty and undergraduate, master's, and doctoral students interested in the study, interpretation, and improvement of organizational and communication phenomena. The department seeks to increase understanding of communication and organizations at the individual, interpersonal, group, organizational, societal, and global levels, by incorporating a variety of epistemological and methodological approaches. The department comprises three programs:

Communication

The Communication program explores how people constitute and share meaning in an abstract world. Current curricular offerings probe communication events as media-bound occurrences, studying the verbal and nonverbal, oral or written, live or mass media nature of communication phenomena. A major in communication, two minors (communication and organizational communication), and a master's degree in communication management are offered.

Organizational Sciences

Centered within a social systems framework, Organizational Sciences offers undergraduate and graduate programs that focus on the for-profit, nonprofit, government, military, service, and other sectors. The premise of the program's offerings is that success comes with a deep understanding of the theory and practice underlying individual and organizational effectiveness. Major, minor, and master's degree in organizational sciences are offered.

I/O Psychology (industrial and organizational psychology)

I/O Psychology offers a doctoral program in areas such as personnel selection, training and development, work motivation, leadership, and work teams. The program of study is designed in accordance with guidelines established by the Society for Industrial and Organizational Psychology.

In addition, the Department of Organizational Sciences and Communication, through the Columbian College of Arts and Sciences, offers an interdisciplinary program leading to the degree of master of arts in leadership education and development (LEAD) to a cohort of designated officers from the U.S. Naval Academy (USNA). The Department awards the degree in partnership with the Department of Human and Organizational Learning in GW's Graduate School of Education and Human Development, and with the Division of Leadership at USNA.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in communication (p. 314)
- Bachelor of Arts with a major in organizational sciences (p. 315)

Minors

- Minor in communication (p. 317)
- Minor in organizational communication (p. 317)
- Minor in organizational sciences (p. 318)

GRADUATE

Master's programs

- Master of Arts in the field of communication management (p. 318)
- Master of Arts in the field of leadership education and development (p. 320)
- Master of Arts in the field of organizational sciences (p. 320)

Doctoral program

- Doctor of Philosophy in the field of psychology with a concentration in industrial/ organizational psychology (p. 321)

FACULTY

Professors L. Offermann (*Chair*), C. Warren

Associate Professors T. Behrend, D.P. Costanza, G. Debebe, M. Liu

Assistant Professors J.C. Miller, J. Mote, N. Olsen, K. Pariera

Adjunct Professor K. Froemling, J. Procopio, T. Suiter, C. Wood

Professorial Lecturers Q. Ahmed, M.A. DiMola, D. Getter, T. Hayes, E. Hoffman, L. Karimova, J. MacDoniels, D. Minionis, E. van Iersel

Adjunct Instructor C.M. Clapp

Lecturers S. Bergman, D. Coultice-Christian, S. Ewing, P. Hanke, C. Kennedy, M. Lally, G. Nair, B. Piatt, P. Schechter, P. Scott, D. Tighe, S. Tomasovic, A. Weiner

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Within the Department of Organizational Sciences and Communication, any course counted toward the major may not also be counted toward the minor. Students taking more than one minor in the department may not double-count electives.

- Communication (COMM) (p. 1076)
- Organizational Sciences (ORSC) (p. 1365)

BACHELOR OF ARTS WITH A MAJOR IN COMMUNICATION

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Required (21 credits):		
COMM 1025	Introduction to Communication Studies	
COMM 1040	Public Communication	
COMM 1041	Interpersonal Communication	
COMM 2100	Communication Theory	
COMM 3110	Research Methods-Communication	
COMM 4150	Persuasion	
COMM 4199W	Senior Seminar	
Electives		
Six additional Communication (COMM) courses (18 credits) at the 2000 level or above.		
A second major or minor other than Organizational Communication and/or Health and Wellness		

SPECIAL HONORS

Students may graduate with Special Honors if they meet the following criteria:

1. Special Honors requirements stated under University Regulations;
2. Selection to Lambda Pi Eta, the National Communication Association Honor Society, which maintains a chapter in the GW Communication Program (i.e., open to majors who have completed a minimum of 24 hours in communication course work, who hold a grade-point average of 3.3 in communication courses and a grade-point average of 3.0 overall, and who are recommended by a majority of the full-time communication faculty); and
3. A grade of *A-* or above on the thesis required in COMM 4199W Senior Seminar.

BACHELOR OF ARTS WITH A MAJOR IN ORGANIZATIONAL SCIENCES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

If a grade below C- is earned in ORSC 1109 Introduction to Organizational Sciences, the course must be repeated; credit for the repetition will not count toward the degree.

Code	Title	Credits
Required courses (24 credits):		
COMM 3170	Organizational Communication	
ECON 1011	Principles of Economics I	
or ECON 1012	Principles of Economics II	
ORSC 1109	Introduction to Organizational Sciences	
ORSC 2046	Global Organizations	
ORSC 2544	Industrial/Organizational Psychology	
ORSC 4161	Research Methods in Organizational Sciences	
ORSC 4197W	Senior Research Seminar	
STAT 1053	Introduction to Statistics in Social Science	
Five courses (15 credits) from the following:		
ORSC 2116	Leading Change	
ORSC 2123	Negotiation and Conflict Resolution	
ORSC 2143	Leadership and Performance	
ORSC 2560	Group Dynamics	
ORSC 3141	Strategy in Organizations	
ORSC 3159	Extreme Decisions	
ORSC 3165	Organizational Network Analysis	
ORSC 3190	Special Topics	
ORSC 4195	Independent Study	
Two courses (6 credits) both within the same department, from the following:		
AMST 2010	Early American Cultural History	
or HIST 2010	Early American Cultural History	
AMST 2011	Modern American Cultural History	
or HIST 2011	Modern American Cultural History	
AMST 2020	Washington, D.C.: History, Culture, and Politics	
or AMST 2020W	Washington, D.C.: History, Culture, and Politics	
or HIST 2020	Washington, D.C.: History, Culture, and Politics	
or HIST 2020W	Washington, D.C.: History, Culture, and Politics	
AMST 2320	U.S. Media and Cultural History	
or HIST 2320	U.S. Media and Cultural History	
AMST 2490	Themes in U.S. Cultural History	
or AMST 2490W	Themes in U.S. Cultural History	
or HIST 2490	Themes in U.S. Cultural History	
or HIST 2490W	Themes in U.S. Cultural History	
AMST 2520	American Architecture I	
or AH 2154	American Architecture I	
AMST 2521	American Architecture II	
or AH 2155	American Architecture II	
AMST 2533	Material Culture in America	
or ANTH 2533	Material Culture in America	
AMST 3900	Critiquing Culture	
AMST 3901	Examining America	
ANTH 2008	Foundations of Anthropological Thought	
or ANTH 2008W	Foundations of Anthropology	
ANTH 3501	Anthropology of Development	
ANTH 3502	Cultural Ecology	
ANTH 3503	Psychological Anthropology	
ANTH 3506	Politics, Ethnicity, and Nationalism	
ANTH 3513	Anthropology of Human Rights	
or ANTH 3513W	Anthropology of Human Rights	
ANTH 3531	Methods in Sociocultural Anthropology	

ANTH 3601	Language, Culture, and Cognition
or LING 3601	Language, Culture, and Cognition
ANTH 3802	Human Cultural Beginnings
or ANTH 3802W	Human Cultural Beginnings
COMM 2120	Small Group Communication
COMM 2140	Nonverbal Behavior
COMM 3171	Professional Communication
COMM 3173	Communication in a Mediated World
COMM 3174	Intercultural Communication
COMM 3176	Issues and Image Management
COMM 4150	Persuasion
ECON 2136	Environmental and Natural Resource Economics
ECON 2157	Urban and Regional Economics
ECON 2158	Industrial Organization
ECON 2159	Government Regulation of the Economy
ECON 2169	Introduction to the Economy of China
ECON 2170	Intro to the Economy of Japan
ECON 2180	Survey of International Economics
ECON 3142	Labor Economics
ECON 3165	Economics of Human Resources
ECON 3191	Game Theory
GEOG 2110	Climate and Human Ecology
GEOG 2127	Population Geography
GEOG 2133	People, Land, and Food
GEOG 2134	Energy Resources
or GEOG 2134W	Energy Resources
GEOG 2140	Cities and Societies
or GEOG 2140W	Urban Geography
GEOG 2141	Cities in the Developing World
GEOG 2148	Economic Geography
GEOG 3120	World Regional Geography
GEOG 3143	Urban Sustainability
or GEOG 3143W	Urban Sustainability
HIST 2321	U.S. History, 1890-1945
HIST 2340	US Diplomatic History
or HIST 2340W	US Diplomatic History
HIST 2440	The American City
or AMST 2440	The American City
HIST 3033	War and the Military in American Society from the Revolution to the Gulf War
or AMST 3324	US Urban History
HIST 3324	US Urban History
or AMST 3324	US Urban History
HIST 3351	U.S. Social History
or AMST 3351	U.S. Social History
HIST 3366	Immigration, Ethnicity, and the American Experience
or HIST 3366W	Immigration, Ethnicity, and the American Experience
HIST 3611	History of Modern China
HIST 3621	History of Modern Japan
PSC 2216	The American Presidency
PSC 2217	Executive Branch Politics
or PPPA 2117	Executive Branch Politics
PSC 2218	Legislative Politics
or PSC 2218W	Legislative Politics
PSC 2219	Political Parties and Interest Groups
PSC 2224	Issues in Domestic Public Policy
PSC 2228	Media, Politics, and Government
PSC 2229	Media and Politics
PSC 2334	Global Perspectives on Democracy
PSC 2337	Development Politics
PSC 2439	International Political Economy
PSC 2442	International Organizations
PSC 2449	International Security Politics

PSYC 2012	Social Psychology
PSYC 2014	Cognitive Psychology
PSYC 3125	Cross-Cultural Psychology
PSYC 3131	Psychological Tests
PSYC 3153	Social Psychology of Learning and Motivation
PSYC 3156	Psychology of Attitudes and Public Opinion
PSYC 4193	Seminar in Industrial/Organizational Psychology
SOC 2104	Contemporary Sociological Theory
or SOC 2104W	Contemporary Sociological Theory
SOC 2105	Social Problems in American Society
or SOC 2105W	SocialProblems in Amer Society
SOC 2161	Sociology of Complex Organizations
SOC 2163	Sociology of Education
SOC 2168	Economic Sociology
SOC 2173	Social Movements
SOC 2175	Sociology of Sex and Gender
or SOC 2175W	Sociology of Sex and Gender

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, the student must submit an application to the department before the beginning of the senior year, take a graduate-level seminar with permission of the department, complete an independent study project in ORSC 4195 Independent Study with a grade of *A*– or better, and have a grade-point average of 3.5 for courses required in the major.

MINOR IN COMMUNICATION

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required courses (6 credits):		
COMM 1025	Introduction to Communication Studies	
COMM 1040	Public Communication	
or COMM 1041	Interpersonal Communication	
Two courses (6 credits) from the following:		
COMM 2120	Small Group Communication	
COMM 3171	Professional Communication	
COMM 3174	Intercultural Communication	
COMM 4150	Persuasion	
Two courses (6 credits) from the following:		
COMM 2000	Sophomore Colloquium	
COMM 2100	Communication Theory	
COMM 2140	Nonverbal Behavior	
COMM 2162	Sociology of the Family	
or SOC 2162	Sociology of the Family	
COMM 3110	Research Methods-Communication	
COMM 3170	Organizational Communication	
COMM 3172	Health Communication	
COMM 3173	Communication in a Mediated World	
COMM 3176	Issues and Image Management	
COMM 3180	Communication Criticism	
COMM 3190	Selected Topics	
COMM 4196	Independent Study	
COMM 4197	Internship	

MINOR IN ORGANIZATIONAL COMMUNICATION

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 12 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required (12 credits):		
COMM 3170	Organizational Communication	
COMM 3171	Professional Communication	
ORSC 1109	Introduction to Organizational Sciences	

ORSC 2544	Industrial/Organizational Psychology
Electives	
Two courses (6 credits) from the following:	
COMM 2120	Small Group Communication
COMM 2140	Nonverbal Behavior
COMM 3173	Communication in a Mediated World
COMM 3174	Intercultural Communication
COMM 3175	Strategic Communication
COMM 3176	Issues and Image Management
COMM 3177	Corporate Ethical Communication
ORSC 2046	Global Organizations
ORSC 2560	Group Dynamics

This minor is not available to communication majors.

MINOR IN ORGANIZATIONAL SCIENCES

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required (6 credits):		
ORSC 1109	Introduction to Organizational Sciences	
ORSC 2046	Global Organizations	
Electives		
Four courses (12 credits) from the following:		
ORSC 2116	Leading Change	
ORSC 2123	Negotiation and Conflict Resolution	
ORSC 2143	Leadership and Performance	
ORSC 2544	Industrial/Organizational Psychology	
ORSC 2560	Group Dynamics	
ORSC 3141	Strategy in Organizations	
ORSC 3159	Extreme Decisions	
ORSC 3165	Organizational Network Analysis	
ORSC 3190	Special Topics	
COMM 3170	Organizational Communication	
COMM 3171	Professional Communication	
COMM 3173	Communication in a Mediated World	
PSYC 4193	Seminar in Industrial/Organizational Psychology	

MASTER OF ARTS IN THE FIELD OF COMMUNICATION MANAGEMENT

The Communication Program in the Department of Organizational Sciences and Communication offers an interdisciplinary program leading to the degree of master of arts in the field of communication management. Communication management explores systematic planning, implementing, monitoring, and revising of communication messages and processes (including technology and networks) within and across organizations. The program is designed to meet the needs of a diverse pool of students with varying career aspirations in this growing field. The curriculum provides advanced instruction in:

1. Analyzing and developing strategies to enhance communication management functions in intercultural, organizational, public, and health contexts.
2. Activating critical thinking, and strategic oral and written communication skills, applicable across multiple communication contexts.
3. Planning, implementing, and actively facilitating communication management-related training and interventions to individuals, groups, and organizations in various contexts.
4. Preparing for admission to doctoral programs in communication and related disciplines (such as international affairs, organizational sciences, public health).

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

30 credits, including 15 credits in required courses, one 3-credit methods course, and 12 credits accruing from one of the following options: thesis option (6 credits in thesis, 3 credits from the COMM electives list, and 3 credits from the non-COMM electives list); or non-thesis option (6 credits from the COMM electives list and 6 credits from the non-COMM electives list).

Code	Title	Credits
Required		
COMM 6150	Persuasion	
or ORSC 6224	Persuasion & Negotiation	
COMM 6100	Communication Theory	
COMM 6110	Research Methods in Communication	
COMM 6171	Professional Communication	
COMM 6190	Leadership Communication	
Methods courses		
One of the following:		
STAT 6104	Statistics in Management, Administration, and Policy Studies	
DNSC 6202	Mathematics and Statistics for Management	
PUBH 6264	Quantitative Methods	
PUBH 6504	Social and Behavioral Science Research Methods	
PUBH 8417	Qualitative Research Methods and Analysis	
EDUC 8122	Qualitative Research Methods	
PSYC 8257	Current Topics in Social Psychology	
Required for the Thesis Option		
COMM 6199	Master's Thesis (taken for six credits)	
Electives		
One of the following for the thesis option or two for the non-thesis option, as approved by the advisor:		
COMM 6174	Intercultural Communication	
COMM 6172	Health Communication	
COMM 6242	Organizational Communication and Conflict Management	
or ORSC 6242	Organizational Communication and Conflict Management	
COMM 6165	Organizational and Communication Networks	
COMM 6189	Intercultural Negotiation	
ORSC 6243	Sem:Leadership-Complex Organzt	
COMM 6196	Independent Study	
One of the following for the thesis option or two for the non-thesis option, as approved by the advisor:		
ANTH 6506	Topics in Medical Anthropology	
DNSC 6247	Organization, Management, and Leadership	
DNSC 6290	Special Topics (Communication Strategy in Project Management)	
EDUC 6530	Intercultural Campus Ldrshp	
HOL 6704	Leadership in Organizations	
IAFF 6171	Introduction to Conflict Resolution	
IBUS 6201	International Marketing	
IBUS 6401	International Business Strategy	
MGT 6210	Leading Teams	
MGT 6215	Conflict Management and Negotiations	
ORSC 6212	Current Issues in Personnel Testing and Selection	
ORSC 6214	Personnel Training and Performance Appraisal Systems	
PMGT 6404	Principled Political Leadership	
PMGT 6402	Applied Political Communications	
PSYC 8243	Seminar: Psychology of Leadership in Organizations	
PSYC 8248	Research Applications to Organizational Intervention and Change	
PUBH 6247	Design of Health Studies	
PUBH 6431	Global Health Communication Strategies and Skills	
PUBH 6500	Planning and Implementing Health Promotion Programs	
PUBH 6501	Program Evaluation	
PUBH 6503	Introduction to Public Health Communication & Marketing	
PUBH 6570	AdvPublHlthComm: Theory & Prac	
SMPA 6202	Media Effects, Public Opinion, and Persuasion	
SMPA 6204	Strategic Political Communication	

MASTER OF ARTS IN THE FIELD OF LEADERSHIP EDUCATION AND DEVELOPMENT

The Department of Organizational Sciences and Communication, part of the Columbian College of Arts and Sciences, offers an interdisciplinary degree program leading to the degree of master of arts in leadership education and development (LEAD) to a cohort of designated officers from the U.S. Naval Academy (USNA). The Department awards the degree in partnership with the Department of Human and Organizational Learning in GW's Graduate School of Education and Human Development, and with the Division of Leadership at the USNA.

Students complete the 45-credit program in one year across three academic terms (a summer session and fall and spring semesters). These credits are delivered through 14 courses and a research capstone—GW teaches 30 of the 45 credits and the USNA teaches the remaining 15 credits.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

45 credits, including 30 credits taken at GW and 15 credits taken at the U.S. Naval Academy (USNA)

Code	Title	Credits
Required		
COMM 6171	Professional Communication	
COMM 6242	Organizational Communication and Conflict Management	
HOL 6701	Adult Learning	
HOL 6702	Organizational Change I	
HOL 6704	Leadership in Organizations	
HOL 6742	Design of Adult Learning Interventions	
HOL 6746	Work Groups and Teams in Organizations	
LEAD 6001	The Academy and the Brigade *	
LEAD 6003	Foundations of Moral Reasoning *	
LEAD 6004	LEAD Fellows Teaching Practicum *	
LEAD 6005	LEAD Fellows Counseling Practicum *	
LEAD 6006	LEAD Research Capstone *	
ORSC 6209	Management Systems	
ORSC 6245	Seminar: Organizational Behavior	
ORSC 8261	Research Methods in Organizational Sciences	

*Course taken at the USNA

MASTER OF ARTS IN THE FIELD OF ORGANIZATIONAL SCIENCES

The Department of Organizational Sciences and Communication offers an interdisciplinary program leading to the degree of master of arts in the field of organizational sciences. The program is designed for public, private, and nonprofit sector professionals who wish to increase their managerial competence, enhance their leadership ability, and improve their career potential. The curriculum provides knowledge and skills in the social and behavioral sciences.

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

36 credits, including 27 credits in required courses, 9 credits in elective courses, and successful completion of a master's comprehensive examination.

Code	Title	Credits
Required		
ORSC 6104	Statistics in Management, Administration, and Policy Studies	
ORSC 6209	Management Systems	
ORSC 6216	Theories and Management of Planned Change	
ORSC 6219	Managerial Economics	
ORSC 6241	Strategic Management and Policy Formation	
ORSC 6242	Organizational Communication and Conflict Management	
ORSC 6243	Sem:Leadership-Complex Organzt	
ORSC 6245	Seminar: Organizational Behavior	
ORSC 6259	Psychology of Individual and Group Decision Making	

Electives	
9 credits from the following:	
ORSC 6212	Current Issues in Personnel Testing and Selection
ORSC 6214	Personnel Training and Performance Appraisal Systems
ORSC 6217	Productivity and Human Performance
ORSC 6222	Theory and Practice of Compensation Management
ORSC 6223	Collective Bargaining
ORSC 6224	Persuasion & Negotiation
ORSC 6246	Comparative Management
ORSC 6248	Strategic Human Resource Planning
ORSC 6250	Leadership Coaching: Principles and Practices
ORSC 6251	Team Coaching and Facilitation
ORSC 6295	Directed Research
ORSC 6297	Special Topics
ORSC 6298	Directed Readings
Successful completion of a master's comprehensive examination.	

DOCTOR OF PHILOSOPHY IN THE FIELD OF PSYCHOLOGY WITH A CONCENTRATION IN INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY

The doctor of philosophy in the field of industrial/organizational (I/O) psychology degree program offers graduate training in areas such as personnel selection, training and development, work motivation, leadership, work teams, and organizational development. The program of study is designed in accordance with guidelines established by the Society for Industrial and Organizational Psychology (SIOP; Division 14, APA).

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy program (p. 82).

Code	Title	Credits
Required		
Methods/Statistics		
ORSC 8261	Research Methods in Organizational Sciences	
PSYC 8231	Development of Psychometric Instruments	
DNSC 6274	Statistical Modeling and Analysis	
DNSC 6275	Advanced Statistical Modeling and Analysis	
DNSC 6276	Exploratory and Multivariate Data Analysis	
Industrial/Organizational Core		
PSYC 8245	Seminar: Organizational Behavior	
PSYC 8246	Seminar: Personnel Evaluation Techniques	
PSYC 8243	Seminar: Psychology of Leadership in Organizations	
PSYC 8291	Theories of Organizational Behavior	
ORSC 6297	Special Topics (Individual Differences and Work Behavior)	
PSYC 8248	Research Applications to Organizational Intervention and Change	
or ORSC 6214	Personnel Training and Performance Appraisal Systems	
Psychology		
One of the following:		
PSYC 8253	Social Cognition *	
PSYC 8254	Social Influence *	
PSYC 8255	Attitudes and Attitude Change *	
One of the following:		
PSYC 8203	Experimental Foundations of Psychology: Learning, Memory, and Cognition *	

PSYC 8204	Experimental Foundations of Psychology: Biological Basis of Behavior
Electives**	
15 credits from the following:	
PSYC 8203	Experimental Foundations of Psychology: Learning, Memory, and Cognition *
PSYC 8204	Experimental Foundations of Psychology: Biological Basis of Behavior *
PSYC 8211	Community Psychology I
PSYC 8253	Social Cognition *
PSYC 8254	Social Influence *
PSYC 8255	Attitudes and Attitude Change *
PSYC 8256	Introduction to Survey Research
PSYC 8257	Current Topics in Social Psychology
ORSC 6209	Management Systems
ORSC 6216	Theories and Management of Planned Change
ORSC 6217	Productivity and Human Performance
ORSC 6241	Strategic Management and Policy Formation
ORSC 6242	Organizational Communication and Conflict Management
ORSC 6246	Comparative Management
ORSC 6248	Strategic Human Resource Planning
ECON 6219	Managerial Economics
STAT 2118	Regression Analysis
STAT 3119	Analysis of Variance
Dissertation	
PSYC 8998	Advanced Reading and Research (taken for 3 credits)
PSYC 8999	Dissertation Research (taken for a total of 12 credits)

*Can be used as an elective only if it is not chosen to fulfill breadth requirement.
** The list of electives is not exhaustive. At least 3 hours must be outside Psychology.

PEACE STUDIES

The Peace Studies (https://religion.columbian.gwu.edu/peace-studies-program) program is designed to strengthen a student's ability to explore the multiple meanings of peace, the relationship between peace and conflict, and the role of peace on local and global levels. The program fosters the study of peace in its philosophical and religious dimensions, as an important aspect of international affairs, and as a vital part of social, economic, and environmental justice. Peace Studies focuses on the examination of peace and conflict through the lens of the humanities and the liberal arts. Housed within the Department of Religion (http://religion.columbian.gwu.edu) in the Columbian College of Arts and Sciences, the Peace Studies program emphasizes the role of world religions in peace building and conflict resolution.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in peace studies (p. 323)

Minor

- Minor in peace studies (p. 325)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSTD 1010. Introduction to Peace Studies and Conflict Resolution. 3 Credits.
Major thinkers and themes in the field of peace studies and conflict resolution. Focus on philosophical and religious foundations of peace and justice movements in the 20th century. Examination of peace and conflict through an interdisciplinary lens and on personal, local, and international levels.

PSTD 3190. Capstone Seminar. 3 Credits.
Capstone seminar for peace studies majors and minors in their junior or senior year. Taken concurrently with a relevant internship or as part of a long-term research project to probe the relationship between peace studies and conflict resolution in practice and in theory.

PSTD 3191. Special Topics Peace Studies. 1-3 Credits.
Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

PSTD 3999. Independent Study. 1-3 Credits.
Tutorial designed by an undergraduate student under the guidance of a faculty member to pursue an academic topic in the area of Peace Studies and Conflict Resolution outside available course offerings.

BACHELOR OF ARTS WITH A MAJOR IN PEACE STUDIES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Two years of a single foreign language, or placement into the third year of a foreign language by examination, or one year each of two modern foreign languages.*

Code	Title	Credits
Required (6 credits)		
PSTD 1010	Introduction to Peace Studies and Conflict Resolution	
PSTD 3190	Capstone Seminar (Offered only in the fall semester)	
Electives (24 credits)		
Eight courses (24 credits) from the following categories as indicated:		
Philosophical and religious approaches to peace: two courses (6 credits)		
PHIL 2132	Social and Political Philosophy	
or PHIL 2132W	Social and Political Philosophy	
PHIL 2133	Philosophy and Nonviolence	
PHIL 2134	Philosophy of Human Rights	
REL 2921	The Religions Wage Peace	
REL 2922	Ethics and World Religions	
REL 3923	Violence and Peace in Judaism, Christianity, and Islam	
REL 3931	Interfaith Dialogue in World Religions	
REL 3990	Selected Topics in Religion	
PSTD 3099	Variable Topics	
PSTD 3191	Special Topics Peace Studies	
PSTD 3999	Independent Study	
International peace and conflict: three courses (9 credits)		
ANTH 3506	Politics, Ethnicity, and Nationalism	
COMM 3174	Intercultural Communication	
GEOG 2120	World Regional Geography	
GEOG 2146	Political Geography	
GEOG 2147	Military Geography	
GER 3185	Literary Voices and the Fascist Experience—in English	
HIST 2340	US Diplomatic History	
HIST 3033	War and the Military in American Society from the Revolution to the Gulf War	
HIST 3035	The United States and the Wars in Indochina, 1945–1975	
HIST 3045	International History of the Cold War	
HIST 3046	The Cold War in the Third World	
HIST 3061	The Holocaust	
HIST 3062	War Crimes Trials	
HIST 3332	History of American Foreign Policy Since World War II (Part 1)	
HIST 3333	History of American Foreign Policy Since World War II (Part 2)	
HIST 3334	The Nuclear Arms Race	
PSC 2334	Global Perspectives on Democracy	
PSC 2336	State-Society Relations in the Developing World	
PSC 2338	Nationalism	
PSC 2440	Theories of International Politics	
PSC 2442	International Organizations	
or PSC 2442W	International Organizations	
PSC 2444	Public International Law	
PSC 2446	U.S. Foreign Policy	
PSC 2449	International Security Politics	
or PSC 2449W	International Security Politics	
PSC 2451	Theory of War	

or PSC 2451W	Theory of War
PSC 2476	The Arab-Israeli Conflict
Social, economic, and environmental justice: three courses (9 credits)	
ANTH 3513	Anthropology of Human Rights
or ANTH 3513W	Anthropology of Human Rights
ECON 2136	Environmental and Natural Resource Economics
ECON 2151	Economic Development
or ECON 2151W	Economic Development
ECON 2167	Economics of Crime
ECON 3161	Public Finance: Expenditure Programs
GEOG 2133	People, Land, and Food
GEOG 2134	Energy Resources
GEOG 2136	Water Resources
GEOG 2148	Economic Geography
GEOG 3132	Environmental Quality and Management
GEOG 3143	Urban Sustainability
or GEOG 3143W	Urban Sustainability
GEOL 3131	Global Climate Change
GEOL 3193	Intro to Environmental Law
PHIL 2124	Philosophies of Disability
or PHIL 2124W	Philosophies of Disability
PHIL 2125	Philosophy of Race and Gender
or PHIL 2125W	Philosophy of Race and Gender
PHIL 2135	Ethics in Business and the Professions
PHIL 2281	Philosophy of the Environment
PSC 2108	Freedom and Equality
PSC 2221	African-American Politics
PSC 2225	Women and Politics
PSC 2240	Poverty, Welfare, and Work
PSC 2337	Development Politics
PSC 2367	Human Rights
or PSC 2367W	Human Rights
PSYC 3125	Cross-Cultural Psychology
PSYC 3126	Multicultural Psychology
or PSYC 3126W	Multicultural Psychology
PSYC 3151	Theory and Practice of Women's Leadership
PSYC 3154	Psychology of Crime and Violence
PSYC 3156	Psychology of Attitudes and Public Opinion
PSYC 3173	Community Psychology
PUBH 2114	Environment, Health, and Development
PUBH 2115	Health, Human Rights, and Displaced Persons
PUBH 3132	Health and Environment
PUBH 3133	Global Health & Development
PUBH 3150	Sustainable Energy & Env Hlth
SMPA 3460	Race, Media & Politics
SMPA 3471	Media in the Developing World
SMPA 3472	Media and Foreign Policy
SOC 2170	Class and Inequality in American Society
or SOC 2170W	Class/Inequality-Amer Society
SOC 2173	Social Movements
SOC 2175	Sociology of Sex and Gender
or SOC 2175W	Sociology of Sex and Gender
SOC 2177	Sociology of the Sex Industry
SOC 2179	Race and Minority Relations
SOC 2184	Violence and the Family

Special Topics courses may count toward the major with the approval of the Peace Studies Program Director.

*Students are encouraged to study abroad.

SPECIAL HONORS

Special Honors are awarded to students who meet the requirements stated under University Regulations, maintain a

grade-point average of 3.5, and receive a grade of *A–* or better in PSTD 3190 Peace Studies Seminar.

MINOR IN PEACE STUDIES

The following requirements must be fulfilled: 18 credits in courses in peace studies and related fields.

Code	Title	Credits
Required		
PSTD 1010	Introduction to Peace Studies and Conflict Resolution	
PSTD 3190	Capstone Seminar	
At least one course from each of the following three categories: *		
Philosophical and religious approaches to peace		
PHIL 2132	Social and Political Philosophy	
or PHIL 2132W	Social and Political Philosophy	
PHIL 2133	Philosophy and Nonviolence	
PHIL 2134	Philosophy of Human Rights	
REL 2921	The Religions Wage Peace	
REL 2922	Ethics and World Religions	
REL 3923	Violence and Peace in Judaism, Christianity, and Islam	
REL 3931	Interfaith Dialogue in World Religions	
REL 3990	Selected Topics in Religion	
PSTD 3099	Variable Topics	
PSTD 3191	Special Topics Peace Studies	
PSTD 3999	Independent Study	
International peace and conflict		
ANTH 3506	Politics, Ethnicity, and Nationalism	
ANTH 3812	The Aztec Empire	
COMM 3174	Intercultural Communication	
GEOG 2120	World Regional Geography	
GEOG 2146	Political Geography	
GEOG 2147	Military Geography	
GER 3185	Literary Voices and the Fascist Experience—in English	
HIST 2340	US Diplomatic History	
HIST 3033	War and the Military in American Society from the Revolution to the Gulf War	
HIST 3035	The United States and the Wars in Indochina, 1945–1975	
HIST 3045	International History of the Cold War	
HIST 3046	The Cold War in the Third World	
HIST 3061	The Holocaust	
HIST 3062	War Crimes Trials	
HIST 3332	History of American Foreign Policy Since World War II (Part 1)	
HIST 3333	History of American Foreign Policy Since World War II (Part 2)	
HIST 3334	The Nuclear Arms Race	
PSC 2334	Global Perspectives on Democracy	
PSC 2336	State–Society Relations in the Developing World	
PSC 2338	Nationalism	
PSC 2440	Theories of International Politics	
PSC 2442	International Organizations	
or PSC 2442W	International Organizations	
PSC 2444	Public International Law	
PSC 2446	U.S. Foreign Policy	
PSC 2449	International Security Politics	
PSC 2451	Theory of War	
or PSC 2451W	Theory of War	
PSC 2476	The Arab-Israeli Conflict	
Social, economic, and environmental justice		
ANTH 3513	Anthropology of Human Rights	
or ANTH 3513W	Anthropology of Human Rights	
ECON 2136	Environmental and Natural Resource Economics	
ECON 2151	Economic Development	
or ECON 2151W	Economic Development	

ECON 2167	Economics of Crime
ECON 3161	Public Finance: Expenditure Programs
GEOG 2133	People, Land, and Food
GEOG 2134	Energy Resources
GEOG 2136	Water Resources
GEOG 2148	Economic Geography
GEOG 3132	Environmental Quality and Management
GEOG 3143	Urban Sustainability
or GEOG 3143W	Urban Sustainability
GEOL 3131	Global Climate Change
GEOL 3193	Intro to Environmental Law
PHIL 2124	Philosophies of Disability
or PHIL 2124W	Philosophies of Disability
PHIL 2125	Philosophy of Race and Gender
or PHIL 2125W	Philosophy of Race and Gender
PHIL 2135	Ethics in Business and the Professions
PHIL 2281	Philosophy of the Environment
PSC 2108	Freedom and Equality
PSC 2221	African-American Politics
PSC 2225	Women and Politics
PSC 2240	Poverty, Welfare, and Work
PSC 2337	Development Politics
PSC 2367	Human Rights
or PSC 2367W	Human Rights
PSYC 3125	Cross-Cultural Psychology
PSYC 3126	Multicultural Psychology
or PSYC 3126W	Multicultural Psychology
PSYC 3151	Theory and Practice of Women's Leadership
PSYC 3154	Psychology of Crime and Violence
PSYC 3156	Psychology of Attitudes and Public Opinion
PSYC 3173	Community Psychology
PUBH 2114	Environment, Health, and Development
PUBH 2115	Health, Human Rights, and Displaced Persons
PUBH 3132	Health and Environment
PUBH 3133	Global Health & Development
PUBH 3150	Sustainable Energy & Env Hlth
SMPA 3460	Race, Media & Politics
SMPA 3471	Media in the Developing World
SMPA 3472	Media and Foreign Policy
SOC 2170	Class and Inequality in American Society
or SOC 2170W	Class/Inequality-Amer Society
SOC 2173	Social Movements
SOC 2175	Sociology of Sex and Gender
or SOC 2175W	Sociology of Sex and Gender
SOC 2177	Sociology of the Sex Industry
SOC 2179	Race and Minority Relations
SOC 2184	Violence and the Family
One additional elective	
An internship in a relevant agency may also count for 3 hours of credit, with advisor's prior approval, through the following:	
CCAS 2154	Elective Internship

* Lists of courses that can fulfill each category (http://religion.columbian.gwu.edu/undergraduate-academic-programs) are available in the Department of Religion.

PHILOSOPHY

From reading the works of Plato and Aristotle to studying logic and phenomenology, the Department of Philosophy provides a broad-based learning experience. One of the arts and humanities disciplines in the Columbian College of Arts and Sciences, the program also examines the intersection of philosophy with other subjects, including law, biomedicine, science, and politics.

Two options are offered for the major, both of which are designed to give a broad background in philosophy, but with somewhat different emphases. The first option reflects the traditional structure of the discipline and its subfields; it is especially (but not exclusively) recommended for those considering graduate study in philosophy. The second option

is designed for those primarily interested in the relationship of philosophy to public affairs.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in philosophy (p. 332)
- Bachelor of Arts with a major in philosophy (public affairs focus) (p. 332)
- Combined program (p. 343)

Minors

- Minor in philosophy (p. 345)
- Minor in logic (p. 344)
- Minor in applied ethics (p. 343)
- Minor in mind–brain studies (p. 344)

GRADUATE

Master's programs

- Master of Arts in the field of philosophy (p. 345)
- Master of Arts in the field of public policy with a concentration in philosophy and social policy (p. 346)

FACULTY

Professors R.P. Churchill, G. Weiss

Associate Professors J.C. Brand-Ballard, M. Friend, T. Zawidzki (*Chair*)

Assistant Professors L. Papish, M. Ralkowski, E.J. Saidel, J. Trullinger, V.C. Wills

Adjunct Professors A. Pedeferri, M. Sigrist, C. Venner

Affiliated Faculty D. Malone-France (UWP/Religion)

Professorial Lecturers S. Aas, C. Bassiri, R. Carr, M. Davis, L. Eby, D. Kirilov, L. Okster

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PHIL 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details. Restricted to First-year students in CCAS.

PHIL 1051. Introduction to Philosophy. 3 Credits.
Readings from major philosophers and study of their positions on the most basic questions of human life. Topics include such issues as: What is justice? What is knowledge? What is reality? Does God exist? What is the mind? Do humans have free will?.

PHIL 1062. Philosophy and Film. 3 Credits.
Philosophical problems and theories of perception, meaning, personal identity, and moral agency and their illustration in the context of cinema. Cinema and its derivatives (TV, video) as prime routes to experience of the natural and social worlds in an age of communication. Readings in classical and contemporary philosophy and in film theory; screening of a series of films.

PHIL 1153. The Meaning of Mind. 3 Credits.
Introductory course for students with no background in philosophy or the sciences of the mind. The central questions, assumptions, and hypotheses about the human mind. The nature of thought, consciousness, and self; knowledge of other minds; implications of the sciences of the mind for freedom of the will and responsibility; and the relationship between the mind and the brain.

PHIL 1193. Introduction to Existentialism. 3 Credits.
The philosophical themes of selfhood, mortality, authenticity, and ethical responsibility from an existentialist perspective, including the writings of Kierkegaard, Heidegger, Nietzsche, Camus, and Sartre. The place of existentialism in the history of philosophy.

PHIL 2045. Introduction to Logic. 3 Credits.
Introduction to informal logic, scientific argument, and formal logic. The informal logic component focuses on fallacies of reasoning and practical applications of logic. The formal logic component focuses on translation from English into propositional logic, truth tables, and proofs in propositional logic.

PHIL 2111. History of Ancient Philosophy. 3 Credits.
History of Western philosophy from the Pre-Socratics to the Stoics (6th century BCE to 1st century CE). Major emphasis on the writings of Plato and Aristotle. Among themes to be covered: knowledge and reality, political and moral philosophy.

PHIL 2111W. History of Ancient Philosophy. 3 Credits.
History of Western philosophy from the Pre-Socratics to the Stoics (6th century BCE to 1st century CE). Major emphasis on the writings of Plato and Aristotle. Among themes to be covered: knowledge and reality, political and moral philosophy.

PHIL 2112. History of Modern Philosophy. 3 Credits.
History of Western philosophy of the 16th through 18th centuries; Continental Rationalism and British Empiricism from the scientific revolution through the Enlightenment; major emphasis on Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume, and Kant. Prerequisite: PHIL 1051 .

PHIL 2124. Philosophies of Disability. 3 Credits.
Disability presents an intense and interesting challenge to traditional philosophical presuppositions and principles. This course examines various philosophical approaches to disability —historical, individual, and medical paradigms as well as those that rely on frameworks of social or human rights.

PHIL 2124W. Philosophies of Disability. 3 Credits.
Disability presents an intense and interesting challenge to traditional philosophical presuppositions and principles. This course examines various philosophical approaches to disability —historical, individual, and medical paradigms as well as those that rely on frameworks of social or human rights.

PHIL 2125. Philosophy of Race and Gender. 3 Credits.
A theoretical examination of the bodily, social, discursive, and political effects of patriarchy, racism, and classism.

PHIL 2125W. Philosophy of Race and Gender. 3 Credits.
A theoretical examination of the bodily, social, discursive, and political effects of patriarchy, racism, and classism.

PHIL 2131. Ethics: Theory and Applications. 3 Credits.
Examination of leading ethical theories (e.g., utilitarianism, deontology, virtue ethics), and methodology in ethics. Engagement with contemporary problems.

PHIL 2132. Social and Political Philosophy. 3 Credits.
Philosophical theories about how economic, political, legal, and cultural institutions should be arranged. Topics include the meaning and significance of liberty, the legitimate functions of government, the nature of rights, the moral significance of social inequality, and the meaning of democracy.

PHIL 2132W. Social and Political Philosophy. 3 Credits.
Philosophical theories about how economic, political, legal, and cultural institutions should be arranged. Topics include the meaning and significance of liberty, the legitimate functions of government, the nature of rights, the moral significance of social inequality, and the meaning of democracy.

PHIL 2133. Philosophy and Nonviolence. 3 Credits.
Violence and nonviolence in the personal and social struggle for meaningful, just, and peaceful existence; philosophical foundations of pacifism and nonviolent resistance in the thought of Tolstoy, Gandhi, King, and others; philosophical inquiry into war, terrorism, genocide, and ethnic conflict, as well as human rights, humanitarian intervention, and just war theory.

PHIL 2134. Philosophy of Human Rights. 3 Credits.
Conceptual, ethical, and theoretical analyses of human rights with emphasis on the justification of human rights, the debate over cultural relativism, and the application of human rights norms in domestic and global contexts.

PHIL 2135. Ethics in Business and the Professions. 3 Credits.
Ethical theories and basic concepts for analysis of moral issues arising in business and in professional practice.

PHIL 2136. Contemporary Issues in Ethics. 3 Credits.
Introduction to a range of debates in applied ethics, including both classic debates concerning topics such as the permissibility of abortion, animal treatment, and suicide as well as more current debates concerning our interactions with the environment and our obligations to the poor in a global context.

PHIL 2281. Philosophy of the Environment. 3 Credits.
Three models of environmental sustainability: the current paradigm in economic and cultural thinking (neoclassical economics); redistribution of resources toward greater global equity (a macroeconomic perspective); and de-growth in the developed economies (ecological economics). The models offer different perspectives on what environmental sustainability means and how it can impact the cultural, religious, moral, metaphysical, and existential situation.

PHIL 3100. Selected Topics. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

PHIL 3100W. Selected Topics. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

PHIL 3113. 19th-Century Philosophy. 3 Credits.
European philosophy of the 19th century, with major emphasis on Kant, Hegel, Schopenhauer, Kierkegaard, and Nietzsche. Prerequisite: PHIL 1051 .

PHIL 3121. Symbolic Logic. 3 Credits.
Analysis and assessment of deductive arguments, using propositional, predicate, and other logics; philosophical basis and implications of logical analysis; metatheory of logic; modal and non-standard logics. Prerequisite: Phil 1045 or permission of instructor.

PHIL 3142. Philosophy of Law. 3 Credits.
Systematic examination of fundamental concepts of law and jurisprudence; special emphasis on the relationship between law and morality.

PHIL 3142W. Philosophy of Law. 3 Credits.
Systematic examination of fundamental concepts of law and jurisprudence; special emphasis on the relationship between law and morality.

PHIL 3151. Philosophy and Science. 3 Credits.
Analysis of the structure and meaning of science, including scientific progress and theory change, objectivity in science, the drive for a unified science, and ways science relates to everyday understandings of the world. Attention given to various sciences, including physics, biology, and neuroscience. Prerequisite: PHIL 1051 or a 2000-level philosophy course.

PHIL 3151W. Philosophy and Science. 3 Credits.
Analysis of the structure and meaning of science, including scientific progress and theory change, objectivity in science, the drive for a unified science, and ways science relates to everyday understandings of the world. Attention given to various sciences, including physics, biology, and neuroscience. Prerequisite: PHIL 1051 or two semesters of college-level science.

PHIL 3152. Theory of Knowledge. 3 Credits.
Inquiry into the basis and structure of knowledge, the problems of skepticism and justification, the relations between subjectivity and objectivity, and the contributions of reason, sense experience, and language. Prerequisite: PHIL 1051 ; PHIL 2112 also recommended.

PHIL 3153. Mind, Brain, and Artificial Intelligence. 3 Credits.
Investigation of the nature of mind from a variety of perspectives, including neuroscience, cognitive psychology, and artificial intelligence, as well as traditional philosophy of mind. Possible additional topics include consciousness, mental disorders, animal minds, and the nature and meaning of dreams. Prerequisites: PHIL 1051 or PHIL 1153 or PHIL 2112 or permission of the instructor.

PHIL 3161. Philosophy and Literature. 3 Credits.
Critical investigation of the sociopolitical commitments that inform the practices of reading and writing as discussed by Sartre, Barthes, Foucault, and others. Focus on the development of existentialist themes, including authenticity, freedom, temporality, and death in the work of Kafka, Tolstoy, Mann, Woolf, and others.

PHIL 3162. Philosophy of Art. 3 Credits.
The problem of artistic representation and the nature of aesthetic experience as related to the creation, appreciation, and criticism of art. Special emphasis on nonrepresentational works of art and their interpretation. Prerequisite: PHIL 1051 or PHIL 2111 or PHIL 2112 or PHIL 3113.

PHIL 3162W. Philosophy of Art. 3 Credits.
The problem of artistic representation and the nature of aesthetic experience as related to the creation, appreciation, and criticism of art. Special emphasis on nonrepresentational works of art and their interpretation. Prerequisite: PHIL 1051 or PHIL 2111 or PHIL 2112 or PHIL 3113.

PHIL 3172. American Philosophy. 3 Credits.
A survey of American philosophical thought, focusing on the late 19th through mid-20th centuries. Covers American Pragmatism (Peirce, James, Dewey) in depth; other authors may include Thoreau, Emerson, Royce, Santayana, Mead, Quine, and Rorty.

PHIL 3172W. American Philosophy. 3 Credits.
A survey of American philosophical thought, focusing on the late 19th through mid-20th centuries. Covers American Pragmatism (Peirce, James, Dewey) in depth; other authors may include Thoreau, Emerson, Royce, Santayana, Mead, Quine, and Rorty.

PHIL 3251. Philosophy of Biology. 3 Credits.
An introduction to conceptual and methodological issues raised by contemporary biology, including teleology, reductionism, units of selection, the structure of evolutionary theory, genetics, taxonomy, and the nature of scientific explanation. Other issues may include the nature–nurture debate, creationism/intelligent design, the evolution of altruism, and the relevance of evolutionary theory to ethical questions.

PHIL 4192. Analytical Philosophy. 3 Credits.
The dominant movements of 20th-century Anglo-American philosophy, including logical positivism, British ordinary language philosophy, and neopragmatism, as represented by Russell, G.E. Moore, Wittgenstein, Ayer, Quine, Kripke, et al. Prerequisite: one other upper-division philosophy course (PHIL 2112 and PHIL 3121 recommended).

PHIL 4193. 20th-Century Continental Philosophy. 3 Credits.
An intensive, systematic introduction to the phenomenological and hermeneutic traditions in philosophy through some of their best-known representatives: Husserl, Heidegger, Gadamer, Sartre, Beauvoir, and Merleau-Ponty. Central topics of discussion include consciousness, anguish/anxiety, discourse, interpretation, the Other, death, and ambiguity. Prerequisite: PHIL 2112 or PHIL 3113.

PHIL 4193W. 20th-Century Continental Philosophy. 3 Credits.
An intensive, systematic introduction to the phenomenological and hermeneutic traditions in philosophy through some of their best-known representatives: Husserl, Heidegger, Gadamer, Sartre, Beauvoir, and Merleau-Ponty. Central topics of discussion include consciousness, anguish/anxiety, discourse, interpretation, the Other, death, and ambiguity. Prerequisites: PHIL 2112 or PHIL 3113.

PHIL 4195. Topics in Value Theory. 3 Credits.
Variable topics in ethics, political philosophy, aesthetics, and other subfields in normative philosophy. Prerequisite: one upper-division course on related subject matter or permission of the instructor.

PHIL 4195W. Topics in Value Theory. 3 Credits.
Various topics in ethics, political philosophy, aesthetics, and other subfields in normative philosophy, such as contemporary philosophy of religion. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

PHIL 4196. Topics in Theory of Knowledge. 3 Credits.
Variable topics in epistemology, philosophy of science and mathematics, philosophy of mind, and similar subfields. Prerequisite: one upper-division course on related subject matter or permission of the instructor.

PHIL 4198. Proseminar. 3 Credits.
Variable topics; preparation and presentation of a major research paper. Open only to philosophy majors in the junior and senior year as approved by major advisor. May be repeated for credit. Restricted to philosophy juniors and seniors only.

PHIL 4198W. Proseminar in Philosophy. 3 Credits.
Preparation and presentation of a major research paper. Open only to philosophy majors in the junior and senior year as approved by major advisor. May be repeated for credit provided the topic differs. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to philosophy juniors and seniors only.

PHIL 4199. Readings and Research. 1-3 Credits.
Independent study to be arranged with a faculty sponsor. Restricted to Departmental approval required.

PHIL 6201. Readings and Research. 3 Credits.
Advanced readings and reports. Investigation of special problems.

PHIL 6202. Readings and Research. 3 Credits.
Advanced readings and reports. Investigation of special problems.

PHIL 6211. Topics in the History of Ancient Philosophy. 3 Credits.
Topic announced in the Schedule of Classes. Restricted to For graduate students only.

PHIL 6212. Topics in the History of Modern Philosophy. 3 Credits.
Topic announced in the Schedule of Classes. Restricted to For graduate students only.

PHIL 6221. Advanced Logic. 3 Credits.
Intensive reading of a difficult text in an advanced logical system or a series of logical systems. Focus on analyzing reasoning under partial information, using the formal system to analyze fallacies of reasoning and analyzing quantum phenomena using the formal system. Restricted to For graduate students only. Recommended background: Good formal training in logic - propositional logic: natural deduction, tables and trees; first-order logic: language (translation from English), trees and natural deduction; some limitative results, eg, decidability, compactness, completeness, Lovenheim-Skolem properties, soundness, etc.

PHIL 6222. Philosophy of Mathematics. 3 Credits.
Examination of several philosophies of mathematics, with in-depth concentration on Field's "fictionalism." A fictionalist believes that all of the ontology of mathematics is favorably compared to a fictional object, so it does not literally exist. Students develop reactions to Field's philosophical position using the resources of alternative philosophical positions. Restricted to For graduate students only. Recommended background: Basic understanding of first-order logic.

PHIL 6223. Philosophy of Logic. 3 Credits.
Central concepts in the philosophy of logic, including truth, reasoning, inference, deduction, induction, judgment, assertion, warrant, proof, demonstration, meaning, semantics, syntax, paradox, mathematical models, and the relationship between a formal representation of logical reasoning and the philosophical ideal of the practice of reasoning. Recommended background: Some grounding in first-order logic will be presupposed.

PHIL 6225. Queer(ing) Philosophy. 3 Credits.
Examination of how queer theory, which emerged as a field in its own right in the early 1990s, has posed significant challenges to traditional, taken-for-granted understandings of time, space, the body, race, sexuality, normality, culture, violence, and disability. Restricted to For graduate students only.

PHIL 6230. Ethical Issues in Policy Arguments. 3 Credits.
Critical analysis of ethical foundations of public policy arguments, e.g., about protection of the environment or health and safety, equality of opportunity. Case studies of appeals to "welfare improvements," to norms of duty, to "the social contract," and to rights–claims. Attention to historical contexts and biases. Open to undergraduates only with permission of instructor.

PHIL 6231. Seminar: Economic Justice. 3 Credits.
Ethical and economic analysis of equity and efficiency of current U.S. income distribution patterns. Theories of justice; economic theories of distribution; assessment of redistribution policies. Open to undergraduates only with permission of instructor.

PHIL 6232. Topics in Contemporary Political Philosophy. 3 Credits.
Topic announced in the Schedule of Classes. Restricted to For graduate students only.

PHIL 6233. Contemporary Moral Philosophy. 3 Credits.
Investigation of contemporary debates in normative ethics and/or metaethics. Topics may include the virtue ethics revival in the 20th century, the distinction between the right and the good, or important metaethical positions such as fictionalism, expressivism, and constitutivist accounts of moral principles. Restricted to For graduate students only.

PHIL 6234. Consequentialism and Its Critics. 3 Credits.
An overview of the debate over consequentialism, culminating in discussion of recent literature. Forms of consequentialism (act, rule, motive, cooperative); direct versus indirect; classic objections and replies; partiality; friendship; agent-relative considerations; doctrine of doing and allowing; doctrine of double effect. Restricted to For graduate students only.

PHIL 6236. Moral Status. 3 Credits.
Examination of the question of what sorts of beings matter morally in their own right and how much they matter. While the paradigm bearers of moral status are persons, the course considers competing ways of thinking about the possible moral status of human nonpersons, nonhuman persons, great apes, dolphins, other sentient animals, nonsentient lifeforms, the environment, future people, and advanced forms of artificial intelligence. Restricted to For graduate students only.

PHIL 6237. Animal Ethics. 3 Credits.
The moral status of animals and the ethics of human use of animals. Major topics include models of moral status, animals' mental life, and specific ethical issues associated with the eating of animal products, the use of animals in research, and the keeping of animals in homes and zoos. Restricted to For graduate students only.

PHIL 6238. Feminist Ethics and Policy Implications. 3 Credits.
Feminist critiques of traditional ethical reasoning; alternative feminist ethical frameworks examined and applied to contemporary social problems (e.g., respecting cultural differences, dependency, disability). Same as WSTU 6238. Prerequisite: PHIL 2125 or PHIL 2131 or permission of instructor.

PHIL 6239. Virtue Ethics. 3 Credits.
Historical and/or contemporary approaches to virtue ethics and key readings in the virtue ethical tradition. Topics include empirical work on virtue in philosophy and psychology, the divide between "radical" virtue ethics and contemporary virtue ethics, "hybrid" approaches to virtue ethics (e.g., consequentialist virtue ethics), and meta-ethical issues relevant to the study of virtue. Restricted to For graduate students only.

PHIL 6242. Philosophy, Law, and Social Policy. 3 Credits.
Consideration of the relationship between legal interpretation and policy goals. Theories concerning the role of the judiciary in a constitutional democracy and methods of constitutional and statutory interpretation. Representative policy topics include capital punishment, pornography, affirmative action, welfare, property rights, racial gerrymandering, gun control.

PHIL 6245. Biomedical Ethics. 3 Credits.
An in-depth introduction to the field of biomedical ethics. Following a brief review of ethical theory, the course proceeds to several central topics in biomedical ethics before ending with students' presentations of their original research. The emphasis is on normative ethical reasoning, with considerable attention to the empirical assumptions underlying particular ethical judgments and to policy dimensions of several of the central topics.

PHIL 6250. Topics in Health Policy. 3 Credits.
Topics in health policy from the perspective of philosophical ethics, including human and animal research, the enhancement of human traits, justice and health care allocation.

PHIL 6251. Advanced Introduction to Philosophy of Mind. 3 Credits.
Critical examination of classical philosophical arguments pertaining to the mind/body problem, the problem of consciousness, the problem of intentionality, the problem of freedom of the will, and the problem of personal identity. Focus on careful analysis of classical philosophical writings on these topics. Restricted to For graduate students only.

PHIL 6252. Advanced Introduction to Philosophy of Cognitive Science. 3 Credits.
The emergence of cognitive phenomena in phylogeny and ontogeny, social cognition, nativist vs. empiricist approaches to cognition, models of reasoning and decision-making, representationalist vs. embodied/embedded/enactive approaches to cognition, and theories of perception, memory, and concepts. Restricted to For graduate students only.

PHIL 6253. Cognitive Science and Public Policy. 3 Credits.
The cognitive sciences are providing new insights into the nature of human decision making at an accelerating pace. Cognitive psychology, cognitive neuroscience, neuroeconomics, evolutionary psychology, and developmental and comparative psychology are rewriting theories about human nature with significant implications for public policy. The course examines recent work in the cognitive sciences with the intent of drawing out its public policy implications.

PHIL 6254. Mental Representation. 3 Credits.
Thoughts are like pictures of the world in that they represent the world. But thoughts sometimes represent the world in ways that don't correspond to the way it actually is. How do thoughts come to have representational content? Why do we have thoughts? Such questions are considered through the careful reading of recent work on the subject. Restricted to For graduate students only.

PHIL 6257. The Nature of Animal Minds. 3 Credits.
Do nonhuman animals have minds? If so, what are they like? How are they similar and how are they different from our minds? What might count as evidence that an animal has a mind? Consideration of some of the questions philosophers and scientists have been asking and issues these questions raise when we think about the possibility that nonhuman animals are thinking creatures. Restricted to For graduate students only.

PHIL 6262. Normative Issues in Foreign Policy. 3 Credits.
Selected issues on foreign policy from a normative perspective; emphasis on human rights, economic globalization, global poverty, sustainable development, and the ethics of military intervention.

PHIL 6281. Environmental Philosophy and Policy. 3 Credits.
Examination of philosophical frameworks for assessing policy approaches to environmental problems. Representative topics include duties to future generations, environmental justice, legal rights for natural objects, critiques of cost–benefit analysis, sustainability, risk measurement, the intrinsic value of nature.

PHIL 6290. Special Topics in Public Policy. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

PHIL 6293. Contemporary Continental Philosophy. 3 Credits.
Focus on several powerful philosophical concepts introduced by late 20th/early 21st-century continental scholars. Through a close reading of selected works, the influence these scholars have had upon one another is traced. Critical examination of the theoretical resources the works provide in articulating some of the most urgent ethical, social, and political demands of contemporary human existence. Restricted to For graduate students only.

PHIL 6294. Special Topics in Continental Philosophy. 3 Credits.
Topic announced in the Schedule of Classes. Restricted to For graduate students only.

PHIL 6998. Thesis Research. 3 Credits.

PHIL 6999. Thesis Research. 3 Credits.

BACHELOR OF ARTS WITH A MAJOR IN PHILOSOPHY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Recommended		
PHIL 1051	Introduction to Philosophy	
or PHIL 1051W	Hist Intro-Western Philosophy	
Required		
The following three courses (9 credits):		
PHIL 2045	Introduction to Logic	
PHIL 2111	History of Ancient Philosophy	
or PHIL 2111W	History of Ancient Philosophy	
PHIL 2112	History of Modern Philosophy	
One of the following courses (3 credits) :		
PHIL 3113	19th-Century Philosophy	
or PHIL 3113W	19th-Century Philosophy	
PHIL 3172	American Philosophy	
or PHIL 3172W	American Philosophy	
PHIL 4192	Analytical Philosophy	
or PHIL 4192W	Analytical Philosophy	
PHIL 4193	20th-Century Continental Philosophy	
or PHIL 4193W	20th-Century Continental Philosophy	
Four additional philosophy (PHIL) courses (12 credits) numbered 2000 or above.		
One of the following options:		
A: Two Proseminar courses		
PHIL 4198	Proseminar (6 credits)	
B: Honors thesis option (requires departmental approval and a senior thesis)		
PHIL 4198	Proseminar (3 credits)	
PHIL 4199	Readings and Research (3 credits)	

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must

1. have at least a 3.7 grade-point average in the major and a 3.3 average overall;
2. submit an honors paper prepared under the supervision of a faculty advisor in the department.

Only if a committee of three faculty members in the department approves the honors paper will Special Honors be recommended.

BACHELOR OF ARTS WITH A MAJOR IN PHILOSOPHY (PUBLIC AFFAIRS FOCUS)

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Recommended		
PHIL 1051	Introduction to Philosophy	
or PHIL 1051W	Hist Intro-Western Philosophy	
Required		
PHIL 2045	Introduction to Logic (3 credits)	

One course from the following (3 credits):	
PHIL 2111	History of Ancient Philosophy
or PHIL 2111W	History of Ancient Philosophy
PHIL 2112	History of Modern Philosophy
Two courses from the following (6 credits):	
PHIL 2131	Ethics: Theory and Applications
PHIL 2132	Social and Political Philosophy
or PHIL 2132W	Social and Political Philosophy
PHIL 2136	Contemporary Issues in Ethics
Four additional philosophy (PHIL) courses numbered 2000 or above (12 credits)	
One of the following options:	
A: Two Proseminar Courses	
PHIL 4198	Proseminar (6 credits)
B: Honors Thesis option (requires departmental approval and a senior thesis)	
PHIL 4198	Proseminar (3 credits)
or PHIL 4198W	Proseminar in Philosophy
PHIL 4199	Readings and Research (3 credits)

GENERAL EDUCATION

In addition to the University General Education Requirement, undergraduate students in Columbian College must complete a further, College-specific general education curriculum–Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

Coursework for the University General Education Requirement is distributed as follows:

- Writing–one approved course in university writing and two writing-in-the-disciplines (WID) approved courses;
- Humanities–one approved course in the humanities that involves critical thinking skills;
- Mathematics or Statistics–one approved course in either mathematics or statistics;
- Natural or Physical Science–one approved laboratory course that employs the process of scientific inquiry; and,
- Social Sciences–two approved courses in the social sciences

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts–one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context;
- Global or Cross-Cultural Perspective–one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries;
- Humanities–one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement);
- Local or Civic Engagement–one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action;
- Natural or Physical Science–one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement; and,
- Oral Communication–one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC may also be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

University General Education and G-PAC Courses

- Arts (p. 333)
- Global or Cross-Cultural (p. 334)
- Humanities (p. 337)
- Local/Civic Engagement (p. 340)
- Mathematics or Statistics (p. 340)
- Natural or physical laboratory sciences (p. 341)
- Oral Communication (p. 341)
- Social Sciences (p. 342)
- Writing (p. 343)

Arts

Code	Title	Credits
AH 1031	Survey of Art and Architecture I	

AH 1032	Survey of Art and Architecture II
AH 2071	Introduction to the Arts in America
AH 2154	American Architecture I
AH 2155	American Architecture II
AMST 1100	Politics and Film
AMST 2071	Introduction to the Arts in America
AMST 2520	American Architecture I
AMST 2521	American Architecture II
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts
CHIN 3173	Chinese Drama and Theatre
ENGL 1210	Introduction to Creative Writing
ENGL 2210	Techniques in Creative Writing
FA 1401	Painting: Visual Thinking
FA 1501	Black & White Photography
FA 1502	Color Photography
FA 1601	New Media: Digital Art
ITAL 4183	History of Italian Film
MUS 1103	Music in the Western World
MUS 1104	Topics in Music
MUS 1105	Introduction to Musical Thought and Practice
MUS 2101	Harmony
MUS 2122	Music in the US
or MUS 2122W	Music in the US
SLAV 2785	Introduction to Russian Cinema I
SLAV 2786	Introduction to Russian Cinema II
TRDA 1020	Women and the Creative Process
TRDA 1214	Beginning Acting
TRDA 2191	Dance History
or TRDA 2191W	Dance History
TRDA 2195	Global Dance History
TRDA 3245	History of the Theatre I
or TRDA 3245W	History of the Theatre I
TRDA 3246	History of the Theatre II
or TRDA 3246W	History of the Theatre II

Global or Cross-Cultural

Code	Title	Credits
AMST 1200	The Sixties in America	
AMST 2010	Early American Cultural History (same as HIST 2010)	
AMST 2011	Modern American Cultural History (same as HIST 2011)	
AMST 2120W	Freedom in American Thought and Popular Culture (same as PSC 2120W)	
AMST 2210	The African American Experience	
AMST 2320	U.S. Media and Cultural History (same as HIST 2320)	
AMST 2350	U.S. Religion and Politics (same as HIST 2350)	
AMST 2380	Sexuality in US History (same as HIST 2380/HIST 2380W)	
AMST 2410	20th-Century U.S. Immigration (same as HIST 2410)	
AMST 2440	The American City (same as HIST 2440)	
AMST 2710	The United States in Global Context, 1898–Present (same as HIST 2710)	
AMST 2730	World War II in History and Memory (same as HIST 2730/HIST 2730W)	
or AMST 2730W	World War II in History and Memory	
AMST 2750W	Latinos in the United States (same as HIST 2750/HIST 2750W)	
AMST 3352	Women in the United States to 1865 (same as HIST 3352/HIST 3352W and WSTU 3352/WSTU 3352W)	
or AMST 3352W	Women in the United States to 1865	
ANTH 1002	Sociocultural Anthropology	
or ANTH 1002W	Sociocultural Anthropology	
ANTH 1003	Archaeology	
ANTH 1004	Language in Culture and Society	

ANTH 2008	Foundations of Anthropological Thought
or ANTH 2008W	Foundations of Anthropology
ANTH 2750	Latinos in the United States (same as AMST 2750W)
or ANTH 2750W	Latinos in the United States
ANTH 3838	Theory and Practice in Archaeology
or ANTH 3838W	Theory and Practice in Archaeology
CHIN 3111	Chinese Literature in Translation
CHIN 3112	Chinese Literature in Translation
CHIN 3123	Introduction to Chinese Linguistics
CHIN 3124	Introduction to Chinese Linguistics
CHIN 3163	Taiwanese Literature and Film
CHIN 3173	Chinese Drama and Theatre
CLAS 2113	The Roman World to 337 A.D. (same as HIST 2113)
EALL 3811	Confucian Literature in East Asia (same as REL 2811)
EALL 3814	Religion and Philosophy in East Asia (same as REL 2814)
or EALL 3814W	Religion and Philosophy in East Asia
ENGL 1330	Myths of Britain
or ENGL 1330W	Myths of Britain
ENGL 1340	Essential Shakespeare
or ENGL 1340W	Essential Shakespeare
ENGL 1610	Introduction to Black American Literature I
or ENGL 1610W	Introduction to Black American Literature I
ENGL 1611	Introduction to Black American Literature II
or ENGL 1611W	Introduction to Black American Literature II
ENGL 1710	Introduction to Postcolonial Literature and Film I
or ENGL 1710W	Introduction to Postcolonial Literature and Film I
ENGL 1711	Introduction to Postcolonial Literature and Film II
or ENGL 1711W	Introduction to Postcolonial Literature and Film II
FREN 2006	Language, Culture & Society II
FREN 3020	Contemporary France
FREN 3100	Introduction to French Literature
or FREN 3100W	Introduction to French Literature
FREN 4540	19th-Century French Literature and Culture
GEOG 1001	Introduction to Human Geography
GER 2091	Introduction to German Literature–in English I
GER 2092	Introduction to German Literature–in English II
GER 2161	German Culture–in English I
GER 2162	German Culture–in English II
GREK 1001	Beginning Classical Greek I
HIST 1011	World History, 1500-Present
HIST 1110	European Civilization in Its World Context
HIST 1120	European Civilization in Its World Context
or HIST 1120W	European Civilization in its World Context
HIST 1121	The War of Ideas in European and International History, 1750–Present
HIST 1310	Introduction to American History
HIST 1311	Introduction to American History
HIST 2010	Early American Cultural History (same as AMST 2010)
HIST 2011	Modern American Cultural History (same as AMST 2011)
HIST 2050	History of Jewish Civilization: From the Bible to Modernity
HIST 2124	19th-Century Europe
HIST 2125	20th-Century Europe
HIST 2131	History of England Since 1689
HIST 2141	History of France Since 1814
HIST 2160	History of Germany

HIST 2312	The American Civil War and Reconstruction, 1850-1877
HIST 2313	History of the American West
HIST 2320	U.S. Media and Cultural History (same as AMST 2320)
HIST 2321	U.S. History, 1890-1945
HIST 2322	U.S. History since 1945
HIST 2350	U.S. Religion and Politics (same as AMST 2350)
HIST 2380	Sexuality in US Cultural Hist (same as AMST 2380 and WSTU 2380)
HIST 2410	20th-Century U.S. Immigration (same as AMST 2410)
HIST 2440	The American City (same as AMST 2440)
HIST 2710	The United States in Global Context, 1898–Present (same as AMST 2710)
HIST 2730	World War II in History and Memory (same as AMST 2730/2730W)
or HIST 2730W	World War II History & Memory
HIST 3044W	The Price of Freedom: Normandy 1944
HIST 3352	Women in the United States to 1865 (same as AMST 3352/AMST 3352W and WSTU 3352/3352W)
or HIST 3352W	Women in the United States I
HIST 3360	African American History to 1865 (same as AMST 3360)
HIST 3361	African American History Since 1865 (same as AMST 3361)
HIST 3811	The Middle East in the 20th Century
or HIST 3811W	Middle East in 20th Century
ITAL 4380	Italian Journeys Medieval to Postmodern
JAPN 3111	Japanese Literature in Translation
JAPN 3112	Japanese Literature in Translation
KOR 3111	Korean Literature in Translation
KOR 3112	Korean Literature in Translation
KOR 3123	Introduction to Korean Linguistics
KOR 3124	Introduction to Korean Linguistics
PHIL 2125	Philosophy of Race and Gender
or PHIL 2125W	Philosophy of Race and Gender
PHIL 2134	Philosophy of Human Rights
PSC 1001	Introduction to Comparative Politics
or PSC 1001W	Intro to Comparative Politics
PSC 1012W	Introduction to Politics II
PSC 2120W	Freedom in American Thought and Popular Culture (same as AMST 2120W)
PSTD 1010	Introduction to Peace Studies and Conflict Resolution
REL 1010	The New Testament
or REL 1010W	The New Testament
REL 2165	The Gospels
REL 2169	Lost Gospels
REL 2562	Mythologies of India
REL 2811	Confucian Literature in East Asia (same as EALL 2811)
REL 2814	Religion and Philosophy in East Asia (same as EALL 2814/EALL 2814W)
REL 2981	Women in Western Religion (same as WSTU 3981)
REL 3149	Biblical Issues
or REL 3149W	Biblical Issues
REL 3151	The Historical Jesus
or REL 3151W	The Historical Jesus
REL 3161	The Life and Thought of Paul
or REL 3161W	The Life and Thought of Paul
REL 3923	Violence and Peace in Judaism, Christianity, and Islam
SPAN 2005	Advanced Spanish I
SPAN 2006	Advanced Spanish II
SPAN 2056	Intensive Advanced Spanish
SPAN 3100	Readings in Spanish and Latin American Literature

SPHR 1071	Foundations of Human Communication
or SPHR 1071W	Foundations of Human Communication
SPHR 1084	Perspectives in Deaf Culture
WSTU 2380	Sexuality in US Cultural Hist (same as AMST 2380 and HIST 2380)
WSTU 3352	Women in the United States I (same as AMST 3352/3352W and HIST 3352/3352W)
WSTU 3981	Women in Western Religion (same as REL 2981)

Note: Global or Cross-Cultural courses can double count with an analysis/communication requirement.

Humanities

Code	Title	Credits
AMST 1050	Explorations in American Culture	
AMST 1160	Race, Gender and Law	
AMST 1200	The Sixties in America	
AMST 2010	Early American Cultural History (same as HIST 2010)	
AMST 2011	Modern American Cultural History (same as HIST 2011)	
AMST 2020	Washington, D.C.: History, Culture, and Politics (same as HIST 2020/ HIST 2020W)	
or AMST 2020W	Washington, D.C.: History, Culture, and Politics	
AMST 2120W	Freedom in American Thought and Popular Culture (same as PSC 2120W)	
AMST 2210	The African American Experience	
AMST 2320	U.S. Media and Cultural History (same as HIST 2320)	
AMST 2350	U.S. Religion and Politics (same as HIST 2350)	
AMST 2380	Sexuality in US History (same as HIST 2380 and WSTU 2380)	
AMST 2410	20th-Century U.S. Immigration (same as HIST 2410)	
AMST 2440	The American City (same as HIST 2440)	
AMST 2710	The United States in Global Context, 1898–Present (same as HIST 2710)	
AMST 2730	World War II in History and Memory (same as HIST 2730/HIST 2730W)	
or AMST 2730W	World War II in History and Memory	
AMST 2750W	Latinos in the United States (same as ANTH 2750/ANTH 2750W)	
AMST 3352	Women in the United States to 1865 (same as HIST 3352/HIST 3352W and WSTU 3352 and WSTU 3352W)	
or AMST 3352W	Women in the United States to 1865	
ANTH 2750	Latinos in the United States (same as AMST 2750W)	
or ANTH 2750W	Latinos in the United States	
CHIN 3111	Chinese Literature in Translation	
CHIN 3112	Chinese Literature in Translation	
CHIN 3123	Introduction to Chinese Linguistics	
CHIN 3124	Introduction to Chinese Linguistics	
CHIN 3163	Taiwanese Literature and Film	
CLAS 2107	Greek and Roman Drama	
CLAS 2113	The Roman World to 337 A.D. (same as HIST 2113)	
EALL 3811	Confucian Literature in East Asia (same as REL 2811)	
EALL 3814	Religion and Philosophy in East Asia (same as REL 2814)	
or EALL 3814W	Religion and Philosophy in East Asia	
ENGL 1050	Introduction to Literary Studies	
ENGL 1315	Literature and the Financial Imagination	
ENGL 1320	Literature of the Americas	
or ENGL 1320W	Literature of the Americas	
ENGL 1330	Myths of Britain	
or ENGL 1330W	Myths of Britain	
ENGL 1340	Essential Shakespeare	
or ENGL 1340W	Essential Shakespeare	
ENGL 1351	Shakespeare Seminar	
ENGL 1410	Introduction to English Literature I	
or ENGL 1410W	Introduction to English Literature I	

ENGL 1411	Introduction to English Literature II
or ENGL 1411W	Introduction to English Literature II
ENGL 1510	Introduction to American Literature I
or ENGL 1510W	Introduction to American Literature I
ENGL 1511	Introduction to American Literature II
or ENGL 1511W	Introduction to American Literature II
ENGL 1610	Introduction to Black American Literature I
or ENGL 1610W	Introduction to Black American Literature I
ENGL 1611	Introduction to Black American Literature II
or ENGL 1611W	Introduction to Black American Literature II
ENGL 1710	Introduction to Postcolonial Literature and Film I
or ENGL 1710W	Introduction to Postcolonial Literature and Film I
ENGL 1711	Introduction to Postcolonial Literature and Film II
or ENGL 1711W	Introduction to Postcolonial Literature and Film II
ENGL 3446	Shakespearean London
ENGL 3910	Disability Studies
FREN 2006	Language, Culture & Society II
FREN 3020	Contemporary France
FREN 3100	Introduction to French Literature
or FREN 3100W	Introduction to French Literature
FREN 4540	19th-Century French Literature and Culture
GER 2091	Introduction to German Literature—in English I
GER 2092	Introduction to German Literature—in English II
GER 2161	German Culture—in English I
GER 2162	German Culture—in English II
GREK 1001	Beginning Classical Greek I
HIST 1011	World History, 1500-Present
HIST 1110	European Civilization in Its World Context
HIST 1120	European Civilization in Its World Context
or HIST 1120W	European Civilization in its World Context
HIST 1121	The War of Ideas in European and International History, 1750–Present
HIST 1310	Introduction to American History
HIST 1311	Introduction to American History
HIST 2010	Early American Cultural History (same as AMST 2010)
HIST 2011	Modern American Cultural History (same as AMST 2011)
HIST 2020	Washington, D.C.: History, Culture, and Politics (same as AMST 2020/ AMST 2020W)
or HIST 2020W	Washington, D.C.: History, Culture, and Politics
HIST 2050	History of Jewish Civilization: From the Bible to Modernity
HIST 2124	19th-Century Europe
HIST 2125	20th-Century Europe
HIST 2131	History of England Since 1689
HIST 2141	History of France Since 1814
HIST 2160	History of Germany
HIST 2312	The American Civil War and Reconstruction, 1850-1877
HIST 2320	U.S. Media and Cultural History (same as AMST 2320)
HIST 2321	U.S. History, 1890-1945
HIST 2322	U.S. History since 1945
HIST 2350	U.S. Religion and Politics (same as AMST 2350)
HIST 2380	Sexuality in US Cultural Hist (same as AMST 2380 and WSTU 2380)
HIST 2410	20th-Century U.S. Immigration (same as AMST 2410)
HIST 2440	The American City (same as AMST 2440)

HIST 2710	The United States in Global Context, 1898–Present (same as AMST 2710)
HIST 2730	World War II in History and Memory (same as AMST 2730/2730W)
or HIST 2730W	World War II History & Memory
HIST 3044W	The Price of Freedom: Normandy 1944
HIST 3352	Women in the United States to 1865 (same as AMST 3552/AMST 3552W and WSTU 3552/3552W)
or HIST 3352W	Women in the United States I
HIST 3360	African American History to 1865 (same as AMST 3360)
HIST 3361	African American History Since 1865 (same as HIST 3661)
HIST 3611	History of Modern China
HIST 3630	History of Korea
HIST 3811	The Middle East in the 20th Century
or HIST 3311W	The Jacksonian Era and the Rise of Mass Politics
HONR 1016	Honors Proseminar: Origins and Evolution of Modern Thought
HONR 2053	Honors Proseminar: Arts and Humanities
or HONR 2053W	Honors Proseminar: Arts and World Cultures
ITAL 4380	Italian Journeys Medieval to Postmodern
JAPN 3111	Japanese Literature in Translation
JAPN 3112	Japanese Literature in Translation
KOR 3111	Korean Literature in Translation
KOR 3112	Korean Literature in Translation
KOR 3123	Introduction to Korean Linguistics
KOR 3124	Introduction to Korean Linguistics
LATN 2001	Intermediate Latin
LATN 3001	Major Latin Authors I
or LATN 3001W	Major Latin Authors I
LATN 3002	Major Latin Authors II
or LATN 3002W	Major Latin Authors II
PHIL 1051	Introduction to Philosophy
PHIL 1153	The Meaning of Mind
PHIL 2124	Philosophies of Disability
or PHIL 2124W	Philosophies of Disability
PHIL 2125	Philosophy of Race and Gender
or PHIL 2125W	Philosophy of Race and Gender
PHIL 2131	Ethics: Theory and Applications
PHIL 2132	Social and Political Philosophy
PHIL 2133	Philosophy and Nonviolence
PHIL 2134	Philosophy of Human Rights
PHIL 2136	Contemporary Issues in Ethics
PHIL 2281	Philosophy of the Environment
PHIL 3142	Philosophy of Law
or PHIL 3142W	Philosophy of Law
PHIL 3151	Philosophy and Science
PHIL 3153	Mind, Brain, and Artificial Intelligence
PSC 2120W	Freedom in American Thought and Popular Culture (same as AMST 2120W)
PSTD 1010	Introduction to Peace Studies and Conflict Resolution
REL 1010	The New Testament
or REL 1010W	The New Testament
REL 2165	The Gospels
REL 2169	Lost Gospels
REL 2201	Judaism
REL 2301	Christianity
REL 2314	Contemporary Philosophy of Religion
REL 2401	Islam
REL 2501	Hinduism
REL 2562	Mythologies of India
REL 2811	Confucian Literature in East Asia (same as EALL 2811)
REL 2814	Religion and Philosophy in East Asia (same as EALL 2814/EALL 2814W)

REL 2981	Women in Western Religion (same as WSTU 3981)
REL 3149	Biblical Issues
or REL 3149W	Biblical Issues
REL 3151	The Historical Jesus
or REL 3151W	The Historical Jesus
REL 3161	The Life and Thought of Paul
or REL 3161W	The Life and Thought of Paul
REL 3405	Shi'ite Islam
REL 3614	Buddhist Philosophy
REL 3923	Violence and Peace in Judaism, Christianity, and Islam
SPAN 2005	Advanced Spanish I
SPAN 2006	Advanced Spanish II
SPAN 2056	Intensive Advanced Spanish
SPAN 3100	Readings in Spanish and Latin American Literature
WLP 1020	WLP Humanities Seminar
WSTU 2380	Sexuality in US Cultural Hist (same as AMST 2380 and HIST 2380)
WSTU 3352	Women in the United States I (same as AMST 3352/AMST 3352W and HIST 3352/HIST 3352W)
or WSTU 3352W	Women in the United States I
WSTU 3981	Women in Western Religion (same as REL 2981)

Language courses require placement tests.

Local/Civic Engagement

Code	Title	Credits
AMST 2020	Washington, D.C.: History, Culture, and Politics (same as HIST 2020/ HIST 2020W)	
or AMST 2020W	Washington, D.C.: History, Culture, and Politics	
BISC 1007	Food, Nutrition, and Service	
BISC 1008	Understanding Organisms through Service Learning	
CHEM 1003	Contemporary Science for Nonscience Majors	
GEOG 1003	Society and Environment	
HIST 2020	Washington, D.C.: History, Culture, and Politics (same as AMST 2020/ AMST 2020W)	
or HIST 2020W	Washington, D.C.: History, Culture, and Politics	
PHIL 2133	Philosophy and Nonviolence	
PHIL 2136	Contemporary Issues in Ethics	
PHIL 2281	Philosophy of the Environment	
PHIL 3142	Philosophy of Law	
or PHIL 3142W	Philosophy of Law	
PSC 1002	Introduction to American Politics and Government	
or PSC 1002W	Intro-American Politics & Govt	
PSC 1011	Introduction to Politics I	
SOC 1002	The Sociological Imagination	
SOC 2169	Urban Sociology	
SUST 1001	Introduction to Sustainability	

Note: Local/civil engagement courses can double count with an analysis/communication requirement.

Mathematics or Statistics

Code	Title	Credits
MATH 1007	Mathematics and Politics	
MATH 1009	Mathematical Ideas I	
MATH 1010	Mathematical Ideas II	
MATH 1051	Finite Mathematics for the Social and Management Sciences	
MATH 1221	Calculus with Precalculus II *	
MATH 1231	Single-Variable Calculus I *	
MATH 1232	Single-Variable Calculus II	
MATH 1252	Calculus for the Social and Management Sciences *	
MATH 2233	Multivariable Calculus	
STAT 1051	Introduction to Business and Economic Statistics *	

STAT 1053	Introduction to Statistics in Social Science *
STAT 1111	Business and Economic Statistics I *
STAT 1127	Statistics for the Biological Sciences *
STAT 2112	Business and Economic Statistics II
STAT 2118	Regression Analysis

*MATH 1221, 1231, and 1252 are equivalent courses. STAT 1051, 1053, 1111, and 1127 are equivalent courses. Credit cannot be earned for more than one in either group.

Natural or Physical Laboratory Sciences

Code	Title	Credits
ANTH 1001	Biological Anthropology	
ANTH 3412	Hominin Evolution	
ASTR 1001	Stars, Planets, and Life in the Universe	
ASTR 1002	Origins of the Cosmos	
BISC 1005	The Biology of Nutrition and Health *	
BISC 1006	The Ecology and Evolution of Organisms *	
BISC 1007	Food, Nutrition, and Service *	
BISC 1008	Understanding Organisms through Service Learning *	
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
CHEM 1003	Contemporary Science for Nonscience Majors	
CHEM 1004	Contemporary Science for Nonscience Majors	
CHEM 1111	General Chemistry I	
CHEM 1112	General Chemistry II	
CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I **	
CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II **	
GEOG 1002	Introduction to Physical Geography	
GEOL 1001	Physical Geology ***	
GEOL 1002	Historical Geology	
GEOL 1005	Environmental Geology ***	
GEOL 1006	Science & the Environment	
HONR 1033	Honors Proseminar: Scientific Reasoning and Discovery	
HONR 1034	Honors Proseminar: Scientific Reasoning and Discovery	
PHYS 1003	Physics for Future Presidents	
PHYS 1007	Music and Physics	
PHYS 1011	General Physics I	
PHYS 1012	General Physics II	
PHYS 1021	University Physics I	
PHYS 1022	University Physics II	
PHYS 1025	University Physics I with Biological Applications	
PHYS 1026	University Physics II with Biological Applications	

*BISC 1005 and 1007 are equivalent courses; BISC 1006 and BISC 1008 are equivalent courses. Credit cannot be earned for both.

**To fulfill the G-PAC requirement, CHEM 2151 and CHEM 2153 must both be taken; same applies to CHEM 2152 and CHEM 2154.
***GEOL 1001 and GEOL 1005 are equivalent courses; credit cannot be earned for both.

Oral Communication

Code	Title	Credits
AMST 2010	Early American Cultural History (same as HIST 2010)	
ANTH 1004	Language in Culture and Society	
ANTH 2008	Foundations of Anthropological Thought	
or ANTH 2008W	Foundations of Anthropology	
ANTH 2502	Anthropology of Science and Technology: 21st-Century Brave New Worlds	
ANTH 3838	Theory and Practice in Archaeology	
or ANTH 3838W	Theory and Practice in Archaeology	

COMM 1040	Public Communication
COMM 1041	Interpersonal Communication
ECON 4198W	Proseminar in Economics
ENGL 1510	Introduction to American Literature I
or ENGL 1510W	Introduction to American Literature I
ENGL 1710	Introduction to Postcolonial Literature and Film I
or ENGL 1710W	Introduction to Postcolonial Literature and Film I
ENGL 1711	Introduction to Postcolonial Literature and Film II
or ENGL 1711W	Introduction to Postcolonial Literature and Film II
ENGL 3481	The Eighteenth Century II
or ENGL 3481W	The Eighteenth Century II
ENGL 3620	American Poetry I
FREN 2005	Language, Culture & Society I
FREN 2006	Language, Culture & Society II
FREN 3020	Contemporary France
GER 2091	Introduction to German Literature—in English I
GER 2092	Introduction to German Literature—in English II
GER 2161	German Culture—in English I
HIST 1110	European Civilization in Its World Context
HIST 2010	Early American Cultural History (same AMST 2010)
HIST 2050	History of Jewish Civilization: From the Bible to Modernity
HIST 3044W	The Price of Freedom: Normandy 1944
ITAL 4380	Italian Journeys Medieval to Postmodern
MUS 2122	Music in the US
or MUS 2122W	Music in the US
PHIL 2124	Philosophies of Disability
or PHIL 2124W	Philosophies of Disability
PHIL 2133	Philosophy and Nonviolence
PHIL 2134	Philosophy of Human Rights
PHIL 4198	Proseminar
or PHIL 4198W	Proseminar in Philosophy
PSTD 1010	Introduction to Peace Studies and Conflict Resolution
REL 1010	The New Testament
or REL 1010W	The New Testament
SPAN 2006	Advanced Spanish II
SPAN 2056	Intensive Advanced Spanish
SPAN 3022	Advanced Oral Proficiency: Environmental and Social Sustainability in Latin America
SPAN 3100	Readings in Spanish and Latin American Literature

Note: Oral Communications courses can count toward analytic, perspective, WID, and major requirements.

Social Sciences

Code	Title	Credits
ANTH 1002	Sociocultural Anthropology	
or ANTH 1002W	Sociocultural Anthropology	
ANTH 1003	Archaeology	
ANTH 1004	Language in Culture and Society	
ANTH 2008	Foundations of Anthropological Thought	
or ANTH 2008W	Foundations of Anthropology	
ANTH 2502	Anthropology of Science and Technology: 21st-Century Brave New Worlds	
ANTH 3838	Theory and Practice in Archaeology	
or ANTH 3838W	Theory and Practice in Archaeology	
COMM 1025	Introduction to Communication Studies	
COMM 1040	Public Communication	
COMM 1041	Interpersonal Communication	
ECON 1011	Principles of Economics I	
ECON 1012	Principles of Economics II	

GEOG 1001	Introduction to Human Geography
GEOG 1003	Society and Environment
HONR 2043	Honors Microeconomics
HONR 2044	Honors Macroeconomics
HONR 2047	Honors Proseminar: Social and Behavioral Sciences
or HONR 2047W	Honors Proseminar: Social and Behavioral Science
PSC 1001	Introduction to Comparative Politics
or PSC 1001W	Intro to Comparative Politics
PSC 1002	Introduction to American Politics and Government
or PSC 1002W	Intro-American Politics & Govt
PSC 1011	Introduction to Politics I
PSC 1012W	Introduction to Politics II
PSYC 2011	Abnormal Psychology *
or PSYC 2011W	Abnormal Psychology
PSYC 2012	Social Psychology *
PSYC 2013	Developmental Psychology *
PSYC 2014	Cognitive Psychology *
PSYC 2015	Biological Psychology *
SMPA 1050	Media in a Free Society
SMPA 2101	Journalism: Theory & Practice
SMPA 2102	Introduction to Political Communication
SOC 1002	The Sociological Imagination
SOC 2101	Social Research Methods
SOC 2102	Techniques of Data Analysis
SOC 2103	Classical Sociological Theory
or SOC 2103W	Classical Sociological Theory
SOC 2104	Contemporary Sociological Theory
or SOC 2104W	Contemporary Sociological Theory
SOC 2169	Urban Sociology
SPHR 1071	Foundations of Human Communication
or SPHR 1071W	Foundations of Human Communication
SPHR 1084	Perspectives in Deaf Culture
SUST 1001	Introduction to Sustainability

*PSYC 1001 is a prerequisite for all Psychology courses.

Writing

Code	Title	Credits
UW 1020	University Writing	
or HONR 1015	Honors Proseminar: UW 1020: Origins and Evolution of Modern Thought	

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must: have at least a 3.7 grade-point average in the major and a 3.3 average overall; and submit an honors paper prepared under the supervision of a faculty advisor in the department.

Only if a committee of three faculty members in the department approves the honors paper will Special Honors be recommended.

COMBINED PROGRAMS, PHILOSOPHY AND PUBLIC POLICY

The Department of Philosophy offers a combined bachelor of arts in philosophy and master of arts in public policy with a concentration in philosophy and social policy degree program. Undergraduate students take a specified number of graduate credits as part of their degree program, thereby decreasing the number of credits normally required for the master's degree. Undergraduate students interested in the B.A./M.A. program should consult a departmental advisor as early in their program as possible. B.A. in philosophy (public affairs focus) majors may apply to the program upon completion of 12 credits in philosophy (PHIL) course work at the 1000-level or above, and must apply before completing 75 credits in the B.A. program.

Visit the program website (http://philosophy.columbian.gwu.edu/combined-bama-program-philosophy) for additional information.

MINOR IN APPLIED ETHICS

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 9 credits in required courses and 9 credits in elective courses.

Required courses (9 credits):	
PHIL 2131	Ethics: Theory and Applications
PHIL 2135	Ethics in Business and the Professions
PHIL 2136	Contemporary Issues in Ethics
Three additional courses (9 credits) from the following:	
PHIL 2124	Philosophies of Disability
or PHIL 2124W	Philosophies of Disability
PHIL 2125	Philosophy of Race and Gender
or PHIL 2125W	Philosophy of Race and Gender
PHIL 2132	Social and Political Philosophy
or PHIL 2132W	Social and Political Philosophy
PHIL 2133	Philosophy and Nonviolence
PHIL 2134	Philosophy of Human Rights
PHIL 2281	Philosophy of the Environment
PHIL 3142	Philosophy of Law
or PHIL 3142W	Philosophy of Law
PHIL 4195	Topics in Value Theory
or PHIL 4195W	Topics in Value Theory

MINOR IN LOGIC

REQUIREMENTS

The following requirements must be fulfilled: 18 credits

One course (3 credits) from the following:	
PHIL 2045	Introduction to Logic
PHIL 3121	Symbolic Logic
One course (3 credits) from the following:	
MATH 3710	Introduction to Mathematical Logic
MATH 3720	Axiomatic Set Theory
MATH 3730	Computability Theory
or MATH 3730W	Computability Theory
MATH 3740	Computational Complexity
or MATH 3740W	Computational Complexity
Four additional courses (12 credits) from the lists above or from the following:	
CSCI 1112	Algorithms and Data Structures
CSCI 3313	Foundations of Computing
CSCI 4222	Theory of Computer Translators
LING 2601	Language & Linguistic Analysis
or ANTH 2601	Language & Linguistic Analysis

No more than two courses may count toward both the student's major and the minor in logic.

For more information, contact the Philosophy Department. (http://philosophy.columbian.gwu.edu)

MINOR IN MIND–BRAIN STUDIES

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required courses (6 credits):		
PHIL 3153	Mind, Brain, and Artificial Intelligence	
PSYC 3122	Cognitive Neuroscience	
Electives (12 Credits)		
Four courses from the following, with a maximum of two courses from any one department:		
ANTH 1005	The Biological Bases of Human Behavior	
ANTH 3413	Evolution of the Human Brain	
ANTH 3601	Language, Culture, and Cognition	
or LING 3601	Language, Culture, and Cognition	
ANTH 3603	Psycholinguistics	
or LING 3603	Psycholinguistics	
BISC 2220	Developmental Neurobiology	
BISC 2452	Animal Behavior	
BISC 3320	Human Neurobiology	
PHIL 1153	The Meaning of Mind	
PHIL 3151	Philosophy and Science	

or PHIL 3151W	Philosophy and Science
PHIL 3152	Theory of Knowledge
PHIL 3251	Philosophy of Biology
PSYC 2014	Cognitive Psychology
PSYC 3118	Neuropsychology
PSYC 3121	Memory and Cognition
PSYC 3124	Visual Perception
SPHR 1071	Foundations of Human Communication
or SPHR 1071W	Foundations of Human Communication
SPHR 2104	Speech and Language Disorders
or SPHR 2104W	Speech and Language Disorders
SPHR 2106	Anatomy and Physiology for Speech and Hearing II
SPHR 2131	Language Acquisition and Development
SPHR 3116	Brain & Language

For more information, contact Dr. Tad Zawidzki (Philosophy) at zawidzki@gwu.edu.

MINOR IN PHILOSOPHY

REQUIREMENTS

The following requirements must be fulfilled: 15 credits in elective courses.

Code	Title	Credits
Electives		
Two of the following:		
PHIL 2111	History of Ancient Philosophy	
or PHIL 2111W	History of Ancient Philosophy	
PHIL 2112	History of Modern Philosophy	
PHIL 3113	19th-Century Philosophy	
or PHIL 3113W	19th-Century Philosophy	
PHIL 3172	American Philosophy	
or PHIL 3172W	American Philosophy	
PHIL 4192	Analytical Philosophy	
or PHIL 4192W	Analytical Philosophy	
PHIL 4193	20th-Century Continental Philosophy	
or PHIL 4193W	20th-Century Continental Philosophy	
Four additional PHIL courses, only one of which may be numbered below 2000.		

MASTER OF ARTS IN THE FIELD OF PHILOSOPHY

The master of arts in philosophy is intended to prepare students for admission to doctoral programs in philosophy and related disciplines such as political theory, biomedical ethics, and gender studies; train students to do research from either a contemporary or historical perspective; develop students' abilities in critical thinking, close reading, publishable writing, and oral communication; and prepare students to teach philosophy.

The curriculum focuses on the following areas:

1. Practical philosophy, including ethics, political philosophy, philosophy of law, and the philosophy of action
2. Philosophies of gender, race, ethnicity, sexual orientation, and disability
3. Core analytic philosophy, including philosophy of language, epistemology, metaphysics, and philosophy of mind
4. Continental philosophy of the twentieth and twenty-first centuries
5. The history of philosophy

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

30 credits.

Code	Title	Credits
Required		
One of the following:		
PHIL 6211	Topics in the History of Ancient Philosophy	
PHIL 6212	Topics in the History of Modern Philosophy	
For thesis option:		

PHIL 6998	Thesis Research

Remaining coursework is selected in consultation with the advisor.

MASTER OF ARTS IN THE FIELD OF PUBLIC POLICY WITH A CONCENTRATION IN PHILOSOPHY AND SOCIAL POLICY

The interdisciplinary program in public policy with a concentration in philosophy and social policy brings the normative, historical, and analytical-logical skills of philosophical inquiry to bear upon contemporary problems of social policy. The program is affiliated with the Trachtenberg School of Public Policy and Public Administration (https://tspppa.gwu.edu).

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (https://philosophy.columbian.gwu.edu/ma-philosophy-and-social-policy) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

Two options are available at the discretion of the faculty. Thesis option—30 credits, including 24 credits in required courses and 6 hours in thesis; non-thesis option—36 credits, including 24 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
Four of the following:		
PHIL 6230	Ethical Issues in Policy Arguments	
PHIL 6231	Seminar: Economic Justice	
PHIL 6238	Feminist Ethics and Policy Implications	
PHIL 6242	Philosophy, Law, and Social Policy	
PHIL 6250	Topics in Health Policy	
PHIL 6262	Normative Issues in Foreign Policy	
PHIL 6281	Environmental Philosophy and Policy	
One course from each of the following groups:		
Group A		
PPPA 6010	Politics & The Policy Process	
PSC 8212	Urban Policy Problems	
Group B		
ECON 6217	Survey of Economics I	
ECON 6237	Economics of the Environment and Natural Resources	
ECON 6248	Health Economics	
Group C		
PSC 6103	Approaches to Public Policy Analysis	
PPPA 6006	Policy Analysis	
SOC 6248	Race and Urban Redevelopment	
WSTU 6240	Women and Public Policy	
WSTU 6265	Women, Welfare & Poverty	
HIST 6011	Reading and Research in History and Public Policy	
Group D		
PPPA 6002	Research Methods and Applied Statistics (or substitute as approved by the advisor)	
For thesis option:		
PHIL 6998	Thesis Research	
PHIL 6999	Thesis Research	
Electives		

Electives may focus on a particular policy area (e.g., biomedical/health care, urban/welfare, or environmental policy), or may explore varied approaches and policy issues.

Other requirements

Successful completion of a master's comprehensive examination.

PHYSICS

The physics program offers instruction in the fundamental laws of the discipline as it strengthens a student's ability to see how these laws apply to all the sciences and everyday occurrences. Physics is part of the natural, mathematical, and biomedical sciences discipline in the Columbian College of Arts and

Sciences. Through courses ranging from classical mechanics to electromagnetic theory, the physics program prompts students to use mathematical logic, deductive reasoning, developed intuition, and careful observation.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in physics (p. 347)
- Bachelor of Science with a major in astronomy and astrophysics
- Bachelor of Science with a major in physics (p. 349)
- Bachelor of Science with a major in biophysics (p. 349)

Minors

- Minor in astronomy and astrophysics (p. 350)
- Minor in biophysics (p. 350)
- Minor in physics (p. 351)

GRADUATE

Master's program

- Master of Science in the field of physics (p. 351)

Doctoral program

- Doctor of Philosophy in the field of physics (p. 352)

FACULTY

Professors W.J. Briscoe (*Chair*), A. Eskandarian, G. Feldman, C. Kouveliotou, F.X. Lee, A.K. Opper, M.E. Reeves, I. Strakovsky (*Research*), C. Zeng

Associate Professors A. Afanasev, K.S. Dhuga, E.J. Downie, H. Griesshammer, H. Haberzettl, W. Peng, R.L. Workman (*Research*)

Assistant Professors A. Alexandru, M. D#ring, O. Kargaltsev, B.C. Kung, G. Lan, X. Qiu, A.J. van der Horst

Adjunct Professors G. White

Professorial Lecturers J.T. Broach, M.F. Corcoran, L. Medsker, A. Moscati, I. Moskowitz, C. O'Donnell

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Departmental prerequisite: Consent of a departmental graduate advisor is required for admission to all graduate courses in physics.

- Astronomy (ASTR) (p. 1045)
- Physics (PHYS) (p. 1382)

BACHELOR OF ARTS WITH A MAJOR IN PHYSICS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Required introductory courses (30 credits):		
PHYS 1021	University Physics I	
or PHYS 1025	University Physics I with Biological Applications	
PHYS 1022	University Physics II	
or PHYS 1022W	University Physics 2	
or PHYS 1026	University Physics II with Biological Applications	
PHYS 1023	Modern Physics	
or PHYS 1023W	Modern Physics	
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
MATH 2233	Multivariable Calculus	
MATH 2184	Linear Algebra I	
or APSC 2113	Engineering Analysis I	
MATH 3342	Ordinary Differential Equations	
or APSC 2113	Engineering Analysis I	
CHEM 1111	General Chemistry I	
or CHEM 1112	General Chemistry II	
or BISC 1111	Introductory Biology: Cells and Molecules	

or BISC 1112	Introductory Biology: The Biology of Organisms

Code	Title	Credits
Required advanced courses (21 credits):		
PHYS 2151	Intermediate Laboratory I: Techniques and Methods	
or PHYS 2151W	Intermediate Laboratory I: Techniques and Methods	
PHYS 3161	Mechanics	
PHYS 3164	Thermal and Statistical Physics	
PHYS 3165	Electromagnetic Theory I	
PHYS 4195	Physics Capstone	
Two additional physics (PHYS) courses (6 credits) numbered 3000 or above or ASTR course numbered 2000 or above		

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must submit for departmental approval an honors thesis based on a two-semester research project. In addition, the student must have a cumulative grade-point average of at least 3.5 in physics courses and 3.5 overall.

BACHELOR OF SCIENCE WITH A MAJOR IN ASTRONOMY AND ASTROPHYSICS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Prerequisites		
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
MATH 2184	Linear Algebra I	
MATH 2233	Multivariable Calculus	
MATH 3342	Ordinary Differential Equations	
MATH 3343	Partial Differential Equations	
PHYS 1021	University Physics I	
PHYS 1022	University Physics II	
PHYS 2023	Modern Physics	
Required		
ASTR 2121	Introduction to Modern Astrophysics	
ASTR 4195	Undergraduate Research in Astrophysics	
PHYS 2151	Intermediate Laboratory I: Techniques and Methods	
PHYS 3161	Mechanics	
PHYS 3164	Thermal and Statistical Physics	
PHYS 3165	Electromagnetic Theory I	
PHYS 3167	Principles of Quantum Physics	
PHYS 3181	Computational Physics	
PHYS 4195	Physics Capstone	
Electives		
One of the following:		
CSCI 1011	Introduction to Programming with Java	
CSCI 1041	Introduction to FORTRAN Programming	
CSCI 1121	Introduction to C Programming	
CSCI 1131	Introduction to Programming with C	
One of the following:		
PHYS 2127	Biophysics: Macroscopic Physics in the Life Sciences	
PHYS 2128	Biophysics: Microscopic Physics in the Life Sciences	
PHYS 2170	Solid-State Physics	
PHYS 2175	Nuclear Physics	
ASTR 3183	General Relativity	
Two of the following:		
ASTR 2131	Astrophysics Seminar	
ASTR 2141	Data Analysis in Astrophysics	
ASTR 2161	Space Astrophysics	

Elective courses should be selected in consultation with the advisor.

BACHELOR OF SCIENCE WITH A MAJOR IN BIOPHYSICS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Required introductory courses (20 credits):		
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
MATH 2233	Multivariable Calculus	
PHYS 1023	Modern Physics	
or PHYS 1023W	Modern Physics	
PHYS 1025	University Physics I with Biological Applications	
PHYS 1026	University Physics II with Biological Applications	

Code	Title	Credits
Required courses (33 credits):		
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
BISC 3209	Molecular Biology	
BISC 3261	Introductory Medical Biochemistry	
CHEM 1111	General Chemistry I	
CHEM 1112	General Chemistry II	
CHEM 2151	Organic Chemistry I	
CHEM 2152	Organic Chemistry II	
STAT 1127	Statistics for the Biological Sciences	
One course (3 credits) from the following:		
CSCI 1011	Introduction to Programming with Java	
CSCI 1041	Introduction to FORTRAN Programming	
CSCI 1111	Introduction to Software Development	
CSCI 1112	Algorithms and Data Structures	
CSCI 1131	Introduction to Programming with C	
Required advanced courses (18 credits):		
PHYS 2127	Biophysics: Macroscopic Physics in the Life Sciences	
PHYS 2128	Biophysics: Microscopic Physics in the Life Sciences	
PHYS 2151	Intermediate Laboratory I: Techniques and Methods	
or PHYS 2151W	Intermediate Laboratory I: Techniques and Methods	
or PHYS 2152	Intermediate Laboratory II: Instrumentation	
PHYS 3161	Mechanics	
PHYS 3164	Thermal and Statistical Physics	
PHYS 3165	Electromagnetic Theory I	
One course (3 credits) from the following:		
PHYS 4195	Physics Capstone	
PHYS 4196	Undergraduate Research in Biophysics	
PHYS 4197	Undergraduate Research in Nuclear Physics	

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must submit for departmental approval an honors thesis based on a two-semester research project. In addition, the student must have a cumulative grade-point average of at least 3.5 in physics courses and 3.5 overall.

BACHELOR OF SCIENCE WITH A MAJOR IN PHYSICS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Required introductory courses (36 credits):		
PHYS 1021	University Physics I	

or PHYS 1025	University Physics I with Biological Applications
PHYS 1022	University Physics II
or PHYS 1022W	University Physics 2
or PHYS 1026	University Physics II with Biological Applications
MATH 1231	Single-Variable Calculus I
PHYS 2023	Modern Physics
or PHYS 1023W	Modern Physics
MATH 1232	Single-Variable Calculus II
MATH 2233	Multivariable Calculus
MATH 2184	Linear Algebra I
or APSC 2113	Engineering Analysis I
MATH 3342	Ordinary Differential Equations
or APSC 2113	Engineering Analysis I
MATH 3343	Partial Differential Equations
CSCI 1111	Introduction to Software Development
or CSCI 1041	Introduction to FORTRAN Programming
or CSCI 1121	Introduction to C Programming
or CSCI 1131	Introduction to Programming with C
CHEM 1111	General Chemistry I
or CHEM 1112	General Chemistry II
or BISC 1111	Introductory Biology: Cells and Molecules
or BISC 1112	Introductory Biology: The Biology of Organisms

Code	Title	Credits
PHYS 2151	Intermediate Laboratory I: Techniques and Methods	
or PHYS 2151W	Intermediate Laboratory I: Techniques and Methods	
PHYS 3161	Mechanics	
PHYS 3164	Thermal and Statistical Physics	
PHYS 3165	Electromagnetic Theory I	
PHYS 3167	Principles of Quantum Physics	
PHYS 3181	Computational Physics	
PHYS 4195	Physics Capstone	
PHYS 4196	Undergraduate Research in Biophysics	
or PHYS 4197	Undergraduate Research in Nuclear Physics	
or ASTR 4195	Undergraduate Research in Astrophysics	

Two additional physics (PHYS) courses (6 credits) numbered 3000 or above or ASTR course numbered 2000 or above

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must submit for departmental approval an honors thesis based on a two-semester research project. In addition, the student must have a cumulative grade-point average of at least 3.5 in physics courses and 3.5 overall.

MINOR IN ASTRONOMY AND ASTROPHYSICS

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
Required		
PHYS 1011	General Physics I	
or PHYS 1021	University Physics I	
PHYS 1012	General Physics II	
or PHYS 1022	University Physics II	
ASTR 1001	Stars, Planets, and Life in the Universe	
or ASTR 1002	Origins of the Cosmos	
ASTR 2121	Introduction to Modern Astrophysics	
One of the following:		
ASTR 2131	Astrophysics Seminar	
ASTR 2141	Data Analysis in Astrophysics	
ASTR 2161	Space Astrophysics	

MINOR IN BIOPHYSICS

REQUIREMENTS

The following requirements must be met: 17 credits in required courses.

Code	Title	Credits
Required		
PHYS 1021	University Physics I	
PHYS 1022	University Physics II	
PHYS 1023	Modern Physics	
PHYS 2127	Biophysics: Macroscopic Physics in the Life Sciences	
PHYS 2128	Biophysics: Microscopic Physics in the Life Sciences	

MINOR IN PHYSICS

REQUIREMENTS

The following requirements must be fulfilled: 17 credits, including 11 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
MATH 2233	Multivariable Calculus	
PHYS 1021	University Physics I	
or PHYS 1025	University Physics I with Biological Applications	
PHYS 1022	University Physics II	
or PHYS 1026	University Physics II with Biological Applications	
or PHYS 1022W	University Physics 2	
PHYS 2023	Modern Physics	
or PHYS 1023W	Modern Physics	
Electives		
6 credits in two approved upper-level physics courses at the 3000 level or above.		

MASTER OF SCIENCE IN THE FIELD OF PHYSICS

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Prerequisite: a bachelor's degree with a major in physics at this University, or an equivalent degree.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

36 credits, including 30 credits in required courses and 6 credits in either elective courses or thesis.

Code	Title	Credits
Required		
PHYS 6110	Mathematical Methods of Theoretical Physics	
PHYS 6120	Advanced Mechanics	
PHYS 6210	Electrodynamics and Classical Field Theory	
PHYS 6220	Quantum Mechanics I	
PHYS 6310	Statistical Mechanics	
PHYS 6510	Communications in Physics	
PHYS 6580	Laboratory	
PHYS 6130	Computational Physics I	
PHYS 6230	Computational Physics II	
PHYS 6330	Computational Physics III	
Non-thesis option—two of the following:		
PHYS 6610	Nuclear and Particle Physics I	
PHYS 6710	Nuclear and Particle Physics II	
PHYS 6620	Biophysics I	
PHYS 6720	Biophysics II	
PHYS 6630	Astrophysics I	
PHYS 6730	Astrophysics II	
or		
Thesis option		

PHYS 6998	Thesis Research
PHYS 6999	Thesis Research

DOCTOR OF PHILOSOPHY IN THE FIELD OF PHYSICS

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy Program (p. 82).

Code	Title	Credits
Required		
PHYS 6110	Mathematical Methods of Theoretical Physics	
PHYS 6120	Advanced Mechanics	
PHYS 6210	Electrodynamics and Classical Field Theory	
PHYS 6220	Quantum Mechanics I	
PHYS 6310	Statistical Mechanics	
PHYS 6320	Quantum Mechanics II	
PHYS 6130	Computational Physics I	
PHYS 6230	Computational Physics II	
PHYS 6330	Computational Physics III	
PHYS 6510	Communications in Physics	
One of the following options:		
Option A		
PHYS 6610	Nuclear and Particle Physics I	
PHYS 6710	Nuclear and Particle Physics II	
Option B		
PHYS 6620	Biophysics I	
PHYS 6720	Biophysics II	
Option C		
PHYS 6630	Astrophysics I	
PHYS 6730	Astrophysics II	

Specific course requirements can be waived on a case-by-case basis upon approval of the department's graduate advisor.

Research fields

- Nuclear physics–experimental and theoretical studies on the structure, electromagnetic, weak and strong interactions, and scattering of few-body systems at low and intermediate energies;
- Biophysics and condensed-matter physics–experimental, theoretical, and computational studies of structures and functions of cells, biological networks and biomolecules, deciphering information encoded in genome; theoretical and observational astrophysics; interdisciplinary physics, including energy research and physics education research.

POLITICAL SCIENCE

The Department of Political Science, part of the social and behavioral sciences discipline in the Columbian College of Arts and Sciences, offers a program that examines politics in depth on both a national and international scale. Classroom study is supplemented by opportunities to intern on Capitol Hill or at government agencies.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in political science (p. 361)
- Bachelor of Arts with a major in political science (public policy focus) (p. 363)
- Bachelor of Science with a major in political science (p. 365)
- Combined program (p. 367)

Dual programs

- Bachelor of Arts with a major in political science and Master of Professional Studies in the field of advocacy in the global environment (p. 849)
- Bachelor of Arts with a major in political science and Master of Professional Studies in the field of legislative affairs (p. 850)
- Bachelor of Arts with a major in political science and Master of Professional Studies in the field of political management (p. 850)

Minors

- Minor in political science (p. 368)
- Minor in public policy (p. 368)

GRADUATE

Master's program

- Master of Arts in the field of political science (p. 369)
- Master of Arts in the field of legal institutions and theory (p. 369)

Doctoral program

- Doctor of Philosophy in the field of political science (p. 370)

FACULTY

University Professors M. Barnett, M. Finnemore

Professors S. Biddle, S. Binder, M.E. Brown, N.J. Brown, C.J. Deering, B. Dickson (*Chair)*, H.B. Feigenbaum, C. Glaser, J.H. Lebovic, M. Lynch, F. Maltzman, C. McClintock, K.J. Morgan, H.R. Nau, S.K. Sell, D. Shambaugh, M.J. Sodaro, R.P. Stoker, P. Wahlbeck, S.L. Wolchik

Associate Professors S.J. Balla, B. Bartels, A. Bowie, I. Creppell, A. Downes, H. Farrell, H.E. Hale, D. Hayes, E.D. Lawrence, C. McConnaughy, M.M. Mochizuki, J.M. Sides, E.J.Teitelbaum, I. White, S. Wiley

Assistant Professors M. Allendoerfer, C. Arrington, S. Goldman, E. Grynaviski, E. Finkel, S. Kaplan, E. Kramon, Y. Lupu, M. Miller, C. Mylonas, E. Saunders, R. Stein, C. Talmadge, W.J. Winstead, A. Ziegfeld

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Departmental prerequisite: PSC 1001 Introduction to Comparative Politics is prerequisite to Group A courses (comparative politics), PSC 1002 Introduction to American Politics and Government is prerequisite to Group B courses (American government and politics), and PSC 1003 Introduction to International Politics is prerequisite to Group C courses (international politics, law, and organizations). Honors course equivalents are acceptable substitutes. Students who have taken PSC 1011 Introduction to Politics I–PSC 1012W Introduction to Politics II have fulfilled prerequisites to all three groups. Elliott School students substitute IAFF 1005 Introduction to International Affairs: A Washington Perspective for PSC 1003 Introduction to International Politics as a prerequisite to Group C courses.

PSC 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

PSC 1001. Introduction to Comparative Politics. 3 Credits.
Concepts and principles of comparative analysis, with an examination of politics and government in selected countries.

PSC 1001W. Intro to Comparative Politics. 0-3 Credits.
Concepts and principles of comparative analysis, with an examination of politics and government in selected countries.

PSC 1002. Introduction to American Politics and Government. 3 Credits.
Structure, powers, and processes of the American political system and the impact on public policy.

PSC 1002W. Intro-American Politics & Govt. 3 Credits.
Structure, powers, and processes of the American political system and the impact on public policy.

PSC 1003. Introduction to International Politics. 3 Credits.
Analysis of world politics, focusing on the role of nation-states and international organizations and on selected foreign policy issues.

PSC 1011. Introduction to Politics I. 6 Credits.
Role of personal and social values in politics. Problems in the Western (especially American) tradition of political science. Admission by special selection process.

PSC 1012W. Introduction to Politics II. 6 Credits.
Continuation of PSC 1011. Role of personal and social values in politics. Thinking outside the Western state: culture, nationalism, ethnic conflict, democratization, international conflict. Admission by special selection process.

PSC 2000. Sophomore Colloquium. 3 Credits.
The Sophomore Colloquia are small seminar-style courses limited to second-year students in Columbian College. These courses engage students deeply in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects of the students. Topics vary by semester. Consult the schedule of classes for more details. Restricted to Registration by instructor approval.

PSC 2101. Scope and Methods of Political Science. 3 Credits.
Nature of political inquiry, approaches to the study of politics and government, empirical methods of research.

PSC 2102. Visualizing and Modeling Politics. 3 Credits.
The class builds on PSC 2101, Scope and Methods of Political Science, with emphasis on working with data to examine political questions. Prerequisites: PSC 2101 or STAT 1051 or STAT 1053 or STAT 1111.

PSC 2105. Major Issues of Western Political Thought I. 3 Credits.
Foundations of Western political thought—Plato to Aquinas.

PSC 2106. Major Issues of Western Political Thought II. 3 Credits.
History of political thought from the 16th through the late 19th century, as set forth in the works of representative thinkers.

PSC 2106W. Major Issues of Western Political Thought II. 3 Credits.
History of political thought from the 16th through the late 19th century, as set forth in the works of representative thinkers. Writing intensive.

PSC 2107. 20th-Century Political Thought. 3 Credits.
Recent Western political thought; analysis and critique of the legacies of modern political theories and ideologies.

PSC 2108. Freedom and Equality. 3 Credits.
Case analysis of major ideas related to freedom and equality in the Western political tradition.

PSC 2110. American Political Thought. 3 Credits.
Political thought in the U.S. from colonial times to the present as seen through major representative writings.

PSC 2120W. Freedom in American Thought and Popular Culture. 3 Credits.
An inquiry into definitions of freedom through examination of American political thought and popular culture. Writing intensive. (Same as AMST 2120, AMST 2120W, PSC 2120).

PSC 2211. State and Urban Politics. 3 Credits.
Comparative analysis of context, institutions, processes, and policies of state and urban political systems. Prerequisite: PSC 1002.

PSC 2212. State and Urban Policy Problems. 3 Credits.
Selected issues in state and urban policymaking, with emphasis on urban and metropolitan settings. Prerequisite: PSC 1002.

PSC 2213. Judicial Politics. 3 Credits.
An examination of judicial process and behavior. Emphasis on judicial selection, decision making, interaction with the political environment, and impact and implementation of decisions. Prerequisite: PSC 1002.

PSC 2214. U.S. Constitutional Law and Politics I. 3 Credits.
Separation of powers, federal–state relationships, economic regulation. Prerequisites: PSC 1002.

PSC 2215. U.S. Constitutional Law and Politics II. 3 Credits.
Political and civil rights. Prerequisites: PSC 1002.

PSC 2216. The American Presidency. 3 Credits.
Examination of the politics of presidential selection, the authority of the contemporary institution, the mechanisms and processes for formulating public policy, and the influences of personality on performance in office. Prerequisite: PSC 1002.

PSC 2217. Executive Branch Politics. 3 Credits.
Basic concepts in public administration; influence of bureaucratic politics on policy formulation and implementation. Prerequisite: PSC 1002. Same as PPPA 2117.

PSC 2218. Legislative Politics. 3 Credits.
Theory, structure, and process of the U.S. Congress, with emphasis on elections, party organization, committees, and floor procedure, in the context of executive–legislative relations and interest-group activities. Prerequisite: PSC 1002.

PSC 2218W. Legislative Politics. 3 Credits.
Theory, structure, and process of the U.S. Congress, with emphasis on elections, party organization, committees, and floor procedure, in the context of executive–legislative relations and interest-group activities. Writing intensive. Prerequisites: PSC 1002.

PSC 2219. Political Parties and Interest Groups. 3 Credits.
Role of parties as a linkage between mass preferences and government policies. Organization, nominations, voting, and activities in legislative and executive branches. Prerequisite: PSC 1002.

PSC 2220. Public Opinion. 3 Credits.
How public opinion is measured, how it is shaped, and its consequences for policymaking. Prerequisite: PSC 1002.

PSC 2221. African-American Politics. 3 Credits.
The evolution, nature, and role of African Americans within the U.S. political system. How the African American experience has shaped American politics (specifically public opinion, political behavior, political institutions, and salient public policy debates) and how black Americans have come to understand their position within the American political system. Prerequisites: PSC-1002 or PSC-002 or ((PSC-1011 or PSC-011) and (PSC-1012 or PSC-012 or PSC-012W or PSC-1012W)).

PSC 2222. Science, Technology, and Politics. 3 Credits.
Multiple impacts of scientific and technological developments on the political systems. Discussion of public policies for support, use, and control of science and technology. Prerequisite: PSC 1002.

PSC 2223. Campaigns and Elections. 3 Credits.
Examination of the various forms of American political participation in electoral and governmental politics and their effects on the political process. Prerequisite: PSC 1002.

PSC 2224. Issues in Domestic Public Policy. 3 Credits.
Examination of the decision-making process and the substance of various issues in domestic public policy in such areas as crime, economics, education, energy, the environment, poverty, and health. Prerequisite: PSC 1002.

PSC 2225. Women and Politics. 3 Credits.
An examination of the role and impact of women in politics, including women's interests and access to the political system; specific public policy issues with a particular focus on the role of women. Prerequisite: PSC 1002.

PSC 2228. Media, Politics, and Government. 3 Credits.
The impact of mainstream media and online outlets on politics and the governing process; the role of social media, online advertising, and comedy shows; the changing ways in which voters receive information. Prerequisites: PSC 1002.

PSC 2229. Media and Politics. 3 Credits.
The impact of the media on American politics, including the nature of coverage of political issues and campaigns, dynamics of selecting and presenting news stories, and consequences of media messages for public opinion and action. Prerequisite: PSC 1002.

PSC 2230. Law and Justice: The View from Hollywood. 3 Credits.
Analysis of films that focus on justice, the law, and the legal system. Consideration of what they tell us about political and legal culture and what messages they may have for contemporary legal issues. Focus on the relationship between law and justice, the practice of law, and the role of courts and trials in a political system. Prerequisites: PSC 1002.

PSC 2240. Poverty, Welfare, and Work. 3 Credits.
The elements and politics of America's welfare state. Social welfare policies and how they relate to work and poverty. Prerequisites: PSC 1002.

PSC 2330. Comparative Politics of Western Europe. 3 Credits.
Comparative political analysis with primary focus on the principal states of Western Europe. Prerequisite: PSC 1001.

PSC 2331. Comparative Politics of Central and Eastern Europe. 3 Credits.
Specific countries vary, to include nations of central and Eastern Europe and/or the newly independent states of the former Soviet Union. Prerequisite: PSC 1001.

PSC 2332. European Integration. 3 Credits.
The history of the European Union, its accomplishments as an international actor, and the vibrant debates over its future. Prerequisite: PSC 1001.

PSC 2334. Global Perspectives on Democracy. 3 Credits.
International experiences with the historical evolution and current nature of democratic political systems. Prerequisite: PSC 1001.

PSC 2336. State–Society Relations in the Developing World. 3 Credits.
Historically informed exploration of enduring issues of concern in state–society relations, with an empirical focus on selected countries and regions of the developing world. Prerequisite: PSC 1001.

PSC 2337. Development Politics. 3 Credits.
An examination of how and why political systems develop the way they do. Why do some countries develop into democracies, while others become authoritarian? How do class conflict, the nature of the elite, and the political culture affect the development of political institutions? Prerequisite: PSC 1001.

PSC 2338. Nationalism. 3 Credits.
Causes and the effects of nationalism, covering cases from around the world. Prerequisites: PSC 1001, PSC 1011, PSC 1012W.

PSC 2366. Russian Politics. 3 Credits.
An examination of political institutions, processes, and issues of Russian politics. Prerequisite: PSC 1001.

PSC 2367. Human Rights. 3 Credits.
Human rights theory, the various movements for human, religious, civil, political, and other rights. Prerequisite: PSC 1001.

PSC 2367W. Human Rights. 3 Credits.
Human rights theory, the various movements for human, religious, civil, political, and other rights. Writing intensive. Prerequisites: PSC 1001.

PSC 2368. Politics in the Two Koreas. 3 Credits.
An examination of political institutions, processes, and issues in South Korea and North Korea as well as in inter-Korean relations and major-power involvement in peninsular affairs. Prerequisites: PSC-1001 or PSC-001 or PSC-1001W or PSC-001W or ((PSC-1011 or PSC-011) and (PSC-1012 or PSC-012 or PSC-012W or PSC-1012W)).

PSC 2369. Comparative Politics of South Asia. 3 Credits.
A comparative examination of colonialism, economic development, and identity politics in South Asia. Prerequisite: PSC 1001.

PSC 2370. Comparative Politics of China and Northeast Asia. 3 Credits.
Political institutions and processes of China (including Taiwan), Japan, and Korea since World War II. Influence of indigenous traditions and foreign contacts. Prerequisite: PSC 1001.

PSC 2371. Politics and Foreign Policy of China. 3 Credits.
An examination of political institutions, processes, history, and issues of Chinese politics and foreign policy. Prerequisite: PSC 1001.

PSC 2373. Comparative Politics of Southeast Asia. 3 Credits.
Political forces, processes, and outcomes, using empirical examples from Southeast Asia. Prerequisite: PSC 1001.

PSC 2374. Politics and Foreign Policy of Japan. 3 Credits.
An examination of political institutions, processes, and issues of Japanese politics and foreign policy. Prerequisite: PSC 1001.

PSC 2377. Comparative Politics of the Middle East. 3 Credits.
Politics of the eastern Arab states, Turkey, Iran, and Israel. Prerequisite: PSC 1001.

PSC 2377W. Comparative Politics of the Middle East. 3 Credits.
Politics of the eastern Arab states, Turkey, Iran, and Israel. Writing intensive. Prerequisites: PSC 1001.

PSC 2379. Politics and Foreign Policy of Israel. 3 Credits.
Examination of the institutions, processes, and issues of Israeli politics and foreign policy. Prerequisite: PSC 1001.

PSC 2381. Comparative Politics of Sub-Saharan Africa. 3 Credits.
Comparative analysis of political systems in selected countries of Sub-Saharan Africa. Prerequisite: PSC 1001.

PSC 2383. Comparative Politics of Latin America. 3 Credits.
The politics of selected countries in South America, Central America, and the Caribbean. Emphasis on democratization. Prerequisite: PSC 1001.

PSC 2439. International Political Economy. 3 Credits.
Analysis of the political aspects of global economic relationships, focusing on such issues as economic hegemony, interdependence, trade relations, development assistance, multinational corporations, and the role of international organizations. Prerequisite: PSC 1003.

PSC 2440. Theories of International Politics. 3 Credits.
Exploration of alternative theoretical approaches to understanding world politics in its historical and contemporary dimensions. Prerequisite: PSC 1003.

PSC 2442. International Organizations. 3 Credits.
Development and operations of international organizations working in the areas of collective security, peacekeeping, trade, finance, environment, human rights. Prerequisite: PSC 1003.

PSC 2442W. International Organizations. 3 Credits.
Development and operations of international organizations working in the areas of collective security, peacekeeping, trade, finance, environment, human rights. Writing intensive. Prerequisites: PSC 1003.

PSC 2444. Public International Law. 3 Credits.
Survey of essential principles and concepts of public international law through case analysis and with reference to political factors. Prerequisite: PSC 1003.

PSC 2446. U.S. Foreign Policy. 3 Credits.
Survey of essential principles and concepts of public international law through case analysis and with reference to political factors. Prerequisite: PSC 1003.

PSC 2447. American Presidents at War. 3 Credits.
How American presidents have thought about and conducted wars using an analytical and historical approach. Prerequisites: PSC 1003 or IAFF 1005.

PSC 2449. International Security Politics. 3 Credits.
Overview of international security issues. Insights from a variety of historical periods and theoretical approaches inform the analysis. Prerequisite: PSC 1003.

PSC 2449W. International Security Politics. 3 Credits.
Overview of international security issues. Insights from a variety of historical periods and theoretical approaches inform the analysis. Writing intensive. Prerequisite: PSC 1003.

PSC 2451. Theory of War. 3 Credits.
The nature, purposes, and conduct of war. Strategy and its relationship to politics. Major strategic variants for continental warfare, maritime conflict, strategic bombing, insurgency/counterinsurgency, and nuclear war. Prerequisites: PSC 1003.

PSC 2451W. Theory of War. 3 Credits.
The nature, purposes, and conduct of war. Strategy and its relationship to politics. Major strategic variants for continental warfare, maritime conflict, strategic bombing, insurgency and counterinsurgency, and nuclear war. Prerequisites: PSC 1003.

PSC 2461. European-Atlantic Relations. 3 Credits.
International politics of the North Atlantic area, the European Union, and U.S.–European relations. Prerequisite: PSC 1003.

PSC 2468. Post-Soviet Foreign Policy. 3 Credits.
External problems and policies of Russia and the other successor states of the former USSR (especially the Baltics, Ukraine, and southern rim of the former Soviet Union). Prerequisite: PSC 1003.

PSC 2475. International Relations of East Asia. 3 Credits.
Analysis of the foreign policies of selected East Asian countries and the foreign policies of major powers toward the region. Prerequisite: PSC 1003.

PSC 2476. The Arab-Israeli Conflict. 3 Credits.
Origins, evolution, and issues of the Arab–Israeli conflict. Prerequisite: PSC 1003.

PSC 2476W. The Arab-Israeli Conflict. 3 Credits.
The history and current state of the Arab-Israeli conflict; the Jewish and Arab nationalism movements; Palestine under the British Mandate and after the establishment of the State of Israel; the peace process and its collapse; and recent political developments. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: PSC 1003.

PSC 2478. International Relations of the Middle East. 3 Credits.
Analysis of the regional and international relations of the Middle East. Prerequisite: PSC 1003.

PSC 2482. African International Politics. 3 Credits.
Analysis of interstate relations in Africa and of selected aspects of African relations with the outside world. Prerequisite: PSC 1003. Recommended prerequisite: PSC 2381.

PSC 2484. International Relations of Latin America. 3 Credits.
Emphasis on U.S. foreign policy toward Latin America. Prerequisite: PSC 1003.

PSC 2987. Internship: Political Science. 1-3 Credits.
Study of political behavior and institutions through internship experience. Open to departmental majors only. Admission requires departmental approval and junior standing.

PSC 2988. Internship in Law & Socieity. 3 Credits.

PSC 2990. Selected Topics. 3 Credits.

PSC 2990W. Selected Topics. 3 Credits.

PSC 2991. Special Topics in Political Thought. 3 Credits.

PSC 2992. Special Topics in American Politics and Government. 3 Credits.
Prerequisite: PSC 1002.

PSC 2993. Special Topics in Comparative Politics. 3 Credits.
Prerequisite: PSC 1001.

PSC 2994. Special Topics in International Relations. 3 Credits.
Prerequisite: PSC 1003.

PSC 2994W. Special Topics in International Relations. 3 Credits.
Writing intensive. Prerequisites: PSC 1003.

PSC 3192W. Proseminar: Political Science. 3 Credits.
Examination of selected problems in political science. Admission restricted to political science majors in their junior or senior year. May be repeated once for credit.

PSC 4991. Independent Study. 1-3 Credits.
For departmental majors. Prerequisite: senior standing, 15 credit hours of upper-division political science courses, and approval of the undergraduate program advisor and the faculty member who will direct the study.

PSC 5476W. The Arab-Israeli Conflict. 3 Credits.

PSC 6103. Approaches to Public Policy Analysis. 3 Credits.
Primarily for master's students. Empirical and normative foundations of systematic policy analysis: concepts, theories, models, issues, strengths, limitations, and uses and misuses in the policy process.

PSC 6113. The Constitution: History and Ideas. 3 Credits.
With a focus on the history and ideas that influenced James Madison, consideration of ideas that formed the common heritage of all the framers of the Constitution. The separate traditions of liberty that were fused together in the Constitution. Early changes in American society that placed one of those traditions at the center of America's self-understanding.

PSC 6114. Theories of Judicial Review. 3 Credits.
How and why the U.S. Supreme Court interprets the Constitution. The theory behind the practice of judicial review. Consideration of such questions as whether the Constitution intended judicial review and how the two wings of today's Court justify their own position on judicial review.

PSC 6187. Selected Topics in Political Theory. 3 Credits.
In-depth study of significant issues in political theory. Topics vary by semester. Consult the Schedule of Classes for more details. For advanced students.

PSC 6330. Comparative Government and Politics. 3 Credits.
Open to Elliott School students only. Examination of basic approaches to comparative politics.

PSC 6333. Comparative Politics of Russia and Eurasia. 3 Credits.
Comparative analysis of politics in the post-Soviet region. Theoretical and methodological approaches to understanding important issues, frequently including democracy/autocracy, ethnic conflict, political economy, center–periphery relations, and state building.

PSC 6336. Political Economy of Developing Areas. 3 Credits.
Comparative analysis of how development problems have been defined from both political and economic perspectives and the solutions proposed by outsiders and insiders. Emphasis on the rise, demise, and recovery of development orthodoxies.

PSC 6338. U.S. Foreign Economic Policy. 3 Credits.
Exploration of ideas and issues involved in U.S. foreign economic policy, including relationship of economic and security issues, interdependence, protectionism, role of the dollar, industrial policy, and the debt crisis.

PSC 6345. Comparative Foreign Policy. 3 Credits.
The relationship of international actors with one another and with their external environment analyzed in a comparative framework. Focus on nation-states as well as non-state actors, such as international organizations. Differences and similarities in policies on economics, diplomacy, security, and global issues.

PSC 6346. The Politics of U.S. Foreign Policy. 3 Credits.
Patterns and problems in contemporary U.S. foreign policy. Special attention given to the domestic political factors shaping foreign policy.

PSC 6347. U.S. Foreign Policy Traditions. 3 Credits.
Contemporary debate about the substance of American foreign policy through the lens of alternative theoretical approaches to the study of international relations. Classical realist (national interest), neorealist (balance of power), neoliberal (international interdependence and institutions), and constructivist (national identity) interpretations are compared.

PSC 6348. Politics of U.S. National Security Policy. 3 Credits.
Examines competing theoretical approaches to the study of national security policy and tests these on a variety of substantive issue areas in the United States. (May include such topics as nuclear non-proliferation, responses to regional conflicts, definition of new security goals, etc.).

PSC 6349. International Security Politics. 3 Credits.
Overview of the major theoretical debates in international security. How different theoretical approaches inform policy decisions and options.

PSC 6350. Foreign Policy Analysis—Selected Topics. 3 Credits.
Analysis of U.S. foreign policy toward selected world regions.

PSC 6351. Civil-Military Relations. 3 Credits.
Substantive and theoretical issues and debates in the study of civil–military relations.

PSC 6360. Western European Politics. 3 Credits.
Examination of the principal characteristics of the British, French, German, and Italian political systems, comparing their institutional and behavioral adaptations to the problems of advanced industrial democracies.

PSC 6361. Politics of European Integration. 3 Credits.
The origins, institutions, and politics of West European integration, with emphasis on theories of regional integration and the development of the European Union.

PSC 6362. Nation-Building in the Balkans. 3 Credits.

PSC 6364. Comparative Governments and Politics of Central And Eastern Europe. 3 Credits.
Comparative analysis of domestic political processes and policies in Central and Eastern Europe.

PSC 6366. Government and Politics of Russia. 3 Credits.
The politics and development of the Russian state.

PSC 6367. Post-Soviet Politics. 3 Credits.
How the study of former Soviet countries contributes to major debates in comparative politics. Focus includes regimes, political economy, revolutions, ethnic politics, nationalism.

PSC 6368. Japanese Politics and Foreign Policy. 3 Credits.
Japan's path to modernity and the impact its pattern of development has had on the nation's democratization, political economy, and political institutions in the post-1945 period.

PSC 6370. Politics of China I. 3 Credits.
Readings and discussion of the political dynamics and policy process in contemporary China.

PSC 6371. Politics of the PRC 2. 3 Credits.
Research seminar on selected topics in Chinese politics, using official and other primary sources. Prerequisites: PSC 6370 or permission of instructor.

PSC 6372. Foreign Policy of the PRC. 3 Credits.
Readings and research on the main approaches to analyzing China's foreign policy and foreign relations.

PSC 6373. Political Economy of Industrializing Asia. 3 Credits.
Comparative analysis of the relationship between economic interests and politics in East and Southeast Asia. Emphasis on industrializing economies and their integration into global trade and investment networks.

PSC 6374. Korean Politics. 3 Credits.
An examination of Korean politics from the perspectives of four major research areas: authoritarian regime and economic growth; democratic transition and consolidation; the Asian financial crisis and its consequences; and the two Koreas and international relations.

PSC 6377. Comparative Politics of the Middle East. 3 Credits.
Readings and research on selected problems of the governments and politics of the Middle East.

PSC 6379. Government and Politics of Africa. 3 Credits.
Major theories and themes of African politics considering the context shaping political and economic reforms, formal and informal institutions, and prospects for political reform.

PSC 6383. Comparative Politics of Latin America. 3 Credits.
Readings and discussion on the politics of selected countries in South America, Central America, and the Caribbean. Emphasis on the possibilities for democracy and revolution.

PSC 6388. Topics in Comparative Politics. 3 Credits.

PSC 6390. Politics and Culture. 3 Credits.

PSC 6439. International Political Economy. 3 Credits.
Research seminar exploring alternative theoretical approaches to the study of international political economy and their application to the explanation and interpretation of historical and contemporary events in world political and economic affairs. Primarily for Elliott School degree candidates.

PSC 6440. Theory-International Relations. 3 Credits.
Open to Elliott School students only. Theories of international relations.

PSC 6442. Politics and Practice of International Institutions. 3 Credits.
The politics of international institutions in the areas of collective security, peace keeping, trade, money, development, environment, human rights.

PSC 6444. Politics of International Law. 3 Credits.
The political sources and consequences of international law and norms.

PSC 6456. Origins/Major Wars & Terrorism. 3 Credits.
An examination of the origins of major wars, including terrorism, from the 18th to the 20th centuries from the theoretical perspectives of realism, liberalism, and constructivism/identity.

PSC 6457. Arms Control & Disarmament. 3 Credits.
Major issues and trends in the postwar development of U.S. arms control and disarmament policy.

PSC 6465. The International Politics of Central and Eastern Europe. 3 Credits.
Major historical, political, social, and regional factors that have shaped the interwar, World War II, and postwar evolution of Eastern Europe; emphasis on foreign relations with outside powers and on regional East–West contacts.

PSC 6467. Asian Security. 3 Credits.
An examination of the major issues in Asian Security using various theoretical perspectives involving a mix of political science and policy analysis.

PSC 6475. International Politics of East Asia. 3 Credits.
Foreign policies and international behavior of the regional states (especially China, Japan, and Vietnam) and the extraregional powers (especially the U.S. and Russia).

PSC 6476. The Arab-Israeli Conflict. 3 Credits.
Readings and research on the origins, evolution, and issues of the Arab–Israeli conflict.

PSC 6478. International Relations of the Middle East. 3 Credits.
Readings and research on the regional and international relations of the Middle East.

PSC 6484. International Relations of Latin America. 3 Credits.
Readings and discussion on U.S.–Latin American relations and the foreign policies of selected states.

PSC 6489. Topics in International Relations. 3 Credits.

PSC 6987. Legal Internship. 3 Credits.
Study of the interior workings of legal institutions and related organizations through an approved internship with a court, law firm, legal advocacy group, public defender's office, or legal think tank. A research paper is required.

PSC 6996. Reading. 3 Credits.
Limited to graduate degree candidates. Written permission of instructor required.

PSC 6997. Research. 3 Credits.
Limited to graduate degree candidates. Written permission of instructor required.

PSC 6998. Thesis Research. 3 Credits.

PSC 6999. Thesis Research. 3 Credits.

PSC 8101. Introduction to Empirical Political Analysis. 3 Credits.
Statistical foundations of empirical political analysis and computer applications. Basic probability theory, exploratory and descriptive data analysis, statistical inference, and introduction to linear regression.

PSC 8102. Empirical Political Analysis. 3 Credits.
Techniques of social science data analysis. Model building, estimation, and interpretation. Linear models and extensions. Introduction to discrete choice models. Prerequisite: PSC 8101 or permission of instructor.

PSC 8103. Approaches to Policy Analysis. 3 Credits.
Primarily for doctoral students. Empirical and normative foundations of systematic policy analysis: concepts, theories, models, issues, strengths, limitations, and uses and misuses in the policy process.

PSC 8104. Qualitative Research Methods. 3 Credits.
Theoretical, practical, and ethical aspects of conducting qualitative research.

PSC 8105. Readings in Political Theory. 3 Credits.
Selected major works, both ancient and modern, that illuminate basic problems and questions of political theory.

PSC 8106. Topics in Political Theory. 3 Credits.
Advanced readings and group discussions. Analysis and interpretation of selected concepts and schools of thought.

PSC 8107. Modern Political Thought and Ideologies. 3 Credits.
Analysis of some main currents in modern political thought and ideologies.

PSC 8108. Craft of Political Inquiry. 3 Credits.
Logic of inquiry in political science: theories of knowledge, inference, and research methods.

PSC 8109. Systematic Inquiry and Research Design. 3 Credits.
Study design, data collection, and models of analysis in political science.

PSC 8120. Nonlinear Models. 3 Credits.
Introduction to maximum likelihood estimation interpretation of non-linear statistical models. Statistical inference, appropriate use, and presentation and interpretation of results.

PSC 8122. Logitudinal Analysis. 3 Credits.
Examination of two classes of statistical models for longitudinal data—(1) models for time-series, cross-sectional and panel data and (2) modeling event history (i.e., duration, survival, hazard).

PSC 8124. Multilevel Modeling. 3 Credits.
Statistical issues and models for multilevel (hierarchical) data structures, including the variance components, random intercept, and random coefficient models. Handling cross-level interactions.

PSC 8130. Game Theory I. 3 Credits.
Introduction to the core elements of game theory and how it has been utilized in political science. Applications of formal models to political phenomena and the major insights that have come from this work. Restricted to PSC graduate students only.

PSC 8131. Game Theory II. 3 Credits.
Builds on the introductory material in Game Theory I to focus on examples of formal work in political science. Students expand their knowledge of advanced games and learn the principles behind exemplary published research. Restricted to Registration restricted to PSC graduate students only.

PSC 8132. Network Analysis. 3 Credits.
Sociological and psychological foundations of network theory; network measurement and inferential tools; applications of these tools and concepts to political science. Restricted to Registration restricted to PSC graduate students only.

PSC 8185. Topics in Empirical and Formal Political Analysis. 3 Credits.
Selected topics in quantitative political methodology and formal political theory with varying emphasis on maximum likelihood estimation, nonlinear models, causal inference, formal theories, and mathematical/computational tools for the social sciences. May be repeated for credit provided the topic differs. Prerequisite: PSC 8120.

PSC 8187. Selected Topics in Political Theory. 3 Credits.
In-depth coverage of significant issues in political theory, including such topics as justice, toleration, and political community. For advanced students.

PSC 8210. American Political Process. 3 Credits.
A survey of American political institutions, processes, and behavior.

PSC 8211. Urban Politics. 3 Credits.
Comparative analysis of the context, institutions, processes, and policies of urban political systems.

PSC 8212. Urban Policy Problems. 3 Credits.
Analysis of public policy issues confronting urban governments; emphasis on the theoretical roots and empirical impact of past and present programs in such areas as housing, education, poverty, and crime.

PSC 8213. Judicial Politics. 3 Credits.
Introduction to the literature of judicial process and behavior studies; specific focus on selected topics. Emphasis on the major subfields of law, courts, and judicial process.

PSC 8215. Law, Politics, and Society. 3 Credits.
Role of the judiciary in policy formulation; emphasis on the U.S. Supreme Court and civil liberties issues.

PSC 8216. American Presidency. 3 Credits.
Personalized and institutionalized aspects of the presidency, with particular emphasis on the politics of contemporary policymaking.

PSC 8217. Executive Branch Politics. 3 Credits.
Structure and operation of governmental bureaucracy with particular emphasis on the politics of formulating and implementing public policy.

PSC 8218. Legislative Politics. 3 Credits.
Theory, structure, and process of the U.S. Congress, with emphasis on member–constituency relations, individual and collective decision making, party and committee activities, executive–legislative relations, and interest-group activities.

PSC 8219. Political Parties and Elections. 3 Credits.
Nature and functions of American political parties: organizational status, nominating and electoral politics, and role in governing.

PSC 8220. Public Opinion and Political Psychology. 3 Credits.
Sources and dynamics of public opinion and political socialization.

PSC 8221. Interest-Group Politics. 3 Credits.
Theory, structure, and activities of interest groups in American politics.

PSC 8226. Politics and Organizations. 3 Credits.
Theoretical approaches to understanding organizational behavior and change; applications to specific political problems in U.S., international, and comparative politics.

PSC 8229. Politics and Public Policy. 3 Credits.
Examination of political processes that influence policy formulation, policy implementation, and the uses of policy analysis.

PSC 8286. Selected Topics in American Politics. 3 Credits.
In-depth coverage of significant theoretical and empirical issues in American politics, including such topics as political behavior, electoral politics, and race and politics. For advanced students. (Offered as the demand warrants).

PSC 8331. Advanced Theories of Comparative Politics. 3 Credits.
Major concepts, methods, and theoretical debates in comparative politics, including cultural, rational, and institutional approaches.

PSC 8333. Political Violence. 3 Credits.
Theoretical and methodological approaches to studying violence, such as civil wars, ethnic riots, suicide bombings, and genocide, and the impact of violence on societies and people. Restricted to Registration restricted to PSC graduate students only.

PSC 8334. Democracy and Democratization in Comparative Perspective. 3 Credits.
Theoretical approaches to processes of democratization. Evaluation of cultural, economic, institutional, and international-actor approaches. Case analysis of recently transitioned or transitioning nations. Primarily for Ph.D. students in political science.

PSC 8337. Theories of Political Development. 3 Credits.
Examination of how and why political systems develop the way they do. Why do some countries develop into democracies, while others become authoritarian? How do class conflict, the nature of the elite, and the political culture affect the development of political institutions?.

PSC 8338. Nationalism and Nation-Building. 3 Credits.

PSC 8340. Authoritarianism. 3 Credits.

PSC 8341. Theories of Ethnic Politics. 3 Credits.
Focus on cutting-edge interdisciplinary theories of ethnicity's role in politics. Ethnicity's relationship to democracy, economy, psychology, conflict, and solutions. Cases worldwide.

PSC 8388. Selected Topics in Comparative Politics. 3 Credits.
In-depth coverage of significant theoretical and empirical issues in comparative politics, including such topics as democratization, the politics of development, the role of the state in advanced industrial societies, gender and ethnicity, and the politics of nationalism. (Offered as the demand warrants).

PSC 8441. Advanced Theories of International Politics. 3 Credits.
Perspectives examined range from realism to critical theory and focus upon a variety of explanatory variables.

PSC 8450. Topics-International Relations. 3 Credits.

PSC 8452. Theories of International Security. 3 Credits.
Focus on conflict in different systems and scenarios and on causes and consequences of different strategies. The role of ethics in international security.

PSC 8453. Advanced Theories of International Political Economy. 3 Credits.
Major theories of political economy, from classical perspectives on problems of international cooperation to modern treatments of trade, finance, investment, and regulation.

PSC 8454. Domestic Politics and International Relations. 3 Credits.
Theoretical and empirical approaches to exploring the relationship between domestic politics and international relations. Restricted to Open to PhD students in Political Science and MA students with permission of the instructor.

PSC 8460. Military Intervention. 3 Credits.
Theoretical and empirical approaches to the study of military interventions. The challenges of designing political science research on a complex and policy-relevant topic like military intervention.

PSC 8461. Military Effectiveness. 3 Credits.
Theories of military effectiveness in conventional wars. Case studies of several conflicts and brief exploration of effectiveness in unconventional wars.

PSC 8462. Civil War. 3 Credits.
Theories of causes, conduct, and termination of civil wars. Consideration of violence against civilians, rebel recruitment, counterinsurgency, and civil war outcomes.

PSC 8489. Selected Topics in International Politics. 3 Credits.
In-depth coverage of significant theoretical and empirical issues in international politics, including such topics as comparative foreign policy, ethics and norms in international politics, the politics of military intervention, and theories of security in a post-Cold War environment. For advanced students. (Offered as the demand warrants).

PSC 8997. Advanced Reading. 1-3 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

PSC 8998. Advanced Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

PSC 8999. Dissertation Research. 1-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

BACHELOR OF ARTS WITH A MAJOR IN POLITICAL SCIENCE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Prerequisite		
PSC 1001	Introduction to Comparative Politics	
PSC 1002	Introduction to American Politics and Government	
PSC 1003	Introduction to International Politics (or the equivalent)	

Two courses in either economics or history,* and an additional four courses in the social sciences chosen from the following departments: ANTH (excluding ANTH 1001, ANTH 1005, and courses in the 3400s), COMM, GEOG, HMSR, LING, SMPA (excluding SMPA 2112, SMPA 3236, SMPA 2117), ORSC, PSYC, SPHR, SOC, IAFF, PSTD*, and WSTU.* Students also may choose from the following courses:

HONR 2043	Honors Microeconomics
HONR 2044	Honors Macroeconomics
NSC 2126	Sea Power and Maritime Affairs
NSC 2160	Evolution of Warfare
NSC 2180	Amphibious Warfare

12 credits of introductory foreign language and statistics are strongly recommended.

Code	Title	Credits
Required		
Ten upper-division political science courses for a total of 30 credits, including one course from each of the following groups:		
Group A (comparative politics)		
PSC 2330	Comparative Politics of Western Europe	
PSC 2331	Comparative Politics of Central and Eastern Europe	
PSC 2332	European Integration	
PSC 2334	Global Perspectives on Democracy	
PSC 2336	State-Society Relations in the Developing World	
PSC 2337	Development Politics	
PSC 2338	Nationalism	
PSC 2366	Russian Politics	
PSC 2367	Human Rights	
PSC 2367W	Human Rights	
PSC 2368	Politics in the Two Koreas	
PSC 2369	Comparative Politics of South Asia	

PSC 2370	Comparative Politics of China and Northeast Asia
PSC 2371	Politics and Foreign Policy of China
PSC 2373	Comparative Politics of Southeast Asia
PSC 2374	Politics and Foreign Policy of Japan
PSC 2377	Comparative Politics of the Middle East
PSC 2377W	Comparative Politics of the Middle East
PSC 2379	Politics and Foreign Policy of Israel
PSC 2381	Comparative Politics of Sub-Saharan Africa
PSC 2383	Comparative Politics of Latin America
PSC 2993	Special Topics in Comparative Politics
Group B (American government and politics)	
PSC 2211	State and Urban Politics
PSC 2212	State and Urban Policy Problems
PSC 2213	Judicial Politics
PSC 2214	U.S. Constitutional Law and Politics I
PSC 2215	U.S. Constitutional Law and Politics II
PSC 2216	The American Presidency
PSC 2217	Executive Branch Politics
PSC 2218	Legislative Politics
PSC 2218W	Legislative Politics
PSC 2219	Political Parties and Interest Groups
PSC 2220	Public Opinion
PSC 2221	African-American Politics
PSC 2222	Science, Technology, and Politics
PSC 2223	Campaigns and Elections
PSC 2224	Issues in Domestic Public Policy
PSC 2225	Women and Politics
PSC 2228	Media, Politics, and Government
PSC 2229	Media and Politics
PSC 2230	Law and Justice: The View from Hollywood
PSC 2240	Poverty, Welfare, and Work
PSC 2992	Special Topics in American Politics and Government
Group C (international politics, law, and organizations)	
PSC 2439	International Political Economy
PSC 2440	Theories of International Politics
PSC 2442	International Organizations
PSC 2442W	International Organizations
PSC 2444	Public International Law
PSC 2446	U.S. Foreign Policy
PSC 2447	American Presidents at War
PSC 2449	International Security Politics
PSC 2449W	International Security Politics
PSC 2451	Theory of War
PSC 2451W	Theory of War
PSC 2461	European-Atlantic Relations
PSC 2468	Post-Soviet Foreign Policy
PSC 2475	International Relations of East Asia
PSC 2476	The Arab-Israeli Conflict
PSC 2478	International Relations of the Middle East
PSC 2482	African International Politics
PSC 2484	International Relations of Latin America
PSC 2994	Special Topics in International Relations
Group D (research methods)	
PSC 2101	Scope and Methods of Political Science
PSC 2102	Visualizing and Modeling Politics
Group E (political thought)	
PSC 2105	Major Issues of Western Political Thought I
PSC 2106	Major Issues of Western Political Thought II
PSC 2107	20th-Century Political Thought
PSC 2108	Freedom and Equality
PSC 2110	American Political Thought

PSC 2120	Freedom in American Thought and Popular Culture
or PSC 2120W	Freedom in American Thought and Popular Culture
PSC 2991	Special Topics in Political Thought
Proseminar	
PSC 3192W	Proseminar: Political Science (taken in the junior or senior year) **

*In addition to the CCAS General Education Requirements (http://columbian.gwu.edu/undergraduate/advising/gpac) list of courses in social and behavioral sciences, courses in history, peace studies, and women's, general, studies are considered social sciences for this requirement.

**Every major must take PSC 3192W Proseminar: Political Science, which counts toward the 30-credit requirement but does not satisfy group distribution requirements, in the junior or senior year. A graduate course may be substituted for the proseminar requirement with the written permission of the instructor and the undergraduate advisor.

NOTE:

No more than three credits of PSC 2987 Internship: Political Science may be credited toward the major. Additionally, PSC 2987 Internship: Political Science does not satisfy the upper-division distribution requirement.

Specific group credit for offerings of PSC 2990 Selected Topics is determined by the undergraduate advisor.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must have a GPA in upper level Political Science courses of 3.7 or higher. Those with a GPA in the major between 3.5 and 3.7 must complete an independent research project, usually done in PSC 3192, that has been approved as meriting Special Honors by two members of the Political Science faculty. At least one of these faculty members must be tenured or tenure track.

BACHELOR OF ARTS WITH A MAJOR IN POLITICAL SCIENCE (PUBLIC POLICY FOCUS)

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Prerequisite		
PSC 1001	Introduction to Comparative Politics	
PSC 1002	Introduction to American Politics and Government	
PSC 1003	Introduction to International Politics	
Required		
30 credit hours of upper-division courses in political science distributed as follows:		
Three courses (9 credits) in policy-oriented courses from the following:		
PSC 2212	State and Urban Policy Problems	
PSC 2213	Judicial Politics	
PSC 2216	The American Presidency	
PSC 2217	Executive Branch Politics	
PSC 2218	Legislative Politics	
PSC 2219	Political Parties and Interest Groups	
PSC 2240	Poverty, Welfare, and Work	
PSC 2222	Science, Technology, and Politics	
PSC 2224	Issues in Domestic Public Policy	
PSC 2446	U.S. Foreign Policy	
PSC 2468	Post-Soviet Foreign Policy	
One policy-oriented proseminar (3 credits):		
PSC 3192W	Proseminar: Political Science (topic must be policy oriented)	
One course (3 credits) from each of the following groups:		
Group A (comparative politics)		
PSC 2330	Comparative Politics of Western Europe	
PSC 2331	Comparative Politics of Central and Eastern Europe	
PSC 2332	European Integration	
PSC 2334	Global Perspectives on Democracy	
PSC 2336	State–Society Relations in the Developing World	
PSC 2337	Development Politics	

PSC 2338	Nationalism
PSC 2366	Russian Politics
PSC 2367	Human Rights
PSC 2368	Politics in the Two Koreas
PSC 2369	Comparative Politics of South Asia
PSC 2370	Comparative Politics of China and Northeast Asia
PSC 2371	Politics and Foreign Policy of China
PSC 2373	Comparative Politics of Southeast Asia
PSC 2374	Politics and Foreign Policy of Japan
PSC 2377	Comparative Politics of the Middle East
PSC 2379	Politics and Foreign Policy of Israel
PSC 2380	Govts & Politics- North Africa
PSC 2381	Comparative Politics of Sub-Saharan Africa
PSC 2383	Comparative Politics of Latin America
PSC 2993	Special Topics in Comparative Politics
Group B (American government and politics)	
PSC 2211	State and Urban Politics
PSC 2213	Judicial Politics
PSC 2214	U.S. Constitutional Law and Politics I
PSC 2215	U.S. Constitutional Law and Politics II
PSC 2216	The American Presidency
PSC 2218	Legislative Politics
PSC 2219	Political Parties and Interest Groups
PSC 2220	Public Opinion
PSC 2221	African-American Politics
PSC 2223	Campaigns and Elections
PSC 2225	Women and Politics
PSC 2228	Media, Politics, and Government
PSC 2229	Media and Politics
PSC 2230	Law and Justice: The View from Hollywood
PSC 2992	Special Topics in American Politics and Government
Group C (international politics, law, and organizations)	
PSC 2439	International Political Economy
PSC 2440	Theories of International Politics
PSC 2442	International Organizations
PSC 2444	Public International Law
PSC 2446	U.S. Foreign Policy
PSC 2447	American Presidents at War
PSC 2449	International Security Politics
PSC 2451	Theory of War
PSC 2461	European-Atlantic Relations
PSC 2468	Post-Soviet Foreign Policy
PSC 2475	International Relations of East Asia
PSC 2476	The Arab-Israeli Conflict
PSC 2478	International Relations of the Middle East
PSC 2482	African International Politics
PSC 2484	International Relations of Latin America
PSC 2994	Special Topics in International Relations
Group D (research methods)	
PSC 2101	Scope and Methods of Political Science
PSC 2102	Visualizing and Modeling Politics
Group E (political thought)	
PSC 2105	Major Issues of Western Political Thought I
PSC 2106	Major Issues of Western Political Thought II
PSC 2107	20th-Century Political Thought
PSC 2108	Freedom and Equality
PSC 2110	American Political Thought
PSC 2120	Freedom in American Thought and Popular Culture
PSC 2991	Special Topics in Political Thought

Elective		
One upper-division political science elective course (3 credits)		
Code	**Title**	**Credits**
Six courses (18 credits) in other social sciences and statistics, which must include:		
Social sciences		
ECON 1011	Principles of Economics I	
ECON 1012	Principles of Economics II	
ECON 2101	Intermediate Microeconomic Theory	
and one of the following:		
ECON 2159	Government Regulation of the Economy	
ECON 3161	Public Finance: Expenditure Programs	
ECON 3162	Public Finance: Taxation	
SOC 2105	Social Problems in American Society	
SOC 2112	Evaluation Research	
SOC 2161	Sociology of Complex Organizations	
SOC 2170	Class and Inequality in American Society	
Statistics		
STAT 1053	Introduction to Statistics in Social Science	
or STAT 1051	Introduction to Business and Economic Statistics	
or STAT 1111	Business and Economic Statistics I	
and one of the following:		
STAT 1129	Introduction to Computing	
STAT 2118	Regression Analysis	
STAT 2123	Introduction to Econometrics	
STAT 2183	Intermediate Stat Lab/Packages	
12 credits in introductory foreign language and statistics courses is strongly recommended.		

BACHELOR OF SCIENCE WITH A MAJOR IN POLITICAL SCIENCE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Prerequisites		
PSC 1001	Introduction to Comparative Politics	
PSC 1002	Introduction to American Politics and Government	
PSC 1003	Introduction to International Politics	
Required		
Ten upper-division political science courses (30 credits) including one course from each of the following groups:		
Group A (comparative politics)		
PSC 2330	Comparative Politics of Western Europe	
PSC 2331	Comparative Politics of Central and Eastern Europe	
PSC 2332	European Integration	
PSC 2334	Global Perspectives on Democracy	
PSC 2336	State-Society Relations in the Developing World	
PSC 2337	Development Politics	
PSC 2338	Nationalism	
PSC 2366	Russian Politics	
PSC 2367	Human Rights	
PSC 2367W	Human Rights	
PSC 2368	Politics in the Two Koreas	
PSC 2369	Comparative Politics of South Asia	
PSC 2370	Comparative Politics of China and Northeast Asia	
PSC 2371	Politics and Foreign Policy of China	
PSC 2373	Comparative Politics of Southeast Asia	
PSC 2374	Politics and Foreign Policy of Japan	

PSC 2377	Comparative Politics of the Middle East
PSC 2377W	Comparative Politics of the Middle East
PSC 2379	Politics and Foreign Policy of Israel
PSC 2380	Govts & Politics- North Africa
PSC 2381	Comparative Politics of Sub-Saharan Africa
PSC 2383	Comparative Politics of Latin America
PSC 2993	Special Topics in Comparative Politics
Group B (American government and politics)	
PSC 2211	State and Urban Politics
PSC 2212	State and Urban Policy Problems
PSC 2213	Judicial Politics
PSC 2214	U.S. Constitutional Law and Politics I
PSC 2215	U.S. Constitutional Law and Politics II
PSC 2216	The American Presidency
PSC 2217	Executive Branch Politics
PSC 2218	Legislative Politics
PSC 2218W	Legislative Politics
PSC 2219	Political Parties and Interest Groups
PSC 2220	Public Opinion
PSC 2221	African-American Politics
PSC 2222	Science, Technology, and Politics
PSC 2223	Campaigns and Elections
PSC 2224	Issues in Domestic Public Policy
PSC 2225	Women and Politics
PSC 2228	Media, Politics, and Government
PSC 2229	Media and Politics
PSC 2230	Law and Justice: The View from Hollywood
PSC 2240	Poverty, Welfare, and Work
Group C (international politics, law and organizations)	
PSC 2439	International Political Economy
PSC 2440	Theories of International Politics
PSC 2442	International Organizations
PSC 2442W	International Organizations
PSC 2444	Public International Law
PSC 2446	U.S. Foreign Policy
PSC 2447	American Presidents at War
PSC 2449	International Security Politics
PSC 2449W	International Security Politics
PSC 2451	Theory of War
PSC 2451W	Theory of War
PSC 2461	European-Atlantic Relations
PSC 2468	Post-Soviet Foreign Policy
PSC 2475	International Relations of East Asia
PSC 2476	The Arab-Israeli Conflict
PSC 2478	International Relations of the Middle East
PSC 2482	African International Politics
PSC 2484	International Relations of Latin America
Group D (research methods)	
PSC 2101	Scope and Methods of Political Science
PSC 2102	Visualizing and Modeling Politics
Group E (political thought)	
PSC 2105	Major Issues of Western Political Thought I
PSC 2106	Major Issues of Western Political Thought II
PSC 2106W	Major Issues of Western Political Thought II
PSC 2107	20th-Century Political Thought
PSC 2108	Freedom and Equality
PSC 2110	American Political Thought
PSC 2120	Freedom in American Thought and Popular Culture
PSC 2120W	Freedom in American Thought and Popular Culture
PSC 2991	Special Topics in Political Thought

Note: No more than three credits of PSC 2987 may be credited toward the major. Additionally, PSC 2987 does not satisfy the upper-division distribution requirement.	

Proseminar

PSC 3192W	Proseminar: Political Science (taken in the junior or senior year. may)

PSC 3192W may count toward the 30-credit upper-division requirement but does not satisfy the group distribution requirement.

A graduate course may be substituted with the written permission of the instructor and the undergraduate advisor.

Required courses in related areas

MATH 1232	Single-Variable Calculus II
STAT 1051	Introduction to Business and Economic Statistics (only one may be taken for credit)
or STAT 1053	Introduction to Statistics in Social Science
or STAT 1111	Business and Economic Statistics I
Four additional courses from statistics, mathematics, and computer science, excluding the following:	
CSCI 1010	Computer Science Orientation
CSCI 1011	Introduction to Programming with Java
CSCI 1020	Applications Software
CSCI 1021	Introduction to Computers and the Internet
CSCI 1022	Introduction to Internet Technology
CSCI 1023	Introduction to Web Software Development
CSCI 1030	Technology and Society
CSCI 1030W	Technology and Society
MATH 1000	Dean's Seminar
MATH 1008	History of Mathematics
MATH 1009	Mathematical Ideas I
MATH 1010	Mathematical Ideas II
MATH 1220	Calculus with Precalculus I
MATH 1221	Calculus with Precalculus II
MATH 1231	Single-Variable Calculus I
MATH 1252	Calculus for the Social and Management Sciences
MATH 2991	Introductory Special Topics
STAT 1000	Dean's Seminar
STAT 1091	Principles-Statistical Methods
STAT 1127	Statistics for the Biological Sciences
STAT 1129	Introduction to Computing
STAT 4195	Reading and Research

SPECIAL HONORS

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COMBINED PROGRAMS, POLITICAL SCIENCE

REQUIREMENTS

The bachelor of arts with a major in political science may be taken as a combined degree with the following seven master's programs:

- Master of Arts in the field of political science (http://bulletin.gwu.edu/arts-sciences/political-science/ma)
- Master of Arts in the field of legal institutions and theory (http://bulletin.gwu.edu/arts-sciences/political-science/ma-legal-institutions-theory)
- Master of Professional Studies in the field of advocacy in the global environment (p. 849)
- Master of Professional Studies in the field of legislative affairs (p. 850)
- Master of Professional Studies in the field of political management (p. 850)
- Master of Public Policy (http://bulletin.gwu.edu/arts-sciences/public-policy-administration/mpp) (available only to majors in the public policy focus)
- Master of Public Administration (http://bulletin.gwu.edu/arts-sciences/public-policy-administration/mpa)

The program allows students to take a specified number of graduate credits as part of their undergraduate degree, thereby decreasing the number of credits normally required for the master's degree.

Departmental majors who are interested in pursuing a combined bachelor's/master's program should consult the undergraduate program advisor at the beginning of their junior year (after completing 60 credits at GW).

The combined degree program leading to the master of arts in the field of political science is available only to students who qualify for Special Honors. Interested students should consult

the undergraduate program advisor as soon as possible in order to select courses appropriately.

MINOR IN POLITICAL SCIENCE

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 9 credits in required courses and 21 credits in elective courses.

Code	Title	Credits
Required		
9 credits in the following courses:		
PSC 1001	Introduction to Comparative Politics	
PSC 1002	Introduction to American Politics and Government	
PSC 1003	Introduction to International Politics (or equivalent)	
Electives		
12 credits in upper-division political science courses, including one course from each of the following groups:		
Group D (research methods)		
PSC 2101	Scope and Methods of Political Science	
PSC 2102	Visualizing and Modeling Politics	
Group E (political thought)		
PSC 2105	Major Issues of Western Political Thought I	
PSC 2106	Major Issues of Western Political Thought II	
PSC 2107	20th-Century Political Thought	
PSC 2108	Freedom and Equality	
PSC 2110	American Political Thought	
PSC 2120	Freedom in American Thought and Popular Culture	
PSC 2991	Special Topics in Political Thought	
9 credits in the social sciences taken in the following departments: ANTH (excluding ANTH 1001, ANTH 1005, and all ANTH courses in the 3400s), COMM, ECON, GEOG, HIST, HMSR, LING, SMPA (excluding SMPA 2112), ORSC, PSYC, SPHR, SOC, IAFF, PSTD, and WSTU. Students also may choose from the following courses:		
HONR 2043	Honors Microeconomics	
HONR 2044	Honors Macroeconomics	
NSC 2126	Sea Power and Maritime Affairs	
NSC 2160	Evolution of Warfare	
NSC 2180	Amphibious Warfare	

MINOR IN PUBLIC POLICY

The following requirements must be fulfilled: 30 credits, including 18 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
PSC 1001	Introduction to Comparative Politics	
PSC 1002	Introduction to American Politics and Government	
PSC 1003	Introduction to International Politics	
PSC 2101	Scope and Methods of Political Science	
or PSC 2102	Visualizing and Modeling Politics	
ECON 1011	Principles of Economics I	
ECON 1012	Principles of Economics II	
Electives		
Three courses (9 credits) from the following:		
PSC 2212	State and Urban Policy Problems	
PSC 2213	Judicial Politics	
PSC 2216	The American Presidency	
PSC 2217	Executive Branch Politics	
PSC 2218	Legislative Politics	
PSC 2219	Political Parties and Interest Groups	
PSC 2222	Science, Technology, and Politics	
PSC 2224	Issues in Domestic Public Policy	
PSC 2240	Poverty, Welfare, and Work	
PSC 2446	U.S. Foreign Policy	
PSC 2468	Post-Soviet Foreign Policy	
One course (3 credits) from the following:		
ECON 2101	Intermediate Microeconomic Theory	

ECON 2159	Government Regulation of the Economy
ECON 3161	Public Finance: Expenditure Programs
ECON 3162	Public Finance: Taxation
SOC 2105	Social Problems in American Society
or SOC 2105W	SocialProblems in Amer Society
SOC 2112	Evaluation Research
SOC 2161	Sociology of Complex Organizations
SOC 2170	Class and Inequality in American Society
or SOC 2170W	Class/Inequality-Amer Society

MASTER OF ARTS IN THE FIELD OF LEGAL INSTITUTIONS AND THEORY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled.

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

30 credits, including 6 credits in required courses and 24 credits in elective courses.

Code	Title	Credits
Required		
PSC 6113	The Constitution: History and Ideas	
PSC 6114	Theories of Judicial Review	
Electives		
At least one course from the following (students may elect to take up to four):		
PSC 8213	Judicial Politics	
PSC 8215	Law, Politics, and Society	
PSC 8388	Selected Topics in Comparative Politics	
PSC 6987	Legal Internship	
Four to seven courses from the following:		
EDUC 6236	School Law and Policy	
EDUC 6560	Legal Problems in Higher Education	
HIST 6312	The Law of Race and Slavery	
HIST 6370	US Legal History	
LAW 6214	Constitutional Law I	
PHIL 6242	Philosophy, Law, and Social Policy	
PPPA 6075	Law and the Public Administrator	
PSC 6444	Politics of International Law	
PSC 8210	American Political Process	
PSC 8217	Executive Branch Politics	
PSC 8218	Legislative Politics	
PSC 8219	Political Parties and Elections	
PSC 8229	Politics and Public Policy	
SOC 6261	Sociology of Law	
SOC 6263	Race and Crime	
WSTU 6266	Gender & Criminal Justice	

MASTER OF ARTS IN THE FIELD OF POLITICAL SCIENCE

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The Master of Arts in the field of political science is offered in four fields: American politics, international relations, comparative politics, and public policy.

The following requirements must be fulfilled in the the student's selected field:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

Thesis option—30 credits, including 6 credits in thesis; non-thesis option—33 credits.

Code	Title	Credits
Required courses		
At least five courses selected according to departmental guidelines in one of the following four fields: American politics, international relations, comparative politics, and public policy.		
At least two courses outside of the primary field.		

For students selecting the thesis option:	
PSC 6998	Thesis Research
PSC 6999	Thesis Research

Other requirements

Possession of a research tool, which may be reading knowledge of a modern foreign language, a specified level of knowledge in statistics, or two graduate-level courses in a cognate discipline.

Successful completion of a comprehensive examination in the selected field.

DOCTOR OF PHILOSOPHY IN THE FIELD OF POLITICAL SCIENCE

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Students of outstanding ability are admitted to the doctoral program upon recommendation of a departmental graduate committee and the concurrence of Columbian College.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy Program (p. 82).

Required: Two research tools, two comprehensive exams covering a primary and supporting field, an original research paper, and a dissertation demonstrating the capacity to undertake original and significant research. The research tools may be selected from reading knowledge of a modern foreign language, a specified level of knowledge in statistics, or two graduate-level courses in a cognate discipline. The research paper, to be completed by the second year in the program, must reflect the student's ability to conduct original research. Students prepare for the comprehensive exams by taking at least five courses in their primary field and at least four courses in their supporting field, selected according to departmental guidelines. Three primary fields are available: American politics; international relations; and comparative politics. In addition, political theory, public policy, and research methodology are available as supporting fields. Petitions for a self-designed minor field (e.g., political communications) composed primarily of courses not offered by the established fields can be jointly proposed by students and faculty. All students must complete a sequence of courses in research methodology comprising PSC 8101 Introduction to Empirical Political Analysis, PSC 8108 Craft of Political Inquiry, and PSC 8109 Systematic Inquiry and Research Design. Completion of PSC 8120 Nonlinear Models with a grade of *B* or higher will be taken as evidence that a student has achieved the level of knowledge in statistics necessary to satisfy one of the research tool requirements as outlined above.

A recommendation to the dean for admission to candidacy, or the dissertation research stage, will be considered upon satisfactory completion of all coursework, tool requirements, research paper, field examinations, and successful defense of the dissertation prospectus. Students must pass their primary field examination with a satisfactory pass or higher and must pass their supporting field examination with a bare pass or higher in order to be considered eligible for promotion to candidacy. Admission to candidacy is permitted only if the student's performance on the examinations and in the coursework gives a good indication of success in the second unit. Passing the field examinations does not in itself ensure admission to candidacy.

The dissertation prospectus must outline the central research question(s), relate the proposed research to the existing literature, detail a research methodology, and explain the nature of the original contribution that the completed project will provide. The prospectus must be presented and defended in an open forum, which all faculty and doctoral students are invited to attend. The full dissertation must be similarly defended. A dual degree program enables students to earn the Master of Public Policy along with the Ph.D. in the field of political science.

PROFESSIONAL PSYCHOLOGY

Offered through the Columbian College of Arts and Sciences' social and behavioral sciences discipline, the Professional Psychology Program offers the graduate degrees master of arts in the field of forensic psychology and doctor of psychology (Psy.D.) in the field of clinical psychology.

The M.A. program is designed to address a growing need for criminal profilers, competency experts, psychological evaluators, and counselors. Students are immersed in courses ranging from the psychopathology of serial criminals and terrorist agents to the treatment of sex offenders and ethical issues involving interrogation. The Forensic Psychology program offers two tracks; the applied forensics track prepares students for careers in law enforcement or homeland security, while the applied psychology track prepares students for careers as providers of direct services to clients in organizations such as rehabilitational facilities and community action organizations, and can serve as a springboard for clinical work at the doctoral level. Students are required to complete 250 hours of externship training, tailored to their professional interests.

The Psy.D. program offers a substantive introduction to the basic science aspects of psychology and the skills required of a clinical psychologist. Students take a series of foundation courses outlining biological, cognitive, social, and cultural

foundations; basic and more advanced clinical courses, such as psychopathology, group dynamics, assessment, psychotherapy, supervision, and consultation; and research methods, statistics, history and systems, and ethics courses. The advanced curriculum offers courses tailored within three broad tracks: adult, assessment, and child. In addition to didactic courses, students work with a diverse patient population at different public and private agencies as well as at the department's in-house clinic. Upon completion of course work and prior to receiving the Psy.D., students perform a one-year, full-time internship.

The Professional Psychology program also offers the graduate certificate in LGBT health policy and practice.

GRADUATE

Master's program

- Master of Arts in the field of forensic psychology (p. 371)

Doctoral program

- Doctor of Psychology in the field of clinical psychology (p. 372)

CERTIFICATE

- Graduate Certificate in LGBT health policy and practice (p. 373)

FACULTY

Professor L.J. Ingraham (*Director*)

Associate Professors R. Cooter, P. Gedo, C. Marmarosh, R. Ruth

Assistant Professor R. Lopez Sharifi, J. Sexton, K. Weise

Adjunct Professors Y.E. Aleshina, L. Gump, K. Marshall-Woods

Professorial Lecturers J. Babcock, M. Forbes, S. Forssell, A. Gartner, D. Grasso, J. Gorin, C. Holl, S. Kane, E. Klosson, P. Magaletta, B. McConnell, J. McNamara, B. Sheppard, P. Snejnevski, R. Warrier, A. Washington, N. Xenakis, H. Zelle

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: PSYD courses are limited to students enrolled in the Professional Psychology program except by permission of the director. See the Department of Psychology for the degree program leading to the Doctor of Philosophy in the field of clinical psychology.

- Forensic Psychology (FORP) (p. 1228)
- Professional Psychology (PSYD) (p. 1412)

MASTER OF ARTS IN THE FIELD OF FORENSIC PSYCHOLOGY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (http://bulletin.gwu.edu/arts-sciences/#degreeregulationstext).

37 credits, including 25 credits in required courses, 12 credits in elective courses, and successful completion of a master's comprehensive examination.

Code	Title	Credits
Required		
FORP 6101	Psychology and the Legal System I	
FORP 6102	Psychology and the Legal System II	
FORP 6103	Theories of Criminal Behavior	
FORP 6104	Psychopathology	
FORP 6105	Basics of Psychological Assessment	
FORP 6106	Ethics in Forensic Psychology	
FORP 6107	Research and Statistics	
FORP 6108	Consultation and Testimony	
FORP 6130	Practicum/Externship	
Optional tracks		
Applied forensics track		
Four of the following recommended elective courses:		
FORP 6117	Interrogation and Interviewing	
FORP 6118	Psychological Profiling	
FORP 6119	Police Psychology	
FORP 6120	Counterintelligence	

FORP 6128	Terrorism and Counterterrorism
Applied psychology track	
FORP 6109	Evaluation and Treatment of Offenders
FORP 6110	Forensic Psychological Assessment
And two of the following recommended elective courses:	
FORP 6111	Evaluation and Treatment of Sex Offenders
FORP 6112	Substance Abuse Evaluation and Treatment
FORP 6113	Victimology
FORP 6114	Issues in Family Law
FORP 6115	Children and Adolescents in the Legal System

DOCTOR OF PSYCHOLOGY IN THE FIELD OF CLINICAL PSYCHOLOGY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs)

Prerequisite: a bachelor's degree with relevant background and experience in psychology or its equivalent. Students who lack adequate preparation will be expected to complete prerequisite undergraduate courses during the first year of the program; credit for such courses does not apply to the degree.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

Successful completion of all required course work and practical requirements and the general examination.

The Degree of Master of Psychology

Students who have earned 53 credits toward the Psy.D. may receive the M.Psy. degree. Further information on the requirements of the Doctor of Psychology degree appears under Professional Psychology in the Courses of Instruction.

The three-year program includes:

The core curriculum:	
PSYD 8201	Psychological Assessment I
PSYD 8202	Psychological Assessment II
PSYD 8270	Current Topics in Clinical Psychology (Courses offered each year under PSYD 8270 include: Psychological Assessment III, Empirical Research, Prevention, Supervision)
PSYD 8203	Practicum in Clinical Psychology
PSYD 8204	Biological Bases of Clinical Psychology
PSYD 8205	Psychodynamic Psychopathology
PSYD 8206	Cognitive Bases of Clinical Psychology
PSYD 8207	Group and Organizational Dynamics
PSYD 8209	Statistics and Research Design
PSYD 8210	Ethics and Professional Issues
PSYD 8220	Psychodynamic Psychotherapy
PSYD 8221	Psychodynamic Psychotherapy
PSYD 8222	Behavioral–Cognitive Therapies
PSYD 8225	Theories of Mind I
PSYD 8226	Ego Psychology/Object Relations Theory
PSYD 8227	History and Systems of Clinical Psychology
PSYD 8260	Lifespan Development
PSYD 8231	Short-Term Psychotherapy (PSYD 8231/ Short-Term Psychotherapy or PSYD 8240/Group Psychotherapy is required)
PSYD 8240	Group Psychotherapy (PSYD 8231/ Short-Term Psychotherapy or PSYD 8240/Group Psychotherapy is required)
PSYD 8246	Community Intervention (Consultation; Choice of PSYD 8246/Community Intervention or PSYD 8270/Prevention)
Completion of the practicum seminar/PSYD 8203 for each fall and spring semester as well as two practicum during the summers	
Courses chosen from the areas of adult and child psychotherapy or psychological assessment to total 83 credits	
Satisfactory completion of the General Examination	

In addition, successful completion of an externship—a year-long, part-time supervised clinical assignment—is required in two years of the program. A failed externship may, in exceptional circumstances and with the approval of the

program director, be repeated. If the student fails a second time, no further opportunity will be provided, and the student's degree candidacy is terminated.

A one-year, full-time internship at an institution approved by the program faculty is required for completion of the degree program. If the student fails the internship, no further opportunity will be provided, and the student's degree candidacy is terminated.

The Doctor of Psychology program is offered on a full-time basis only.

General Requirements

The program leading to the degree of Doctor of Psychology requires the satisfactory completion of a minimum of 83 credits of approved graduate work. A maximum of 12 credits may be taken in courses offered by the other affiliated members of the Consortium of Universities. Doctor of Psychology students have an overall five-year time limit for completion of all degree requirements.

Transfer of Credit

Provisions are the same as those of the Doctor of Philosophy Program, above, except that up to 27 credits may be transferred into the program.

The General Examination

Each student is required to complete the General Examination no later than the beginning of the final semester of the program. A student who fails to pass any part of the General Examination may, in exceptional circumstances, and with the approval of the program, repeat the examination at the next scheduled examination date. If the student fails a second time, no further opportunity to take the examination is permitted, and the student's degree candidacy is terminated.

GRADUATE CERTIFICATE IN LGBT HEALTH POLICY AND PRACTICE

The graduate certificate in LGBT health policy and practice focuses on applied care. It is designed specifically for those who work on the front lines with clients and patients as well as professionals who work with policy and healthcare system delivery and management to administer programs that serve the physical and mental health needs of the LGBT population.The program is delivered as a combination of distance learning and on-campus residencies and may be pursued in either a one- or two-year track.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (https://lgbt.columbian.gwu.edu) for additional information.

REQUIREMENTS

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Required:	
PSYD 6201	Multi-disciplinary LGBT Health
PSYD 6202	LGBT Mental Health
PSYD 6203	LGBT Health Policy
PSYD 6211	LGBT Health Capstone
PSYD 6212	LGBT Health Capstone II
Elective:	
3 credits selected from the following:	
PSYD 6221	LGBT Health Current Topic
PSYD 8270	Current Topics in Clinical Psychology
PSYC/WSTU 8275	Women and Health
PUBH 6099	Topics in Public Health (Designing and Evaluating HIV Prevention Programs)
PUBH 6514	Preventing Health Disparities

Students may petition to include other courses as electives with program director approval. Electives should be graduate level courses offered at GW that pertain to:

(a) the LGBT population (specifically, not the broader minority population),
(b) physical or mental health with a focus on minority/underserved populations, or
(c) public policy with a focus on health and/or minorit/underserved populations.

PSYCHOLOGY

The Department of Psychology, part of the social and behavioral sciences division within the Columbian College of Arts and Sciences, seeks to advance the science and practice of psychology through research and its dissemination, and to provide outstanding education and training to undergraduate and doctoral students. The faculty encourages a scientist/applied approach to psychology, which is achieved through research and course work that emphasize psychological knowledge, theories and methods, and apply psychological science to important issues individuals, communities, and society face.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in psychology (p. 380)

Combined program

- Bachelor of arts with a major in psychology and master of arts in the field of art therapy (p. 381)

Minor

- Minor in psychology (p. 381)

GRADUATE

Doctoral programs

- Doctor of Philosophy in the field of psychology (p. 381)
- Doctor of Philosophy in the field of psychology with a concentration in applied social
- Doctor of Philosophy in the field of psychology with a concentration in clinical psychology (p. 382)
- Doctor of Philosophy in the field of psychology with a concentration in cognitive neuroscience (p. 383)
- Doctor of Philosophy in the field of psychology with a concentration in industrial/organizational psychology (p. 321) (administered by the Department of Organizational Sciences and Communication)

FACULTY

Professors P. Barratt, I.A. Bowleg, J.M. Ganiban, G. Howe, L.R. Offermann, J.W. Philbeck, P.J. Poppen, L.A. Rothblat, C.K. Sigelman *(Chair)*, P. Wirtz, M.C. Zea

Associate Professors D.P. Costanza, T.L. Dodge, S. Dopkins, C. Gee, S. Lambert, H.N. Le, S. Mitroff, S.D. Molock, P.J. Moore, C.A. Rohrbeck, S. Shomstein, M.H. Sohn, M. Stock

Assistant Professors C. Beil (*Research*), D.J. Kravitz, D.E. Schell, G.K. Wu

Adjunct Professor K. Ross-Kidder, P.J. Woodruff

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Departmental prerequisite: PSYC 1001 General Psychology is prerequisite to all undergraduate psychology courses.

PSYC 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

PSYC 1001. General Psychology. 3 Credits.
Fundamental principles underlying human behavior.

PSYC 2011. Abnormal Psychology. 3 Credits.
Causes, diagnosis, treatment, and theories of various types of maladjustments and mental disorders. Prerequisite: PSYC 1001.

PSYC 2011W. Abnormal Psychology. 3 Credits.
Causes, diagnosis, treatment, and theories of various types of maladjustments and mental disorders. Prerequisite: PSYC 1001.

PSYC 2012. Social Psychology. 3 Credits.
Social foundations of behavior: cognition, motivation, role behavior, communication, small-group processes, and attitudes. Prerequisite: PSYC 1001.

PSYC 2013. Developmental Psychology. 3 Credits.
Introduction to the study of human development; theory and research concerning changes in physical, cognitive, and social functioning and influences on the developing individual. Prerequisite: PSYC 1001.

PSYC 2014. Cognitive Psychology. 3 Credits.
Introduction to the study of cognition; review of data and theories on the topics of perception, attention, memory, language, reasoning, and decision making. Prerequisite: PSYC 1001.

PSYC 2015. Biological Psychology. 3 Credits.
Introduction to the biological basis of behavior; review of data and empirical methods on the topics of neural structure and function, brain damage, neuroanatomy, genes, hormones, and their influence on behavior. Prerequisite: PSYC 1001.

PSYC 2101. Research Methods-Psychology. 3 Credits.
Survey of research designs (e.g., case studies, correlational designs, experiments), methods (e.g., questionnaires, observations), and measurement issues (e.g., reliability and validity). Prerequisite or corequisite: PSYC 1001, STAT 1053.

PSYC 2508. Humanistic Psychology. 3 Credits.
Critical examination of humanistic psychology. Emphasis on role of consciousness in human behavior. Philosophic foundations, existential, phenomenological, and transpersonal psychology. (Formerly PSYC 3108) Prerequisites: PSYC 1001.

PSYC 2514. Adult Development and Aging. 3 Credits.
Psychological aging and development during the adult years, with an emphasis on theories of adult development and research on changes in cognitive functioning and social adjustment in early, middle, and later adulthood. (Formerly PSYC 3114) Prerequisites: PSYC 1001.

PSYC 2529. Theories of Personality. 3 Credits.
Survey of personality theories; emphasis on their application to problems of individuals. (Formerly PSYC 3129) Prerequisites: PSYC 1001.

PSYC 2531. Psychological Tests. 3 Credits.
Survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee. (Formerly PSYC 3131) Prerequisites: PSYC 1001.

PSYC 2544. Industrial/Organizational Psychology. 3 Credits.
Psychological concepts and methods applied to problems of personnel management, employee motivation and productivity, supervisory leadership, and organizational development. Formerly PSYC 2144. Prerequisites: ORSC 1109 or PSYC 1001. (Same as ORSC 2544).

PSYC 2550. Psychology of Sex Differences. 3 Credits.
Relevant biological, psychological, and sociological influences on males and females in the development of sex differences; hormonal differences, gender identity, differential socialization of sons and daughters, masculinity/femininity, cultural evaluation of male and female roles. Survey of relevant psychological theory. Emphasis on empirical research and hypothesis testing. (Formerly PSYC 3150) Prerequisites: PSYC 1001.

PSYC 2554. Psychology of Crime and Violence. 3 Credits.
Examination of many psychological aspects of criminal behavior; personality of criminals and of psychological processes affecting behavior. (Formerly PSYC 3154) Prerequisites: PSYC 1001.

PSYC 2556. Psychology of Attitudes and Public Opinion. 3 Credits.
Psychology of opinion formation, measurement of opinion, social determinants of attitudes, psychological processes in propaganda, bases of receptivity to propaganda, psychological warfare. (Formerly PSYC 3156) Prerequisites: PSYC 1001.

PSYC 2570. Peer Education. 3 Credits.
This is a course designed to train George Washington University undergraduate students to be health peer educators. Students will be trained in various topics related to mental health, physical health, and alcohol and/or other drugs, and will gain the skills needed for outreach programming. Prerequisites: PSYC 1001.

PSYC 2588. Attitudes Toward Death and Dying. 3 Credits.
Exploration of the many different aspects, attitudes, and experiences associated with the process of death and dying. (Formerly PSYC 3188) Prerequisites: PSYC 1001.

PSYC 2596. History and Systems of Psychology. 3 Credits.
A survey and integration of the major viewpoints and concepts of psychology. Recommended for students planning graduate study. (Formerly PSYC 4196) Prerequisites: PSYC 1001.

PSYC 2945. Psychological Study of Spirituality. 3,4 Credits.
The complex interrelationship between psychology and spirituality: health and wellness; development of a spiritual life; psychological factors involved in spirituality; therapy and multicultural issues. (Formerly PSYC 3945) Prerequisites: PSYC 1001.

PSYC 3112. Psychology of Adolescence. 3 Credits.
Psychological characteristics and problems peculiar to adolescence, with emphasis on application of psychology to the solution of such problems. Prerequisite: PSYC 2101 and PSYC 2013.

PSYC 3115. Developmental Psychopathology. 3 Credits.
The origins of child psychopathology, including developmental perspectives and the potential contributions of child-, family-, and community-based characteristics to the emergence of psychopathology. The development of specific childhood disorders. Prerequisite: PSYC 2101 AND PSYC 2011 OR PSYC 2013.

PSYC 3118. Neuropsychology. 3 Credits.
Analysis of neural processes underlying behavior. Basic structure and functions of the nervous system, with emphasis on sensory processes, learning and memory, motivation, and emotion. Prerequisite: PSYC 2101 AND PSYC 2014 OR PSYC 2015.

PSYC 3121. Memory and Cognition. 3 Credits.
An examination of the psychological processes underlying human memory and cognition. Topics cover theoretical and experimental issues involving a range of cognitive function from attention and pattern recognition to learning and memory. Prerequisite: PSYC 2101 AND PSYC 2014 OR PSYC 2015.

PSYC 3122. Cognitive Neuroscience. 3 Credits.
How the structure and functions of the brain are related to cognitive processes and their associated behaviors. The biological bases of behavior and mental activity. Research and case studies by cognitive psychologists, neuroscientists, psychiatrists, and linguists, focusing on how the brain affects pattern recognition, attention, short-term and long-term memory processes, and language. Prerequisite: PSYC 2101 AND PSYC 2014 OR PSYC 2015.

PSYC 3124. Visual Perception. 3 Credits.
An overview of human perception, ranging from the detection of simple stimuli to the identification of objects and events. Perceptions of color, motion, and spatial layout. Research methodology, biological foundations, and theoretical issues. Prerequisite: PSYC 2101 AND PSYC 2014 OR PSYC 2015.

PSYC 3125. Cross-Cultural Psychology. 3 Credits.
Introduction to the theory, methods, and research of cross-cultural psychology, with emphasis on immigrants and ethnic minorities in the United States and on other cultures. Prerequisites: PSYC 2101 and PSYC 2011 or PSYC 2012.

PSYC 3126. Multicultural Psychology. 3 Credits.
The influence of culture on major psychology concepts Current theories and research on culture, with culture being broadly defined to include race, ethnicity, gender, sexual orientation, disability status, and socioeconomic status. Empirical methodologies in cultural psychology, and appreciation of cultural groups within the United States. Issues of culture in the interpretation of personal experiences and in application of cultural diversity issues to various settings. Culturally relevant styles of communication, values from different cultures, racial identity, power and privilege, and issues around health and mental health. Multiculturalism in the modern diverse society. Prerequisite: PSYC 2101 and PSYC 2011 or PSYC 2012.

PSYC 3126W. Multicultural Psychology. 3 Credits.
The influence of culture on major psychology concepts. Current theories and research on culture, with culture being broadly defined to include race, ethnicity, gender, sexual orientation, disability status, and socioeconomic status. Empirical methodologies in cultural psychology, and appreciation of cultural groups within the United States. Issues of culture in the interpretation of personal experiences and in application of cultural diversity issues to various settings. Culturally relevant styles of communication, values from different cultures, racial identity, power and privilege, and issues around health and mental health. Multiculturalism in the modern diverse society. Prerequisites: Psyc 2101 and (Psyc 2011 or Psyc 2012).

PSYC 3128. Health Psychology. 3 Credits.
Current research in the area of health psychology, with special attention to psychological factors related to health and illness, psychological intervention with medical patients, and psychological approaches to illness prevention and health promotion. Prerequisite: PSYC 2101.

PSYC 3132. Social and Personality Development. 3 Credits.
Examination of personal, emotional, and social development from infancy to adolescence and influences on that development. Prerequisite: PSYC 2101 and PSYC 2013.

PSYC 3170. Clinical Psychology. 3 Credits.
An exploration of the history, functions, and concerns of the clinical psychologist. Assessment, treatment, community approaches, ethics. Prerequisite: PSYC 2011 and PSYC 2101.

PSYC 3172. Psychopathology & the Media. 3 Credits.
How abnormal behaviors and mental disorders are portrayed in film and the media, including analysis of the accuracy of these portrayals, focusing on symptomatology, etiology, and treatment of adult psychopathology. Prerequisite: PSYC 2101 and PSYC 2011.

PSYC 3173. Community Psychology. 3 Credits.
The origins and current practice of community psychology, and comparison of community psychological approaches with traditional clinical perspectives. The role of psychology in addressing social issues facing communities; methods for research and intervention targeting communities. Prerequisite: PSYC 2101 and PSYC 2011.

PSYC 3180. Seminar in Cognitive Science. 3 Credits.
Advanced seminar for undergraduate students focusing on recent developments in cognitive science. Topics vary and may include perception, attention, memory, representation, and cognitive control, as well as neural bases of cognitive processes. Prerequisites: PSYC 3118 or PSYC 3121 or PSYC 3122 or PSYC 3124 or PSYC 4106W or PSYC 4107W.

PSYC 3193. Seminar in Industrial/Organizational Psychology. 3 Credits.
Selected specialized topics in the field of psychology and work behavior, such as human ability and personality, decisions and risk behavior, organizational change, and leadership. May be repeated for credit. (Formerly PSYC 4193). Prerequisites: PSYC 1001 and PSYC 2544 or permission of instructor.

PSYC 3198. Current Research Issues. 3 Credits.
Recent studies in psychology, including studies performed by members of the class; emphasis on student participation. May be repeated once for credit. Prerequisites: PSYC 1001 and PSYC 2101.

PSYC 3199. Current Topics in Psychology. 3 Credits.
Topics vary. May be repeated once for credit provided the topic differs. Prerequisites: PSYC 1001 and PSYC 2101.

PSYC 3591. Supervised Research Internship. 1-3 Credits.
Open to qualified students with permission of a supervising faculty member. Arrangements must be made with the faculty supervisor prior to registration; a list of participating faculty members and their research specialties is available from the department. May be repeated for credit; PSYC 3591 and PSYC 4591 combined may be taken for a total of 9 credits maximum. Prerequisites: PSYC 1001, PSYC 2101.

PSYC 3592. Field Internship. 3 Credits.
Senior psychology majors spend a minimum of six hours per week in a supervised internship in a local mental health, rehabilitation, school, or community setting. Students must have weekly blocks of time available. May be repeated for credit, but the repeat enrollment does not count toward the major. Restricted to psychology majors. Prerequisites: PSYC 1001 and PSYC 2101.

PSYC 4106W. Research Lab in Sensation and Perception. 4 Credits.
Capstone course focused on the study of sensation and perception. Students examine previous research, design and carry out research projects, and write psychological research reports. Prerequisites: PSYC 1001, PSYC 2101, and PSYC 2014 or PSYC 2015.

PSYC 4107W. Research Lab in Cognitive Neuroscience. 4 Credits.
A capstone course focused on the study of cognitive neuroscience in which students examine previous research, design and carry out research projects, and write psychological research reports. Prerequisites: PSYC 1001, PSYC 2101, and (PSYC 2014 or PSYC 2015).

PSYC 4201W. Research Lab in Clinical/Community Psychology. 4 Credits.
A capstone course focused on the study of clniical/community psychology in which students examine previous research, design and carry out research projects, and write psychological research reports. Prerequisites: PSYC 1001 and PSYC 2101 and PSYC 2011 or PSYC 2012 or PSYC 2013.

PSYC 4202W. Research Lab in Applied Social Psychology. 4 Credits.
A capstone course focused on the study of topics in applied social psychology, such as discrimination and health, in which students examine previous research, design and carry out research projects, and write psychological research reports. Prerequisites: PSYC 1001 and PSYC 2101 and (PSYC 2011 or PSYC 2012 or PSYC 2013).

PSYC 4203W. Research Lab in Developmental Psychology. 4 Credits.
A capstone course focused on the study of developmental psychology in which students examine previous research, design and carry out research projects, and write psychological research reports. Laboratory fee. Prerequisites: PSYC 1001, PSYC 2101, and PSYC 2011 or PSYC 2012 or PSYC 2013.

PSYC 4591. Independent Research. 1-3 Credits.
Open to qualified students by permission to pursue an independent research project with the supervision of a faculty member ; arrangements must be made with the sponsoring faculty member prior to registration. May be repeated for credit; PSYC 3591 and PSYC 4591 may be taken for a total of 9 credits maximum. (Formerly PSYC 4191) Restricted to . Prerequisites: PSYC 1001, PSYC 2101.

PSYC 4997. Honors Seminar. 3 Credits.
Selected topics in psychology that change each semester. Intended primarily for students in the Special Honors program in psychology. May be repeated once for credit. Prerequisites: PSYC 1001 and PSYC 2101. (Formerly PSYC 4197).

PSYC 6998. Thesis Research. 3 Credits.

PSYC 6999. Thesis Research. 3 Credits.

PSYC 8202. Psychological Research Methods and Procedures. 3 Credits.
Required in all graduate psychology programs. Includes philosophy of science, types of research design, and methods of data collection. Restricted to Graduate students only. Prerequisites: graduate standing, a laboratory course in psychology, and a course in statistics.

PSYC 8203. Experimental Foundations of Psychology: Learning, Memory, and Cognition. 3 Credits.
Current conceptions of learning, memory, and cognition; the research upon which these conceptions are based; applications to practical contexts. Restricted to Graduate students only.

PSYC 8204. Experimental Foundations of Psychology: Biological Basis of Behavior. 3 Credits.
Introduction to the structure and function of the nervous system. Topics include neural communication, sensory processes, memory, neuroendocrinology of sex differences and stress, psychiatric and neurodegenerative disorders. Restricted to Graduate students only.

PSYC 8207. Psychological Assessment I. 3 Credits.
Theoretical and clinical aspects of assessment; includes interviewing, psychometric tests, and projective techniques. Two-hour laboratory—diagnostic work at clinical facilities. Material fee. Restricted to Clinical psychology graduate students only.

PSYC 8208. Psychological Assessment II. 3 Credits.
Continuation of PSYC 8207. Theoretical and clinical aspects of assessment; includes interviewing, psychometric tests, and projective techniques. Two-hour laboratory—diagnostic work at clinical facilities. Material fee. Restricted to Clinical psychology graduate students only.

PSYC 8210. Developmental Theories and Issues. 3 Credits.
Orientation to the field of developmental psychology, with emphasis on traditional and contemporary theories, fundamental concepts and issues, and methodological approaches. Restricted to Graduate students only.

PSYC 8211. Community Psychology I. 3 Credits.
Survey of the history, theories, and values guiding community psychology; models of service delivery. Restricted to Graduate students only.

PSYC 8212. Community Psychology II. 3 Credits.
Continuation of PSYC 8211. Applications of the principles and theories of community psychology to interventions and research. Restricted to Graduate students only. Prerequisites: PSYC 8211.

PSYC 8218. Evidence-Based Interventions. 3 Credits.
Introduction to theory and technique of psychotherapeutic approaches of proven effectiveness. Restricted to Graduate students only.

PSYC 8219. Group Dynamics. 3 Credits.

PSYC 8220. Ethics and Professional Issues. 3 Credits.
The foundations of ethics and ethical decision making, with an emphasis on the APA Ethics Code. Ethical conflicts and issues in the areas of research and practice. Restricted to Graduate students only.

PSYC 8223. Seminar: Human Memory. 3 Credits.
Selected topics of current research interest in the area of human memory. Emphasis on encoding and retrieval processes, amnesia, and disorders of memory. Restricted to Graduate students only.

PSYC 8225. Behavioral Approaches to Child Assessment and Therapy. 3 Credits.
Child assessment and treatment from a behavioral viewpoint. The application of conditioning, reinforcement, and shaping principles with reference to specific disorders of childhood. Restricted to Graduate students only.

PSYC 8227. Seminar: Principles of Psychotherapy. 3 Credits.
For graduate students in clinical psychology. Patient's needs and demands on the therapist. Case participation heavily relied upon. Prerequisite: PSYC 8218.

PSYC 8228. Seminar: Principles of Psychotherapy. 3 Credits.
Continuation of PSYC 8227. For graduate students in clinical psychology. Patient's needs and demands on the therapist. Case participation heavily relied upon. Prerequisite: PSYC 8218.

PSYC 8231. Development of Psychometric Instruments. 3 Credits.
Quantitative techniques and principles used in construction, standardization, and evaluation of personality and ability measures for research and practice; quantification of human judgment for measurement purposes. Prerequisite: course in tests and measurements and an elementary course in statistics. Restricted to Graduate students only.

PSYC 8236. Ethnic and Racial Diversity in Psychology. 3 Credits.
Basic theoretical models of research in ethnic, racial, and cultural diversity and new directions in the field. The impact of being an ethnic minority in the United States. Restricted to Graduate students only.

PSYC 8237. The Practice of General Psychology I. 3 Credits.
Application of psychological principles and findings to a wide spectrum of human problems. Professional issues facing the psychologist offering services. Participation in the development, implementation, and evaluation of applied psychological services and projects. Restricted to Clinical psychology graduate students only.

PSYC 8238. The Practice of General Psychology II. 3 Credits.
Continuation of PSYC 8237. Application of psychological principles and findings to a wide spectrum of human problems. Professional issues facing the psychologist offering services. Participation in the development, implementation, and evaluation of applied psychological services and projects. Restricted to Clinical psychology graduate students only.

PSYC 8239. Lifespan Developmental Psychopathology I. 3 Credits.
Infancy, childhood, and adolescence. Restricted to Graduate students only.

PSYC 8240. Lifespan Developmental Psychopathology II. 3 Credits.
Continuation of PSYC 8239 - Adulthood. Restricted to Graduate students only.

PSYC 8243. Seminar: Psychology of Leadership in Organizations. 3 Credits.
Theories and issues related to the emergence and effectiveness of leaders, with focus on leadership behaviors and processes in organizations. Restricted to Graduate students only.

PSYC 8244. Theories and Processes of Organizational Management. 3 Credits.
Basic functions and techniques of organizational management—design, control, direction, and decision making—examined from the viewpoint of behavioral science. Restricted to Graduate students only.

PSYC 8245. Seminar: Organizational Behavior. 3 Credits.
Analysis of organizational behavior; emphasis on motivation and productivity. Recent research on employee attitudes, primary group, supervisory leadership, formal and informal organization, job design. Restricted to Graduate students only.

PSYC 8246. Seminar: Personnel Evaluation Techniques. 3 Credits.
Techniques of personnel selection and performance evaluation. Employment tests, personal data, assessment interviews, performance ratings, and assessment centers. Federal guidelines in employee selection. Includes practicum. Restricted to Graduate students only.

PSYC 8248. Research Applications to Organizational Intervention and Change. 3 Credits.
Emphasis on development of models of organizational effectiveness; design of valid diagnostic instruments; implementation of research strategies; establishment of program evaluation criteria. Restricted to Graduate students only.

PSYC 8251. Behavioral Neuroscience. 3 Credits.
The neural basis of behavior, with special focus on the psychobiological determinants of learning, memory, and cognition. Methodologies used for different levels of analysis with normal and brain-impaired subjects. Restricted to Graduate students only.

PSYC 8253. Social Cognition. 3 Credits.
Social psychology theories, conceptual approaches, and their applications. Social cognition, person perception, attribution, information processing, attraction, stereotyping. Restricted to Graduate students only.

PSYC 8254. Social Influence. 3 Credits.
Social psychology theories, conceptual approaches, and their applications. Analysis of intentional and unintentional social influence processes and their effects on behavior. Current research on conformity, social power, social exchange, and impression management. Restricted to Graduate students only.

PSYC 8255. Attitudes and Attitude Change. 3 Credits.
Current theory and research on attitudes and attitude change. Restricted to Graduate students only.

PSYC 8256. Introduction to Survey Research. 3 Credits.
Theory and practice of face-to-face telephone and mail surveys. Practical experience with all stages from the formulation of research questions and hypotheses to questionnaire design, sampling, pilot, testing, interviewing, coding, and data cleaning. Prerequisite: STAT 2105 .

PSYC 8257. Current Topics in Social Psychology. 3 Credits.
Advanced seminar with focus on major theoretical approaches, research, or problem areas within field of social psychology. Topic changes each semester. Restricted to Graduate students only.

PSYC 8258. Qualitative Research and Analysis. 3 Credits.
Qualitative research and analysis with a focus on theory, didactic material relevant to qualitative methodologies, and applied qualitative research design and analysis. Restricted to Graduate students only.

PSYC 8259. Psychology of Individual and Group Decision Making. 3 Credits.
Examination of processes in organizational decision making and group behavior. Topics include group and individual decision-making approaches, decision aids and support systems, performance and decision effectiveness, and risk analysis. Restricted to Graduate students only.

PSYC 8260. Psychology of Work Group Development. 3 Credits.
Examination of theory and research on groups as task performance systems. Approaches to team development as a means of improving work group effectiveness, including goal setting, role clarification, increasing interpersonal skills, and conflict resolution. Restricted to Graduate students only.

PSYC 8268. Seminar: Neuropsychology. 3 Credits.
Selected problems in research relating the brain and behavior. Independent topics each semester, such as sensory processing, brain development and behavior, clinical aspects of nervous system function. Restricted to Graduate students only.

PSYC 8275. Women and Health. 3 Credits.
Theoretical and empirical analyses of women's health: how women's health is constructed by medical, psychological, and critical theorists; how sexism, racism, and classism contribute to women's health problems; and identification of conditions that lead to optimal health and well-being. Restricted to Graduate students only. (Same as WSTU 8275).

PSYC 8277. Health Psychology. 3 Credits.
Social psychological theories and research that relate to health and illness. Application of theories of social learning, attribution, attitude change, and social influence to topics such as health promotion and disease prevention, health compliance, and coping with illness and disability. Restricted to Graduate students only.

PSYC 8279. Special Topics in Health Psychology. 3 Credits.
May be repeated for credit provided the topic differs. Admission by permission of instructor. Restricted to Graduate students only.

PSYC 8280. Theories and Practice of Clinical Supervision. 0 Credits.
Theory and practice of clinical supervision through instruction and a supervision practicum in the clinical facilities. Restricted to clinical psychology graduate students.

PSYC 8283. First Year Seminar I: Motivational Interviewing. 0 Credits.
This course develops in clinical psychology doctoral students basic skills necessary for therapeutic effectiveness through motivational interviewing and familiarizes them with goals and values in their clinical training. Restricted to Available only to students in the clinical psychology PhD program.

PSYC 8284. First Year Seminar II: Introduction to Therapy. 0 Credits.
Clinical psychology doctoral students gain basic familiarity with assessment and psychotherapy practices and understanding of the inner workings of the Meltzer Center clinic. Restricted to students in the clinical psychology PhD program.

PSYC 8285. History and Systems of Psychology. 0 Credits.
Clinical psychology doctoral students will engage in self-study of the history and systems of psychology. Restricted to Available only to students in the clinical psychology PhD program.

PSYC 8286. Clinical Psychology Externship. 0 Credits.
Clinical psychology doctoral students will participate in externship placements in clinical settings to develop their clinical skills and competencies. Restricted to students in the clinical psychology PhD program.

PSYC 8287. Current Topics in Clinical Psychology. 3 Credits.
Advanced seminar with focus on major theoretical approaches, research, or problem areas. Topics vary. May be repeated for credit. Restricted to Graduate students only.

PSYC 8288. Current Topics in Industrial/Organizational Psychology. 3 Credits.
Advanced seminar with focus on major theoretical approaches, research, or problem areas. Topics vary. May be repeated for credit. Restricted to Graduate students only.

PSYC 8289. Seminar: Current Topics in Experimental Psychology. 3 Credits.
Review and discussion of contemporary research and theory in a specialized field of psychological study, by leaders in the field. Independent topics each semester; may be repeated for credit. Restricted to Graduate students only.

PSYC 8291. Theories of Organizational Behavior. 3 Credits.
Examination of current theoretical models and research. Restricted to Graduate students only.

PSYC 8295. Independent Research. 3 Credits.
Individual library or experimental research under supervision of staff member. Arrangements must be made with sponsoring faculty member prior to registration. May be repeated for credit. Restricted to Psychology graduate students only.

PSYC 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy major field examination. May be repeated for credit. Restricted to Psychology graduate students only. Prerequisites: Psychology graduate students only.

PSYC 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit. Restricted to Psychology graduate students only.

BACHELOR OF ARTS WITH A MAJOR IN PSYCHOLOGY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Required		
PSYC 1001	General Psychology	
STAT 1053	Introduction to Statistics in Social Science (or equivalent)	
PSYC 2101	Research Methods-Psychology	
Two survey courses (6 credits) from the following:		
PSYC 2011	Abnormal Psychology	
or PSYC 2011W	Abnormal Psychology	
PSYC 2012	Social Psychology	
PSYC 2013	Developmental Psychology	
One survey course (3 credits) from the following:		
PSYC 2014	Cognitive Psychology	
PSYC 2015	Biological Psychology	
One course (3 credits) from the following:		
PSYC 3112	Psychology of Adolescence	
PSYC 3115	Developmental Psychopathology	
PSYC 3125	Cross-Cultural Psychology	
PSYC 3126	Multicultural Psychology	
or PSYC 3126W	Multicultural Psychology	
PSYC 3128	Health Psychology	
PSYC 3132	Social and Personality Development	
PSYC 3170	Clinical Psychology	
PSYC 3173	Community Psychology	
One course (3 credits) from the following:		
PSYC 3118	Neuropsychology	
PSYC 3121	Memory and Cognition	
PSYC 3122	Cognitive Neuroscience	
PSYC 3124	Visual Perception	
Two advanced research lab courses (8 credits) from the following:		
PSYC 4106W	Research Lab in Sensation and Perception	
or PSYC 4107W	Research Lab in Cognitive Neuroscience	
PSYC 4201W	Research Lab in Clinical/Community Psychology	
or PSYC 4202W	Research Lab in Applied Social Psychology	
or PSYC 4203W	Research Lab in Developmental Psychology	
Electives		
Three additional psychology (PSYC) courses (9 credits) numbered 2000 or above		

Only 3 credits of PSYC 3591 or PSYC 4591 may be applied toward the major.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, the student must submit an application to the Psychology Department before the beginning of the senior year, take an honors seminar (PSYC 4997 Honors Seminar) and a graduate-level seminar, and complete a research experience (PSYC 3591 Supervised Research Internship or PSYC 4591 Independent Research). The grade-point average in psychology required for graduation with Special Honors is 3.5.

COMBINED PROGRAM, PSYCHOLOGY

REQUIREMENTS

The Department of Psychology offers a combined bachelor of arts with a major in psychology/master of arts in the field of art therapy program. The program allows students to take a specified number of graduate credits as part of their undergraduate degree, thereby decreasing the number of credits normally required for the master's degree.

Interested students should consult their advisor. Visit the departmental website (http://psychology.columbian.gwu.edu/bachelors-psychologymasters-art-therapy-bama) for deadlines and additional program information.

MINOR IN PSYCHOLOGY

REQUIREMENTS

The following requirements must be fulfilled: 9 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
Required		
PSYC 1001	General Psychology	
Two survey courses (6 credits) from the following, including at least one of PSYC 2014 or PSYC 2015:		
PSYC 2011	Abnormal Psychology	
or PSYC 2011W	Abnormal Psychology	
PSYC 2012	Social Psychology	
PSYC 2013	Developmental Psychology	
PSYC 2014	Cognitive Psychology	
PSYC 2015	Biological Psychology	
Electives		
At least three additional psychology (PSYC) courses (9 credits) numbered 2000 or above, not including PSYC 3591 or PSYC 4591		

Students considering graduate study in psychology are advised to take PSYC 2101, which is a prerequisite for 3000 and 4000 level courses.

DOCTOR OF PHILOSOPHY IN THE FIELD OF PSYCHOLOGY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy program (p. 82).

Successful completion of the required curriculum and the general examination. Note that students whose academic preparation is in other disciplines will be expected to complete prerequisite undergraduate courses to prepare for graduate study in psychology before admission to the field.

Code	Title	Credits
Required		
PSYC 8202	Psychological Research Methods and Procedures	
Two graduate psychology courses outside the chosen field and approved by the advisor		
Appropriate statistics courses		
Satisfactory completion of the General Examination in the major area of study		

The Department of Psychology offers concentrations in clinical psychology (p. 382), cognitive neuroscience (p. 383), and applied social psychology (p.).

Visit the department website (https://psychology.columbian.gwu.edu/graduate) for additional information on doctoral programs.

The concentration in industrial/organizational psychology (p. 321) is offered by the Department of Organizational Sciences and Communication. For specific requirements, consult the director of the concentration concerned. All programs are offered on a full-time basis only.

Visit the program website (https://orgsciandcomm.columbian.gwu.edu/doctoral-program-industrialorganizational-psychology) for additional information.

Graduate courses listed here are limited to graduate students in psychology, except by permission of instructor, and only if space permits.

DOCTOR OF PHILOSOPHY IN THE FIELD OF PSYCHOLOGY WITH A CONCENTRATION IN APPLIED SOCIAL

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy program (p. 82).

72 credits, including 33 credits in core requirements, 21-27 credits in elective courses, and 12-18 credits in dissertation.

Code	Title	Credits
Required		
Applied social		
PSYC 8253	Social Cognition	
PSYC 8254	Social Influence	
PSYC 8255	Attitudes and Attitude Change	
PSYC 8277	Health Psychology	
Methods/Statistics		
DNSC 6274	Statistical Modeling and Analysis	
DNSC 6275	Advanced Statistical Modeling and Analysis	
DNSC 6276	Exploratory and Multivariate Data Analysis	
PSYC 8202	Psychological Research Methods and Procedures	
PSYC 8256	Introduction to Survey Research	
Breadth		
6 credits in psychology (PSYC) courses out of the applied social program.		
Electives		
Recommended electives are listed below; other elective courses may be selected in consultation with the advisor.		
PSYC 8218	Evidence-Based Interventions	
PSYC 8231	Development of Psychometric Instruments	
PSYC 8245	Seminar: Organizational Behavior	
PSYC 8257	Current Topics in Social Psychology	
PSYC 8259	Psychology of Individual and Group Decision Making	
PSYC 8279	Special Topics in Health Psychology	
PSYC 8295	Independent Research	
Dissertation		
PSYC 8998	Advanced Reading and Research	
PSYC 8999	Dissertation Research	

DOCTOR OF PHILOSOPHY IN THE FIELD OF PSYCHOLOGY WITH A CONCENTRATION IN CLINICAL PSYCHOLOGY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy program (p. 82).

72 credits, including 54 credits in required courses, 6 credits in elective courses, 12 credits in dissertation, and successful demonstration of competency in six areas: conducting and presenting research, teaching, assessment, therapy, ethics and professional issues, and ethnic minority and diversity issues.

Code	Title	Credits
Required		
Methods/Statistics		
DNSC 6274	Statistical Modeling and Analysis	
DNSC 6275	Advanced Statistical Modeling and Analysis	
DNSC 6276	Exploratory and Multivariate Data Analysis	
PSYC 8202	Psychological Research Methods and Procedures	

Breadth	
PSYC 8203	Experimental Foundations of Psychology: Learning, Memory, and Cognition
PSYC 8204	Experimental Foundations of Psychology: Biological Basis of Behavior
PSYC 8210	Developmental Theories and Issues
PSYC 8253	Social Cognition
Clinical core	
PSYC 8207	Psychological Assessment I
PSYC 8208	Psychological Assessment II
PSYC 8211	Community Psychology I
PSYC 8212	Community Psychology II
PSYC 8218	Evidence-Based Interventions
PSYC 8220	Ethics and Professional Issues
PSYC 8236	Ethnic and Racial Diversity in Psychology
PSYC 8237	The Practice of General Psychology I
PSYC 8238	The Practice of General Psychology II
PSYC 8239	Lifespan Developmental Psychopathology I
PSYC 8240	Lifespan Developmental Psychopathology II
Electives	
6 credits in elective courses outside of the clinical program.	
Dissertation	
PSYC 8998	Advanced Reading and Research
PSYC 8999	Dissertation Research

Visit the program website (https://psychology.columbian.gwu.edu/clinical) for additional information.

DOCTOR OF PHILOSOPHY IN THE FIELD OF PSYCHOLOGY WITH A CONCENTRATION IN COGNITIVE NEUROSCIENCE

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy program (p. 82).

72 credits, including 33 credits in required courses, 21-27 credits in elective courses, 12-24 credits in dissertation, and successful completion of a comprehensive examination.

Code	Title	Credits
Required		
PSYC 8203	Experimental Foundations of Psychology: Learning, Memory, and Cognition	
PSYC 8204	Experimental Foundations of Psychology: Biological Basis of Behavior	
PSYC 8289	Seminar: Current Topics in Experimental Psychology	
Methods/Statistics		
DNSC 6274	Statistical Modeling and Analysis	
DNSC 6275	Advanced Statistical Modeling and Analysis	
DNSC 6276	Exploratory and Multivariate Data Analysis	
PSYC 8202	Psychological Research Methods and Procedures	
Breadth		
6 credits outside of the cognitive neuroscience field		
Dissertation		
PSYC 8998	Advanced Reading and Research (taken for 6-12 credits)	
PSYC 8999	Dissertation Research (taken for 6-12 credits)	

Electives	
21-27 credits in elective courses, which may include the courses listed below and/or non-restricted courses.	
PSYC 8251	Behavioral Neuroscience
PSYC 8268	Seminar: Neuropsychology
Other	
Successful completion of a comprehensive examination.	

*Other relevant courses may be substituted.

Visit the program website (https://psychology.columbian.gwu.edu/cognitive-neuroscience) for additional information.

PUBLIC POLICY AND PUBLIC ADMINISTRATION

Through its Trachtenberg School of Public Policy and Public Administration, Columbian College of Arts and Sciences offers master of public policy, master of public administration, and doctor of philosophy in the field of public policy and administration degree programs. The master's programs provide academic preparation toward professional careers in government, business, and the nonprofit sector. The Ph.D. program is designed to help students master subjects in multiple academic disciplines, including politics, economics, and quantitative and/or qualitative methods in policy research. In addition, a graduate certificate in nonprofit management provides an overview of central concepts in managing nonprofit organizations.

GRADUATE

Master's programs

- Master of public policy (p. 390)
- Master of public administration (p. 389)

Combined programs

- Master of public administration and graduate certificate in homeland security emergency preparedness and response (p. 390)

Doctoral program

- Doctor of Philosophy in the field of public policy and administration (p. 391)

CERTIFICATE

- Graduate certificate in budget and public finance (p. 392)
- Graduate certificate in nonprofit management (p. 392)

FACULTY

University Professor S.J. Trachtenberg

Professors W.C. Adams, B.S. Barnow, E. Berkowitz, J.M. Brinkerhoff, G. Brock, J.J. Cordes, S. Dudley (*Research*), A. Dor, D.L. Infeld, K.E. Newcomer (*Director*), S. Pace, S. Pandey, D.E. Rigby, A. Ronen *(Teaching),* S. Rosenbaum, G.D. Squires, R.P. Stoker, S.A. Tuch, N. Vonortas, P.W. Wirtz, M.J. Worth

Associate Professors S.J. Balla, L.A. Brainard, S. Cellini, D. Conger, C. Deitch, E.J. Englander, J.F. Kasle, P. Linquiti, A.S. Malik, Y. Nakib,

Assistant Professors L. Brooks, C.M. Carrigan, J. McGinnis

Adjunct Professors N. Augustine, J. Dudik-Gayoso

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Programs in Public Administration are offered at the graduate level by the Trachtenberg School of Public Policy and Public Administration. Courses with 2000 designations are open to undergraduates.

PPPA 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

PPPA 2000. Justice and the Legal System I. 3 Credits.
The structure and function of constitutional law: the Supreme Court as an institution, how its cases are decided, and effects of its decisions on the political and social life of the country.

PPPA 2001. Justice and the Legal System II. 3 Credits.
Continuation of PPPA 2000. The structure and function of constitutional law: the Supreme Court as an institution, how its cases are decided, and effects of its decisions on the political and social life of the country. PPPA 2000 is prerequisite to PPPA 2001, which focuses on the First Amendment.

PPPA 2117. Executive Branch Politics. 3 Credits.
Contemporary concepts and issues in public administration and management. Major trends and approaches to governmental administration in the U.S., including the changing federal role, roles of the public sector in relation to the private sector, and managing public agencies at all levels. Same as PSC 2217.

PPPA 2701. Sustainability and Environmental Policy. 3 Credits.
A survey of the intersection of the principles of sustainability and the set of public policies that affect environmental management in the United States. Consideration of the idea that environmental policy is inevitably implemented in a complex interaction of both natural and human systems. Topics applicable to most environmental policy debates, such as the the balance between costs and benefits of environmental protection. Introduction to a "toolkit" of environmental policy instruments ranging from highly prescriptive command-and-control regulations to flexible market-based policies.

PPPA 6000. Cross-Sectoral Governance in the U.S. Federal System. 1 Credit.
Introduction to the roles and responsibilities of the public, nonprofit, and for-profit sectors in the delivery of public goods and services.

PPPA 6001. Introduction to Public Service and Administration. 3 Credits.
Introduction to the discipline of public administration. The intellectual traditions and theoretical frames of reference that inform public administration as a field of professional practice and study. Current and continuing challenges and controversies.

PPPA 6002. Research Methods and Applied Statistics. 0-3 Credits.
Development of skills and knowledge for conducting original research and critically evaluating empirical studies. Various research designs and data collection techniques are examined. Focus on computerizing data sets for quantitative analysis, analyzing strength of relationships, selecting appropriate statistical techniques, and testing statistical hypotheses.

PPPA 6003. Economics for Public Decision Making. 3 Credits.
The basic tools and concepts in microeconomic analysis; how these tools can be useful in public decision making.

PPPA 6004. Managing Public Organizations. 3 Credits.
Organizational dynamics, management approaches, and workplace relationships that affect behavior in public organizations. Prerequisite: PPPA 6001.

PPPA 6005. Public Budgeting, Revenue, and Expenditure Analysis. 3 Credits.
Survey course that focuses on the institutions and analytical tools associated with raising revenue and allocating/managing resources at all levels of government. Hands-on budgeting skills and communication of analysis to decision makers. Prerequisite: PPPA 6003.

PPPA 6006. Policy Analysis. 3 Credits.
Development of skills in conducting and critiquing policy analyses. Application of methodologies used in analyzing possible consequences of specified alternatives as applied in the public policy decision-making process. Appropriate applications and limitations of policy analysis and its relationship to politics and the policy process.

PPPA 6008. M.P.A./M.P.P. Capstone. 3 Credits.
For M.P.A. and M.P.P. students who will complete their degree program at the end of the fall semester, this course substitutes for PPPA 6009 and 6119, respectively.

PPPA 6009. MPA Capstone. 3 Credits.
Review of concepts and issues; analysis and integration of ethical, political, economic, managerial, and personal values and issues in the field.

PPPA 6010. Politics & The Policy Process. 3 Credits.
The role of policy analysts in public policymaking. The impact that the political, economic, cultural, and bureaucratic context has on the policymaking process and outcomes. Political and ethical issues raised by the intricate interface of the private, not-for-profit, and public sectors in public policy formulation and implementation.

PPPA 6011. Introduction to Public Policy. 3 Credits.
Foundations of the field of public policy, emphasizing the role of policy analysts in the policymaking process. Topics include agenda setting, decisionmaking, policy implementation, program evaluation, and policy feedback.

PPPA 6013. Econometrics–Policy Research I. 3 Credits.
Multivariate research methods in policy analysis Prerequisite: PPPA 6002 . Laboratory fee.

PPPA 6014. Economics in Policy Analysis. 3 Credits.
The application of intermediate microeconomic theory to the study of public policy. Topics include models of individual choice in policy analysis, policy aspects of models of the firm, theory of market failure and welfare economics, and resource allocation decisions in the public sector. Credit cannot be earned for both PPPA 6014 and SMPP 6206. Prerequisites: PPPA 6085. Recommended background: An intermediate-level microeconomic theory course such as ECON 6217.

PPPA 6015. Benefit-Cost Analysis. 3 Credits.
The application of microeconomic theory and welfare economics to the empirical evaluation of public policies and programs. Applied welfare economics as a framework for policy analysis; empirical measures of welfare change; techniques of benefit-cost analysis. Prerequisite: PPPA 6014.

PPPA 6016. Public and Nonprofit Program Evaluation. 3 Credits.
Theory and practice of program evaluation and evaluative research. Exploration of scope and limitations of current practice in evaluation, considering economic, political, social, and administrative factors. Examination of methodological considerations for design, data collection, analysis, and dissemination. Prerequisite: PPPA 6002 .

PPPA 6017. Introductory Microeconomics for Public Policy. 3 Credits.
Intermediate microeconomics with a focus on policy-relevant topics and examples. Restricted to MPA and MPP degree candidates.

PPPA 6018. Public Policy, Governance, and the Global Market. 3 Credits.
The socioeconomic foundations of government regulation and public policy cooperation for the governance of firms, markets, and globalization. The evolution of national, transatlantic, and multilateral frameworks for market and civil society governance, international competition policy cooperation, regulatory harmonization, and industry standards.

PPPA 6019. MPP Capstone. 3 Credits.
Policy theory and typologies; policy formulation, implementation, and evaluation; ethics and practice in policy analysis, processes, content, and contexts; policy linkages to multiple disciplines. Students submit an analysis of a substantive policy primarily utilizing resources in the D.C. region.

PPPA 6024. Leadership in Complex Organizations. 3 Credits.
What the manager must know and do to provide leadership and guidance in large, complex organizations. An exploration of leadership theories and the factors and processes that condition effective leadership.

PPPA 6025. Ethics and Public Values. 3 Credits.
Ethical dimensions of personal and professional judgments of public officials. Cases are used to consider the ethos of public organizations and the moral foundations of public policy.

PPPA 6027. Program Management. 1 Credit.
Program management as a basis for developing policy and evaluating programs; how managers look at problems, the competing demands they face, what (and who) influences their decisions and actions, and how they get things done.

PPPA 6031. Governing and Managing Nonprofit Organizations. 3 Credits.
Historical, legal, and social foundations of the nonprofit sector. Developing organizational strategy and capacity; managing staff, boards, and volunteers; financial management; fund raising, marketing, public advocacy, and other external relations; partnerships and entrepreneurial activities; measuring performance; and policy issues.

PPPA 6032. Managing Fund Raising and Philanthropy. 3 Credits.
Fund-raising for nonprofit organizations and the management of relationships between donors and recipient organizations. Positioning the organization for fund raising; roles of staff and volunteers; principal techniques for identifying, cultivating, and soliciting donors; ethical principles; emerging trends; and relevant policy issues.

PPPA 6033. Non-Profit Enterprise. 3 Credits.
The use of business methods by nonprofit organizations, commercialization in the nonprofit sector, and the relationship between nonprofit and for-profit entities in pursuing social purposes. Case studies.

PPPA 6034. Managing Nonprofit Boards. 3 Credits.
Overview of the responsibilities, roles, and management of nonprofit boards. The emphasis is on governing boards, but advisory councils and boards of other types are also considered.

PPPA 6042. Managing State and Local Governments. 3 Credits.
Examination of state and local governmental structures and functions, their place within the federal system, their revenue sources, their limitations, and the alternatives available to encourage more effective administration to meet public and private demands.

PPPA 6043. Land Use Planning and Community Development. 3 Credits.
Theory and practice of land use planning. Issues of competing land uses in an era of increased sprawl, population pressure, and environmental threat. Growth management techniques and practices in states and localities; the use of various regulatory controls and economic incentives to achieve desired outcomes. The idea of "sustainable community.".

PPPA 6044. State Politics and Policy. 3 Credits.
Important concepts of state politics and government with emphasis on how those concepts affect the formulation and implementation of policy. The functions of state government and the political, economic, and legal factors that shape state public policies.

PPPA 6048. Financing State and Local Government. 3 Credits.
Analysis of the theory and practice of public finance in state and local governments. Includes the financing of services through municipal taxation, intergovernmental funds, debt instruments, and other revenue sources. Review of expenditures as well as financial management practices.

PPPA 6049. Urban and Regional Policy Analysis. 3 Credits.
Examination of selected national policies and their effects on urban areas and governments. Emphasis on policy dimensions of urban systems and their relationship to the social, political, and economic context. Against the background of urban politics and administration, areas of health, education, welfare, manpower, transportation, and housing are addressed.

PPPA 6051. Governmental Budgeting. 3 Credits.
Survey of the actors, institutions, and processes in the federal budgeting system. Executive budget preparation/execution, legislative review and approval of budget requirements, and independent audit of government spending.

PPPA 6052. Tax PolicyAnalysis. 3 Credits.
This course provides a guided, critical study of budgeting by the U.S. Government: its conceptual foundations, structure, processes, accounting, scoring, and results. This process is evaluated, as a system and by its component elements, using the criteria of performance with respect to its fundamental objectives; fiscal and economic stability and efficiency, including for those programs aimed at promoting equity. Because of the dominant role of the Congress in the budget process, attention is focused on the system and process created by the Congressional Budget Act of 1974.

PPPA 6053. Financial Management for Public and Nonprofit Organizations. 3 Credits.
Intensive analysis, using the case study approach, of concepts and principles used in the not-for-profit sector for financial management purposes. Disciplines of accounting, budgeting, operations control, management, and auditing are integrated into comprehensive management control systems and include issues of system design and implementation.

PPPA 6054. Issues in Federal Budgeting. 3 Credits.
Policy tools available to pursue social objectives, including grants, loans, contracting out, regulation, tax credits, and tax expenditures. Focus on criteria such as effectiveness, efficiency, equity, legitimacy, and administrative ease.

PPPA 6055. Contracting Out and Public–Private Partnerships. 3 Credits.
Contracting out and public–private partnerships as methods of delivering government goods and services. Policy and implementation issues, including when and how contracting out may provide a more efficient and effective method of delivering government goods and services.

PPPA 6056. Regulatory Comment Clinic. 3 Credits.
Survey of regulatory theories, institutions, policies, and procedures. Application of economic tools to analyze the effect of existing and proposed regulations on social welfare. Communication of analysis to decision makers and the public.

PPPA 6057. International Development Administration. 3 Credits.
An institutional and policy context for work in the international development industry. Mainstream policies, reform efforts, and alternative approaches. Major actors, selected policy areas, and regional and comparative perspectives.

PPPA 6058. International Development NGO Management. 3 Credits.
Provides an understanding of the primary implementers of international development assistance. Overview of NGO management, highlighting those features that are particular to NGOs active in international development, including NGO relations with government and donors. Recommended: PPPA 6057 or approval of instructor.

PPPA 6059. International Development Management Processes and Tools. 3 Credits.
Training in development management tools and processes; application of international development approaches specific to the development management profession. Key theories and perspectives of community development and development management. Recommended: PPPA 6057 or approval of instructor.

PPPA 6060. Policy Formulation and Administration. 3 Credits.
Impact of economic and political factors on public policy formulation and implementation; intensive analysis of the analytical, normative, and decision-making models of the policy process with special emphasis on their relationship to current policy problems.

PPPA 6061. Banking and Financial Institutions Policy. 3 Credits.
This course examines the broad range of policy issues applicable to banking and financial institutions – including those related to monetary policy, financial stability, consumer protection, and community reinvestment. This area includes a number of questions that are at the forefront of the current national policy debate about the appropriate role of government and how best to regulate financial institutions and financial markets.

PPPA 6062. Community Development Policy and Management. 3 Credits.
This course examines the policy and practice of community development, including how private sector developers and lenders work with nonprofits, foundations, and the public sector to promote sustainable affordable housing, economic development, and other community-based projects that meet both financial as well as social impact criteria. This category of finance and development is intended to help people and communities just outside the margins of conventional, mainstream finance join the economic mainstream – and to help the economic mainstream enter emerging opportunity markets. The course explores different types of community development opportunities, including affordable housing, charter school, community facility, small business lending, and nonprofit real estate projects. The course also addresses emerging trends that are likely to affect community development policymakers and practitioners, including transportation oriented development, "green" development, use of technology, comprehensive community initiatives, and new ways of raising capital for community development projects.

PPPA 6063. Policy Issues in Corporate Social Responsibility (CSR) and Impact Investing. 3 Credits.
This course examines the role of the public and nonprofit sectors in supporting corporate and investor activities that are intended to have social and environmental, in addition to financial, benefits. These activities – often referred to as "corporate Social Responsibility" (CSR) and "impact investing" – have been described as having significant potential to create social benefits in addition to being in the financial best interests of the corporation or investor. At the same time, some critics of these activities have said that they are less about producing social benefits and more about marketing private sector activities that are primarily designed to produce corporate financial gains. The course explores what is meant by these two terms, what steps the public and nonprofit sectors have taken to support the wide range of activities that these terms encompass, and what have been the results of this work both in the United States and in other countries. The course also addresses emerging trends that are likely to affect the public and nonprofit role in CSR and impact investing in the future.

PPPA 6065. Federalism and Public Policy. 3 Credits.

PPPA 6066. Environmental Policy. 3 Credits.
Current issues in environmental policy: biodiversity, land use including wilderness protection, climate change, environmental justice, economic growth, and ecological sustainability.

PPPA 6067. Environment, Energy, Technology, and Society. 3 Credits.
The identification, examination, and evaluation of how environment, energy, and technology are interrelated and how these interactions influence policy formulation and implementation at the international, national, regional, industrial, and organizational levels. Same as SMPP 6207.

PPPA 6072. Legislative Management and Congress. 3 Credits.
Analysis of Congress as a management system; examination of its internal administration and its role in formulating policy through legislation. Staffing practices, leadership, rules and procedures, oversight functions, and coalition building.

PPPA 6075. Law and the Public Administrator. 3 Credits.
Exploration and analysis of the functions of law in a democratic society. Emphasis is placed upon the procedural, historical, and jurisprudential dimensions of American law. This broad perspective seeks to convey understanding of the law as a legal and moral force guiding and constraining public decision making.

PPPA 6076. Federal Government Regulation of Society. 3 Credits.
Analysis of the federal regulatory process as it affects the public and private sectors. The regulatory process from legal, economic, administrative, and political perspectives.

PPPA 6077. Case Studies in Public Policy. 1-3 Credits.
Critical analysis of topical issues in public policy, using a case-study approach. Specific issues covered will vary.

PPPA 6081. Poverty and Social Policy. 3 Credits.
Introduction to analytical and political issues surrounding the ongoing American and British debates on poverty and social policy; evaluating social assistance programs; the complementary roles of policy analysis and public management.

PPPA 6085. Special Topics in Public Policy. 3 Credits.
Topics announced in the Schedule of Classes. May be repeated for credit, provided the topic differs.

PPPA 6097. Practicum in Public Policy and Public Administration. 0 Credits.

PPPA 6098. Independent Research. 1-12 Credits.
Prerequisite: Permission of instructor and program director.

PPPA 6207. Program Management. 1 Credit.

PPPA 8022. Econometrics-Plcy Research II. 3 Credits.
Advanced topics in econometrics for policy research. This course is designed for doctoral students who wish to use econometric tools in their research. The course prerequisite is PPPA 6013 or an equivalent course in introductory econometrics; however, students should expect a greater degree of difficulty and a greater reliance on self-directed study in PPPA 8022 than PPPA 6013.

PPPA 8023. Mixed Methods in Research Design. 3 Credits.
The historical and philosophical foundations of mixed method research design; review of canonical designs; developing and honing skills to implement mixed methods research designs.

PPPA 8100. Seminar: Literature of Public Administration. 3 Credits.
Contemporary and historical literature in the institutional and intellectual development of public administration.

PPPA 8101. Research Methods. 3 Credits.
Doctoral seminar on theory and practice in research methodology. Data sources and gathering, research models and designs. Critical evaluation of research studies. Emphasis on application of research methods to policy questions.

PPPA 8105. Public Finance and Human Capital. 3 Credits.
The many facets of budgeting and finance and the research approaches used to study issues in this field.

PPPA 8111. Seminar: Public–Private Sector Institutions and Relationships. 3 Credits.
An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Same as SMPP 8311. Prerequisite: doctoral degree candidate status.

PPPA 8123. Seminar: The Policy Organization. 3 Credits.
Unique problems of complex organizations: public, private, and mixed. Emerging concepts and theories. Selected issues.

PPPA 8164. Seminar on Program Evaluation. 3 Credits.
Doctoral seminar on theory and practice in public and nonprofit program evaluation. The broad range of approaches undertaken, current controversies in the field, and the political and ethical context for evaluators.

PPPA 8174. Seminar: Public Management. 3 Credits.
Public organization theory and behavior. Organizational behavior, organization theory, and public management. Key traditions of inquiry in the study of public organizations. Restricted to PhD students only.

PPPA 8183. Current Topics & Research. 1 Credit.
Current scholarship discussed in a seminar setting. The conduct of research and presentation of research findings. May be repeated for credit.

PPPA 8190. Philosophical Foundations of Policy and Administrative Research. 3 Credits.
Philosophy of science as applied to research in public policy and public administration. The nature of and current problems related to epistemology, development and role of theories, and relationships among theory, methodology, and empirical data. Credit for this course may be applied toward the dissertation credit requirement. Restricted to public policy and administration doctoral candidates who have taken and passed the qualifying examination and completed all required course work in a policy or public administration field.

PPPA 8191. Dissertation Workshop. 3 Credits.
Critical analysis of current research. Formulation of a dissertation proposal and development of dissertation research strategies. Credit for this course may be applied toward the dissertation credit requirement. Restricted to public policy and administration doctoral candidates who have taken and passed the qualifying examination and completed all required course work in a policy or public administration field.

PPPA 8197. Doctoral Seminar:Special Topic. 1-3 Credits.

PPPA 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination.

PPPA 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

MASTER OF PUBLIC ADMINISTRATION

The master of public administration degree (M.P.A.) is the recognized professional degree in public administration, public management, and public service. It is designed principally, but not exclusively, for those who are pursuing careers in public service. Graduates are employed in government agencies at all levels, national associations, public interest groups, research and consulting firms, and in the private sector.

The M.P.A. degree program provides an opportunity to study management and policy issues in an intergovernmental and intersectoral context. The program focuses on developing critical intellectual capacities, sound analytical skills, and a sensitivity to the ethical and value concerns that are central to the traditions of the field of public administration.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (https://tspppa.gwu.edu/master-public-administration-mpa) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

40 credits, including 22 credits in required courses, 9-12 credits in a selected policy field, and 6-9 credits in elective courses.

Code	Title	Credits
Required		
PPPA 6000	Cross-Sectoral Governance in the U.S. Federal System	
PPPA 6001	Introduction to Public Service and Administration	
PPPA 6002	Research Methods and Applied Statistics	
PPPA 6003	Economics for Public Decision Making	
PPPA 6004	Managing Public Organizations	
PPPA 6005	Public Budgeting, Revenue, and Expenditure Analysis	
PPPA 6006	Policy Analysis	
PPPA 6009	MPA Capstone	
Policy field		
Completion of one 9- or 12-credit policy field.		
Policy fields include budget and public finance; federal policy, politics, and management; international development management; managing state and local governments; homeland security and emergency management; nonprofit management; policy analysis and evaluation; public–private policy and management. With approval, a special field may be constructed, tailored to the student's academic interests and career objectives.		
Consult the SPH website for additional information on policy fields.		
Electives		

6-9 credits in elective courses selected in consultation with the advisor. Courses may be from any related program or discipline

MASTER OF PUBLIC POLICY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Prerequisite: a bachelor's degree from a regionally accredited college or university.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The Master of Public Policy is available in a dual degree program with the Ph.D. in the field of political science and a joint degree program with the J.D. in the GW Law School.

Required: 40 credits consisting of:

Policy core:	
PPPA 6002	Research Methods and Applied Statistics
PPPA 6011	Introduction to Public Policy
PPPA 6013	Econometrics–Policy Research I
PPPA 6014	Economics in Policy Analysis
PPPA 6019	MPP Capstone
Two of the following:	
PPPA 6005	Public Budgeting, Revenue, and Expenditure Analysis
PPPA 6015	Benefit-Cost Analysis
PPPA 6016	Public and Nonprofit Program Evaluation
A three-course policy field:	
Policy fields include budget and public finance, education policy, environmental policy, health policy, national security and foreign policy, international development policy, program and policy evaluation, regulatory policy, social policy, and urban policy. With approval, a special field may be constructed, tailored to the student's academic interests and career objectives	
Electives with approval of the advisor	

DUAL MASTER OF PUBLIC ADMINISTRATION AND GRADUATE CERTIFICATE IN HOMELAND SECURITY EMERGENCY PREPAREDNESS AND RESPONSE

REQUIREMENTS

Master of public administration students can earn a graduate certificate in homeland security emergency preparedness and response in the school of engineering and applied science.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

Required	
PPPA 6000	Cross-Sectoral Governance in the U.S. Federal System
PPPA 6001	Introduction to Public Service and Administration
PPPA 6002	Research Methods and Applied Statistics
PPPA 6003	Economics for Public Decision Making
PPPA 6004	Managing Public Organizations
PPPA 6005	Public Budgeting, Revenue, and Expenditure Analysis
PPPA 6006	Policy Analysis
PPPA 6009	MPA Capstone
Policy field	
Three or four courses	
Policy fields include budget and public finance; federal policy, politics, and management; international development management; managing state and local governments; homeland security and emergency management; nonprofit management; policy analysis and evaluation; public–private policy and management. With approval, a special field may be constructed, tailored to the student's academic interests and career objectives.	

Requirements toward the graduate certificate fulfill the elective credits toward the Master of Public Administration degree and are as follows:

EMSE 6300	Homeland Security: The National Challenge
Five additional courses from the following:	
EMSE 6305	Crisis and Emergency Management
EMSE 6310	Information Technology in Crisis and Emergency Management
EMSE 6315	Management of Risk and Vulnerability for Hazards and Terrorism
EMSE 6320	International Disaster Management
EMSE 6325	Medical and Public Health Emergency Management
EMSE 6330	Management of Terrorism Preparedness and Response
EMSE 6992	Special Topics
EMSE 6345	Disaster Recovery and Organizational Continuity
EMSE 6350	Hazard Mitigation in Disaster Management
EMSE 6240	Environmental Hazard Management

DOCTOR OF PHILOSOPHY IN THE FIELD OF PUBLIC POLICY AND ADMINISTRATION

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy Program (p. 82).

Completion of 72 credits beyond the baccalaureate or a minimum of 48 credits beyond the master's degree. Students who have completed graduate course work judged to satisfy program requirements may be granted advanced standing of up to 24 credits toward the overall 72 credits required for the Ph.D.

Code	Title	Credits
Required		
Prequalifying core curriculum		
PPPA 6013	Econometrics–Policy Research I	
PPPA 6014	Economics in Policy Analysis	
PPPA 8100	Seminar: Literature of Public Administration	
PPPA 8101	Research Methods	
PSC 8229	Politics and Public Policy	
A written qualifying examination		
Core courses		
PPPA 8105	Public Finance and Human Capital	
One of the following to fulfill the quantitative course requirement:		
PPPA 8022	Econometrics-Plcy Research II	
ECON 8376	Econometrics II	
ECON 8377	Econometrics III	
DNSC 6275	Advanced Statistical Modeling and Analysis	
One of the following to fulfill the qualitative course requirement:		
PSC 8104	Qualitative Research Methods	
EDUC 8122	Qualitative Research Methods	
EDUC 8131	Case Study Research Methods	
PUBH 8417	Qualitative Research Methods and Analysis	
or equivalent course as approved by the program director.		
A minimum of 18 credits in one of the following fiields:		
Education policy; health policy; budgeting and public finance; program evaluation; administration and management; science and technology policy; social policy with specialization in gender, poverty and inequality, race and ethnicity, or urban policy.		
A written examination in a policy or public administration field.		
Dissertation research		
12-18 credits in the following courses:		
PPPA 8190	Philosophical Foundations of Policy and Administrative Research	
PPPA 8191	Dissertation Workshop	

PPPA 8199	Dissertation Research (repeated as needed to fulfill dissertation credit requirement)

Students must maintain a grade-point average of at least 3.3 to remain in the program.

GRADUATE CERTIFICATE IN BUDGET AND PUBLIC FINANCE

The certificate in budgeting and public finance provides course work in the theoretical and practical foundations of public budgeting and in the formulation and evaluation of public budgets, as well as the complex choices of economic reasoning in response to resource allocation in the process of formulating and implementing public budgets.

The courses in the certificate provide a background in budget policy and process, characteristics of public revenue and expenditure, and governmental accounting and financial reporting. This certificate is particularly suited for those who are, or envision becoming, budget analysts or financial management officers in public agencies at any level of government.

Certificate students enroll in regular courses of the Trachtenberg School and earn graduate credit. Regular graduate tuition and fees apply.

The Budget and Public Finance certificate program is available at the George Washington University's main campus in downtown Washington, D.C. It is not available as a distance learning program.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program webpage (https://tspppa.gwu.edu/certificate-budget-and-public-finance) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 3 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
Required		
PPPA 6005	Public Budgeting, Revenue, and Expenditure Analysis	
Electives		
Three of the following:		
PPPA 6048	Financing State and Local Government	
PPPA 6051	Governmental Budgeting	
PPPA 6052	Tax PolicyAnalysis	
or PPPA 6054	Issues in Federal Budgeting	
PPPA 6053	Financial Management for Public and Nonprofit Organizations	
PPPA 6055	Contracting Out and Public-Private Partnerships	

GRADUATE CERTIFICATE IN NONPROFIT MANAGEMENT

The graduate certificate in nonprofit management provides an overview of central concepts in managing nonprofit organizations for students who are seeking to prepare for, or advance in, careers in the nonprofit sector. The certificate serves as an alternative for students who wish to expand their knowledge in the field without committing to a master's degree program.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program webpage (http://tspppa.gwu.edu/graduate-certificate-nonprofit-management) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 6 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
PPPA 6031	Governing and Managing Nonprofit Organizations	
PPPA 6032	Managing Fund Raising and Philanthropy	
Elective		
Two of the following		
PPPA 6016	Public and Nonprofit Program Evaluation	
PPPA 6033	Non-Profit Enterprise	
PPPA 6034	Managing Nonprofit Boards	
PPPA 6053	Financial Management for Public and Nonprofit Organizations	

PPPA 6058	International Development NGO Management

Other Trachtenberg School of Public Policy and Public Administration nonprofit courses may be offered periodically. With prior approval of the field advisor, certain non-Trachtenberg School courses at GW may be counted toward the elective group.

RELIGION

The study of religion at GW promotes analysis rather than advocacy of religion or a particular tradition. At the undergraduate level, the Department of Religion offers the bachelor of arts with a major in religion. The program curriculum fosters knowledge of the world's religions, as well as their history, literature, and community structure. Areas of study include Biblical literature, Judaism, Christianity, Islam, Hinduism, ethics, sociology of religion, contemporary movements in theology, and religion in American culture. A minor in religion is also offered.

At the graduate level, the cross-disciplinary master of arts in the field of Islamic studies program focuses on the study of Islam in its classical and contemporary formations, with an emphasis on developing competence in classical Islamic intellectual traditions.

The graduate certificate in Islamic studies is also offered for professionals in related fields who benefit from instruction in critical aspects of Islam.

The doctor of philosophy in the field of American religious history is offered by the Department of History in cooperation with the Department of Religion.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in religion (p. 398)

Minor

- Minor in religion (p. 399)

GRADUATE

Master's program

- Master of Arts in the field of Islamic studies (p. 400)

Doctoral program

- Doctor of Philosophy in the field of American religious history (p. 275)

CERTIFICATE

- Graduate certificate in Islamic studies (p. 401)

FACULTY

University Professor S.H. Nasr

Professors P.B. Duff, R.J. Eisen (*Chair*), A.J. Hiltebeitel, R.W. Tuttle

Associate Professors X. Kang, I.O. Koukios, D. Malone-France, K. Pemberton

Assistant Professors E. Aviv, J.D. Wood

Adjunct Professors M. Faghfoory

Professorial Lecturers B.N. Hebbar, E.C. Hostetter, N. Houghtby-Haddon, P. Reddy

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

REL 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

REL 1001. Introduction to World Religions: West. 3 Credits.
Examination of the religions of the ancient Mediterranean and the major religions of the West. Religious foundations of Western civilizations. The development of Judaism, Christianity, and Islam and their confrontations with secularization and political upheaval in the modern world.

REL 1002. Introduction to World Religions: East. 3 Credits.
Examination of the major religions of the East and comparison with religions in the West. Approaches to the cross-cultural study of religion. Hinduism, Buddhism, and the religions of Tibet, China, and Japan are studied with respect to their history and their encounter with modernity.

REL 1003. Introduction to World Religions. 3 Credits.
Introduction to the major religions of the world: Judaism, Christianity, Islam, Hinduism, Buddhism, Confucianism, and Daoism. Examination of the central aspects of these religions including the doctrinal, ethical, ritual, experiential, and social dimensions. Exploration of similarities and differences between these religious traditions.

REL 1009. The Hebrew Scriptures. 3 Credits.
The literature, history, and religious thought represented by the Hebrew Scriptures (Old Testament). Continuities and contrasts between Israel and the ancient Near East are considered through study of the world view, oral and literary tradition, main religious ideas, and chief figures and movements of the biblical literature.

REL 1010. The New Testament. 3 Credits.
Literature and history of earliest Christianity in the setting of the religious movements of the Greco-Roman world and developments within Judaism. The meaning of the earliest Christian proclamation about the significance of the life, teaching, and death of Jesus of Nazareth becomes the basis for tracing the formation and expansion of the Christian movement.

REL 1010W. The New Testament. 3 Credits.
Literature and history of earliest Christianity in the setting of the religious movements of the Greco-Roman world and developments within Judaism. The meaning of the earliest Christian proclamation about the significance of the life, teaching, and death of Jesus of Nazareth becomes the basis for tracing the formation and expansion of the Christian movement.

REL 2165. The Gospels. 3 Credits.
Study of the four canonical gospels (traditionally those of Matthew, Mark, Luke, and John) in terms of each presenting a distinct literary portrait of Jesus of Nazareth and each being the product of a religious community that shared at least some beliefs and practices with surrounding "pagan" and Jewish communities.

REL 2169. Lost Gospels. 3 Credits.
Examination of some of the gospels not included in the Christian canon. These include, among others, Q, the Gospel of Thomas, the Gospel of Mary, and the Gospel of Judas. These lost gospels provide a fresh perspective on the development and diversity of early Christianity.

REL 2201. Judaism. 3 Credits.
A survey of Jewish thought and practice from the biblical to the modern period; introduction to the Hebrew Bible, rabbinic Judaism, Jewish philosophy and mysticism, Judaism in the modern period; an examination of the central rituals in Judaism, including Sabbath, dietary laws, and major festivals.

REL 2211. Rabbinic Thought and Literature. 3 Credits.
The thought-world of rabbinic Judaism in its formative period, 100–500 CE, through a close reading of primary texts in translation selected from Mishnah, Talmud, and Midrash. Topics include Oral Torah, the mechanics of rabbinic law, conceptions of God, views on suffering. The influence of rabbinic Judaism on modern Jewish ethics and thought.

REL 2301. Christianity. 3 Credits.
Typical themes, patterns, and points of diversity within the Christian religion; commonly shared and contested features and complex relationship with broader culture.

REL 2314. Contemporary Philosophy of Religion. 3 Credits.
The arguments of major figures in contemporary schools of thought within the philosophy of religion, including analytic, continental, deconstructionist, and process philosophy.

REL 2401. Islam. 3 Credits.
Islam as both a religion and a civilization. The basic Islamic beliefs and practices: the Qur'an, Hadith, and Islamic intellectual legacy; and the history of Islam from 632 to the present with particular attention to its encounter with the West.

REL 2501. Hinduism. 3 Credits.
Study of continuity and change in Hinduism, with emphasis on historical development and the consolidating features of the religion. Attention to relations between classical and popular living forms.

REL 2506. Religion, Myth, and Magic. 3 Credits.
Theories of religion developed by anthropologists; survey of world religions with emphasis on non-Western societies; religious processes and change. (Same as ANTH 2506).

REL 2562. Mythologies of India. 3 Credits.
The lore of Indian gods (Vedic, Puranic), heroes (epics), and holy men (Hindu, Buddhist, Jain, Tantric); ties with Indian art, caste, cult, cosmology, and spiritual ideals.

REL 2601. Buddhism. 3 Credits.
Consideration of the Buddhist tradition both thematically and historically, focusing on topics such as Buddhist doctrine, meditation, and rituals. The lived tradition in the pre-modern and modern periods.

REL 2811. Confucian Literature in East Asia. 3 Credits.
Introduction to Confucian literature in China and other parts of East Asia, from its beginnings to the present day. The various historical, philosophical, and religious dimensions of Confucian texts and practices; the role of Confucianism in the formation and development of Chinese and East Asian political systems, family systems, and gender relationships; recent intellectual debates on Confucianism in East Asia. (Same as EALL 3811, EALL 6811).

REL 2814. Religion and Philosophy in East Asia. 3 Credits.
Historical introduction to the major religious and philosophical traditions in China, Japan, and Korea, with focuses on ancestor worship, shamanistic cults, Confucianism, Buddhism, Daoism, and Shinto. The interactions of common East Asian religious and philosophical traditions how these traditions evolved over time, and the way each cultures assimilates foreign elements. How the very ideas of religion and philosophy are formulated and practiced differently in East Asia from those in the Western tradition. (Same as EALL 3814, REL 3814).

REL 2921. The Religions Wage Peace. 3 Credits.
Resources in various world religions that contribute to peacemaking in interpersonal relations and in domestic and international politics. Consideration of ways in which religions contribute to intolerance and violence. Case-based approach to religions as related to peace and conflict resolution.

REL 2922. Ethics and World Religions. 3 Credits.
Modern concepts of ethics and their relation to major world religions, religion as stimulus and barrier to moral change, and modern moral issues ranging from bioethics to war.

REL 2981. Women in Western Religion. 3 Credits.
Historical, theological, and ethical investigation of the image and role of women in Judaism and Christianity; special consideration of the Biblical experience, the sexual qualifications for religious office, use of male and female images and languages, and contemporary issues. Same as WSTU 3981.

REL 3141. Second Temple/Hellenistic Judaism. 3 Credits.
History of Judaism from the time of Ezra through the destruction of Jerusalem in 70 CE—canonization of the Pentateuch, Hellenism, Maccabean revolt, growth of sectarian movements, Herod, ferment against Rome in context of Eastern and Western political currents. Use of primary sources, especially the Bible, Josephus, and noncanonical writings.

REL 3149. Biblical Issues. 3 Credits.
May be repeated for credit provided the topic differs.

REL 3149W. Biblical Issues. 3 Credits.
May be repeated for credit provided the topic differs.

REL 3151. The Historical Jesus. 3 Credits.
Comprehensive study of the life and teachings of Jesus with critical attention to sources. Quest for the historical Jesus.

REL 3151W. The Historical Jesus. 3 Credits.
Comprehensive study of the life and teachings of Jesus with critical attention to sources. Quest for the historical Jesus.

REL 3161. The Life and Thought of Paul. 3 Credits.
Backgrounds of early Christianity, first-century religious and social conditions affecting the spread of Christianity, the life and journeys of Paul, Paul's presentation of the Christian faith.

REL 3161W. The Life and Thought of Paul. 3 Credits.
Backgrounds of early Christianity, first-century religious and social conditions affecting the spread of Christianity, the life and journeys of Paul, Paul's presentation of the Christian faith.

REL 3221. Issues in Jewish Ethics. 3 Credits.
Exploration of current debates about major ethical issues among Jewish thinkers in the Orthodox, Conservative, and Reform denominations; issues in bioethics, feminism, attitudes towards non-Jews, social action, the ethics of war.

REL 3291. Modern Jewish Thought. 3 Credits.
Jewish thought from 1800 to the present through an exploration of six preeminent Jewish theologians: Moses Mendelssohn, Hermann Cohen, Martin Buber, A.J. Heschel, J.B. Soloveitchik, and Mordecai Kaplan. The relationship between these thinkers and the major Jewish denominations: Orthodox, Conservative, Reform, and Reconstructionist.

REL 3292. Seminar: Issues in Jewish Thought. 3 Credits.
In-depth exploration of a selected thinker or issue in Jewish thought. Recommended for students with academic background in the study of religion or Judaic studies. May be repeated for credit provided the topic differs.

REL 3310. Apocalypse and Social Change. 3 Credits.
Investigation of typical ideas, patterns, and areas of social engagement associated with the genre of religious literature known as apocalypse. Why and how diverse groups within Jewish, Christian, and Muslim traditions crafted apocalypses that have shaped cultures across the globe from past to present.

REL 3321. Christian Ethics and Modern Society. 3 Credits.
Nature and principles of Christian life as developed by the Christian community; problems of personal conduct; application to various social institutions.

REL 3341. Christianity in the Ancient World. 3 Credits.
Rise and development of Christianity in relation to the culture, philosophy, mystery religions, and general religious life of the Greco-Roman world to A.D. 500.

REL 3342. Medieval Faith and Symbolism. 3 Credits.
Christian life and thought in the Middle Ages; mystics, saints, popes, and philosophers.

REL 3343. Religion in the Renaissance and Reformation. 3 Credits.
Transformation of the Western understanding of human identity and destiny from the end of the Middle Ages to the Age of Reason.

REL 3344. Christianity in the Modern World. 3 Credits.
Changes in Christian life and thought since 1700, as seen in theology, literature, political life, and religious institutions.

REL 3405. Shi'ite Islam. 3 Credits.
This course examines the emergence and development of Shi'ism as a branch of Islamic orthodoxy with particular emphasis on its doctrine, practices, theology, the law, politics, and the geographical and political context within which a distince Shi'i identity developed.

REL 3414. Islamic Philosophy and Theology. 3 Credits.
The major schools of Islamic philosophy and theology, considered in both a morphological and historical manner. The relation between revelation and reason, determination and free will, and divine and human knowledge as well as the relation among science, philosophy, and religion. The development of various schools of thought, from the classical period to the present.

REL 3425. Islamic Political Thought. 3 Credits.
In contrast to many courses on this topic that focus on modern period, this course investigates Islamic political thought from its inception during the lifetime of the Prophet to its elaboration and expansion by philosophers, theologians and political theorists, and to its encounter with political though coming from the Western world in modern period.

REL 3431. Sufism (Islamic Mysticism). 3 Credits.
The foundation of Sufism in the Quranic revelation, its subsequent development, and its significance within Islamic civilization. Doctrines and practices of Sufism; history of the Sufi orders; Sufi literature, particularly in Arabic and Persian. The influence of Sufism upon social and political life and its state and role in the contemporary world, both Islamic and non-Islamic.

REL 3432. Persian Sufi Literature East and West. 3 Credits.
The teachings of Sufism as reflected in the history of Persian Sufi literature. The influence of that literature on literary figures outside of the Islamic world, especially in the West, but also in India and China, from the 18th to the 20th centuries.

REL 3475. Islamic Religion and Art. 3 Credits.
Investigation of major forms of Islamic art, such as calligraphy, architecture, and urban design; Quranic chanting, poetry, and music in relation to the principles of Islamic revelation. Same as AH 4119.

REL 3481. Women in Islam. 3 Credits.
The ways in which Islam has articulated gender identity and male–female relationships, and conversely, how women have constructed, interpreted, and articulated Islam and their places within it. Same as WSTU 3481.

REL 3482. Gender and Piety in Islam. 3 Credits.
Issues related to gender, sainthood, and piety in Islam. Reading of classical primary texts and historical, ethnographic, and philosophical works. Focus on mysticism and metaphysics in Sufi and Shi'i traditions. Final projects are creative or research oriented.

REL 3566. Dharma in Hinduism and Buddhism. 3 Credits.
Development of working definitions of dharma as it is used in law, religion, ethics, and narrative in Buddhist and Brahmanical/Hindu texts of India's classical period.

REL 3611. South Asian Buddhism. 3 Credits.
The life of Buddha, the Buddhist Councils, doctrines of the schools of Hinayana Buddhism, philosophies of the schools of Indian Mahayana Buddhism, history of Buddhism in Sri Lanka, early history of Tibetan Buddhism, and the decline of Buddhism in India.

REL 3614. Buddhist Philosophy. 3 Credits.
Development of working definitions of dharma as it is used in law, religion, ethics, and narrative in Buddhist and Brahmanical/Hindu texts of India's classical period.

REL 3666. The Book of Revelation and Other Apocalypses. 3 Credits.
Examination of the Book of Revelation in its original historical context. This includes investigation of the origins of apocalyptic thought within Judaism and comparison of the Book of Revelation with other apocalypses such as Daniel, 1 Enoch, and 4 Ezra.

REL 3701. Religion in the United States. 3 Credits.
Growth of religious groups and institutions in relation to American culture, development of religious thought, and analysis of the contemporary religious scene.

REL 3711. Religion in Contemporary America. 3 Credits.
Trends and currents in American religion in the past fifty years. The nature and meaning of religious pluralism in the United States.

REL 3711W. Religion in Contemporary America. 3 Credits.
Trends and currents in American religion in the past fifty years. The nature and meaning of religious pluralism in the United States.

REL 3814W. Religion&Philosophy/East Asia. 3 Credits.
General introduction to the religions and philosophical tradition of China, Japan, and Korea. Same as EALL 3814.

REL 3831. Daoism in East Asia. 3 Credits.
Study of the early history of the formation and development of Daoism, its growth into an institutionalized religious organization in China, and its role in the religious and philosophical history of Japan and Korea. Same as EALL 3831.

REL 3831W. Daoism in East Asia. 3 Credits.
Study of the early history of the formation and development of Daoism, its growth into an institutionalized religious organization in China, and its role in the religious and philosophical history of Japan and Korea. Same as EALL 3831.

REL 3832. Myth, Ritual, and Popular Religion in China. 3 Credits.
Key aspects of popular religious myths, symbols, rituals, and practices in China, such as ancestor worship, spirit possession, fengshui theories, and pilgrimage.

REL 3841. Religion in Modern China. 3 Credits.
The changes, destructions, and reconstructions of Chinese religions from the late 19th century to the present day. The relationship between the (re)making of Chinese religions and the making of a modern Chinese nation-state. Same as CHIN 3841.

REL 3881. Women, Gender, and Religion in China. 3 Credits.
A historical introduction to the concepts of body, gender, and womanhood in Confucian, Daoist, Buddhist, and popular Chinese religious traditions. Women's roles in religious ritual and practices; the influence of Christianity and modernity. (Same as WSTU 3881, EALL 3881).

REL 3901. Thinking About Religion: Classic and Contemporary Approaches. 3 Credits.
Analysis of different ways in which religious phenomena can be approached. Readings and discussion of some of the epoch-making books in the development of the study of religion.

REL 3910. Perennial Philosophy. 3 Credits.
The meaning of the concept of 'perennial philosophy' as understood by various scholars of thought throughout Eastern and Western history, including its contemporary significance. Perennial philosophy as it concerns the nature of the 'divine reality,' the human state, the cosmos, the arts, and relations between religions.

REL 3915. Islam and Hinduism in South Asia. 3 Credits.
Investigation of the historical development and contemporary practice of Islam in South Asia (India, Nepal, Pakistan, Bangladesh, and Afghanistan). Particular attention to devotional traditions within Sufism and Bhakti Hinduism.

REL 3920. Man and the Natural Environment. 3 Credits.
The religious, philosophical, and historical causes of the modern environmental crisis; examination of the relationship between human beings and the natural environment in the West and in major non-Western civilizations from Graeco–Roman antiquity to modern times. Emphasis on the religious and philosophical issues involved in the relationship between man and nature.

REL 3923. Violence and Peace in Judaism, Christianity, and Islam. 3 Credits.
Historical analysis of the violent and peaceful dimensions of the three Abrahamic faiths, with focus on the relationship of the scriptures of each of the three traditions to the later interpretations that supported both violent and peaceful readings of those texts.

REL 3930. Mysticism East and West. 3 Credits.
Mysticism and its various meanings in Eastern and Western religious and spiritual traditions. Comparative study of major figures and works. What schools of mysticism teach about the nature of God and the world and the human state. The rapport between mysticism and various forms of sacred and traditional art.

REL 3931. Interfaith Dialogue in World Religions. 3 Credits.
Comparison of certain families of religions and the doctrinal debates in which they have engaged, including Hindu–Buddhist, inter-Hindu, inter-Buddhist, Buddhist–Confucian, Jewish–Christian, inter-Christian (Catholic–Protestant), Christian–Islamic, and inter-Islamic debates.

REL 3945. The Psychological Study of Spirituality. 3 Credits.
The complex interrelationship between psychology and spirituality: health and wellness; development of a spiritual life; psychological factors involved in spirituality; therapy and multicultural issues. Same as PSYC 3945.

REL 3951. Myth, Epic and Novel. 3 Credits.
Religious themes and images of the hero and their cultural significance in literature: e.g., Indo-European, Biblical, Babylonian narrative traditions; Greek epic and drama; Dante, Milton, Dostoevsky, Kafka, Hesse, Faulkner, Beckett.

REL 3989. The Goddess in India and Beyond. 3 Credits.
The goddess traditions of Hinduism, with some attention to goddess traditions in the ancient Near East and the Mediterranean. Classical Sanskritic, Tantric, and popular expressions of Hindu goddess worship. Comparative studies and issues of gender.

REL 3990. Selected Topics in Religion. 3 Credits.
Critical examination of religious phenomena rendered timely by current events or special resources. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

REL 3990W. Selected Topics in Religion. 3 Credits.
Critical examination of religious phenomena rendered timely by current events or special resources. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

REL 3999. Readings and Research. 2-3 Credits.

REL 4101. Senior Capstone Seminar. 3 Credits.
Required of and open to students majoring in religion.

REL 4191W. Senior Honors Thesis. 3 Credits.

REL 5701. Selected Topics. 0-4 Credits.

REL 6201. Special Topics in Religion. 3 Credits.
May be repeated for credit provided the topic differs.

REL 6401. Islamic Historiographies. 3 Credits.
Muslim historiographic traditions from the 7th to 15th centuries, including what they looked like and how they developed; the development of scholarly methods used to evaluate the source materials for these traditions in the formative and classical periods ofIslam; key developments in postclassical, non-Arabic Muslim historiographic traditions in the Indian Subcontinent, Ottoman Turkey, and the Persian lands.

REL 6402. Qur'an and Hadith. 3 Credits.
The structure, major themes, and literary aspects of the twin sources of Islam. Commentaries written by Muslim scholars and their part in spreading the teachings of the sacred book of Islam. The general principle elements of Islamic theology, law, politics, ethics, philosophy, and art and architecture. The science of Hadith, its types, its relation to the Qur'an, and methods used for authentication of the sayings of the Prophet. The historical role of the Qur'an and Hadith both in classical as well as modem period with particular emphasis on its part in forming Muslim perception of society, history, and politics.

REL 6441. Islamic Law. 3 Credits.
Islamic positive law in the contemporary context. The family law of Islam (marriage, dowry, custody, guardianship and various forms of divorce); the law of inheritance and public trust (waqf) as two selected topics of Islamic private law. Examination of theories of jihad and siyar in the contemporary context of nation-state systems of international relationships. Islamic rituals ('ibadat) whose spirituality prevails the totality of the Islamic set of laws and regulations.

REL 6460. Topics in the Study of Islam. 3 Credits.
Study of sources and approaches to the investigation of Islam by both Western Islamicists and Muslim scholars, with discussion of the main controversial issues and differences in methods used by various schools of scholarship. Prerequisite: A course on Islam or permission of instructor.

REL 6461. Topics in Islamic Thought. 3 Credits.
Perennial major issues in Islamic theology, philosophy, and Sufism such as Divine Unity, prophetology, eschatology, religious knowledge, sacred law, and ethics. Prerequisite: A course on Islam or permission of instructor.

REL 6511. Currents of Modern Hinduism. 3 Credits.
Hinduism since the early seventeenth century. Colonialism, the impact of missionaries, orientalism, reform, relations between Brahmanical and popular Hinduism, Sanskritic and vernacular traditions, regionalism, communalism, nationalism, fundamentalism, politicized "syndicated" Hinduism, and secularism.

REL 6557. India's Great Epics. 3 Credits.
The Mahabharata and the Ramayana are treated in alternate offerings of the course. These founding epic texts of devotional (bhakti) Hinduism are taught in English translation. Vernacular and performative versions of the epics and Western adaptations.

REL 6771. American Religion to 1830. 3 Credits.
Religious thought and life during the Colonial and early National periods.

REL 6773. American Religion Since 1830. 3 Credits.
Religious thought and life from the Civil War to the present.

REL 6911. Myth, Ritual and Language. 3 Credits.
Method and theory in the interpretation of myth and narrative, ritual and sacrifice, and symbolism, with primary reference to the history of religions.

REL 6997. Readings and Research. 2-3 Credits.
Investigation of special problems.

REL 6998. Thesis Research. 3 Credits.

REL 6999. Thesis Research. 3 Credits.

BACHELOR OF ARTS WITH A MAJOR IN RELIGION

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Prerequisite courses: REL 1003 or both REL 1001 and REL 1002

Required courses (12 credits):

REL 1009	The Hebrew Scriptures (or another course in Hebrew Scriptures, such as:)
or REL 3149	Biblical Issues
or REL 3149W	Biblical Issues
REL 1010	The New Testament (or another course in New Testament, such as:)
or REL 1010W	The New Testament
or REL 2165	The Gospels
or REL 3151	The Historical Jesus
or REL 3151W	The Historical Jesus
or REL 3161	The Life and Thought of Paul
or REL 3161W	The Life and Thought of Paul
or REL 3666	The Book of Revelation and Other Apocalypses
REL 3901	Theories and Methods in the Study of Religion (to be taken in the Fall semester of junior year)
REL 4101	Senior Capstone Seminar (to be taken in the Fall semester of senior year)

Four additional courses (12 credits) from one of the following religious traditions:

Buddhism	
REL 2601	Buddhism
REL 3566	Dharma in Hinduism and Buddhism
REL 3611	South Asian Buddhism
REL 3614	Buddhist Philosophy
Christianity	
REL 2165	The Gospels
REL 2169	The Lost Gospels
REL 2301	Christianity
REL 3151	The Historical Jesus
or REL 3151W	The Historical Jesus
REL 3161	The Life and Thought of Paul
or REL 3161W	The Life and Thought of Paul
REL 3321	Christian Ethics and Modern Society
REL 3341	Christianity in the Ancient World
REL 3342	Medieval Faith and Symbolism

REL 3343	Religion in the Renaissance and Reformation
REL 3344	Christianity in the Modern World
REL 3666	The Book of Revelation and Other Apocalypses
Hinduism	
REL 2562	Mythologies of India
REL 3501	Hinduism
REL 3566	Dharma in Hinduism and Buddhism
REL 3915	Islam and Hinduism in South Asia
REL 3989	The Goddess in India and Beyond
Islam	
REL 2401	Islam
REL 3405	Shi'ite Islam
REL 3414	Islamic Philosophy and Theology
REL 3425	Islamic Political Thought
REL 3431	Sufism (Islamic Mysticism)
REL 3475	Islamic Religion and Art
REL 3481	Women in Islam
REL 3482	Gender and Piety in Islam
REL 3915	Islam and Hinduism in South Asia
Judaism	
REL 2201	Judaism
REL 2211	Rabbinic Thought and Literature
REL 3141	Second Temple/Hellenistic Judaism
REL 3221	Issues in Jewish Ethics
REL 3291	Modern Jewish Thought
REL 3292	Seminar: Issues in Jewish Thought
East Asian Religions	
REL 2811	Confucian Literature in East Asia
or EALL 3811	Confucian Literature in East Asia
REL 2814	Religion and Philosophy in East Asia
REL 3831	Daoism in East Asia
or REL 3831W	Daoism in East Asia
REL 3832	Myth, Ritual, and Popular Religion in China
or EALL 3832	Myth, Ritual, and Popular Religion in China
REL 3841	Religion in Modern China
or CHIN 3841	Religion in Modern China
REL 3881	Women, Gender, and Religion in China
or EALL 3881	Women, Gender, and Religion in China
or WSTU 3881	Women, Gender, and Religion in China
Three additional religion (REL) courses (9 credits) numbered 2000 or above and outside the chosen tradition	

It is recommended that students include the study of foreign languages in their undergraduate program, including a language crucial to one of the religious traditions.

See course listing (p. 1443) for a complete list of course offerings in the Religion Department.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must maintain a grade-point average of 3.5 in courses in the major, and receive a grade of *A-* or better in REL 4101 Senior Capstone Seminar.

MINOR IN RELIGION

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, of which no more than 9 credits may be taken in any one major religious tradition listed below:

Code	Title	Credits
Buddhism		
REL 2601	Buddhism	
REL 3566	Dharma in Hinduism and Buddhism	
REL 3614	Buddhist Philosophy	
Christianity		
REL 2165	The Gospels	
REL 2169	The Lost Gospels	
REL 2301	Christianity	

REL 3151	The Historical Jesus
or REL 3151W	The Historical Jesus
REL 3161	The Life and Thought of Paul
or REL 3161W	The Life and Thought of Paul
REL 3321	Christian Ethics and Modern Society
REL 3341	Christianity in the Ancient World
REL 3342	Medieval Faith and Symbolism
REL 3343	Religion in the Renaissance and Reformation
REL 3344	Christianity in the Modern World
REL 3666	The Book of Revelation and Other Apocalypses
Hinduism	
REL 2562	Mythologies of India
REL 3501	Hinduism
REL 3566	Dharma in Hinduism and Buddhism
REL 3915	Islam and Hinduism in South Asia
REL 3989	The Goddess in India and Beyond
Islam	
REL 2401	Islam
REL 3405	Shi'ite Islam
REL 3414	Islamic Philosophy and Theology
REL 3425	Islamic Political Thought
REL 3431	Sufism (Islamic Mysticism)
REL 3475	Islamic Religion and Art
REL 3481	Women in Islam
REL 3482	Gender and Piety in Islam
REL 3915	Islam and Hinduism in South Asia
Judaism	
REL 2201	Judaism
REL 2211	Rabbinic Thought and Literature
REL 3141	Second Temple/Hellenistic Judaism
REL 3221	Issues in Jewish Ethics
REL 3291	Modern Jewish Thought
REL 3292	Seminar: Issues in Jewish Thought
East Asian Religions	
REL 2811	Confucian Literature in East Asia
or EALL 3811	Confucian Literature in East Asia
REL 2814	Religion and Philosophy in East Asia
REL 3831	Daoism in East Asia
or REL 3831W	Daoism in East Asia
REL 3832	Myth, Ritual, and Popular Religion in China
or EALL 3832	Myth, Ritual, and Popular Religion in China
REL 3841	Religion in Modern China
or CHIN 3841	Religion in Modern China
REL 3881	Women, Gender, and Religion in China
or EALL 3881	Women, Gender, and Religion in China
or WSTU 3881	Women, Gender, and Religion in China

REL 3901 is recommended.

View the religion course listings (p. 1443) for a complete list of courses offered by the department.

MASTER OF ARTS IN THE FIELD OF ISLAMIC STUDIES

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

36 credits, including 12 credits in required courses and 24 credits in pre-approved elective courses.

Prerequisite: a bachelor's degree from an accredited college or university and two years of Arabic language study (which may be taken early on in the coursework).

Required

REL 6401	Islamic Historiographies
REL 6402	Qur'an and Hadith

REL 6441	Islamic Law
REL 6460	Topics in the Study of Islam
REL 6998	Thesis Research
REL 6999	Thesis Research
6 additional courses chosen from a pre-approved list in a variety of disciplines, most of which should focus on Islam in the contemporary world.	

A concentration in Hinduism and Islam is available through GW's participation in the Consortium of Universities.

Depending on their focus of study, students may be asked to take courses in other languages; language courses will not count toward the degree.

See departmental website (http://religion.columbian.gwu.edu/master-arts-islamic-studies) for a full program description.

GRADUATE CERTIFICATE IN ISLAMIC STUDIES

The graduate certificate in Islamic studies provides valuable insight into the world of Islam—both Sunni and Shi'ite. The conflict between these two factions lies at the root of many contemporary issues in the Middle East and beyond. This turmoil has made the Islamic world a priority in foreign affairs, and knowledge of the faith's complex cultural intricacies is more important than ever. This certificate program guides professionals in related fields through critical aspects of Islam. Students graduate with the expertise needed to advance their careers and effectively navigate projects involving the Islamic world.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (https://religion.columbian.gwu.edu/islamic-studies-graduate-certificate) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 12 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
REL 6401	Islamic Historiographies	
REL 6402	Qur'an and Hadith	
REL 6441	Islamic Law	
REL 6460	Topics in the Study of Islam	
Electives		
Two additional courses chosen from an approved list in a variety if disciplines, most of which focus on Islam in the contemporary world		

ROMANCE, GERMAN, AND SLAVIC LANGUAGES AND LITERATURES

The Department of Romance, German, and Slavic Languages and Literatures offers undergraduate instruction in French, German, Italian, Portuguese, Russian, and Spanish. In general, Romance language courses are conducted entirely in the language concerned. The proficiency-based curriculum emphasizes skills in aural comprehension, speaking, reading, and writing. Culture, an essential dimension of language acquisition, is integrated from the start.

The undergraduate program is designed to strengthen a student's ability to communicate, reason, and understand the linguistic, social, cultural, and physical environments that inform the lives of the people who speak the target language. Course work fosters critical thinking, based in the linguistic, cultural, and historical roots of the locations where the language is spoken. The curriculum prepares students for careers in academia, business, diplomacy, government, medicine, and law, among other fields.

Classroom and laboratory study is supplemented by the diverse resources of Washington, D.C., through field trips, foreign films, lectures, and cultural programs at embassies. Visit the department website (http://rgsll.columbian.gwu.edu) for information concerning eligibility, requirements, and procedures for the wide variety of opportunities to study abroad (https://studyabroad.gwu.edu).

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in French language, literature, and culture (p. 402)
- Bachelor of Arts with a major in German language and literature (p. 403)
- Bachelor of Arts with a major in Russian language and literature (p. 404)
- Bachelor of Arts with a major in Spanish and Latin American languages, literatures, and cultures (p. 405)

Minors

- Minor in French language, literature, and culture (p. 406)
- Minor in German language and literature (p. 406)
- Minor in Italian language and literature (p. 407)
- Minor in Russian language and literature (p. 407)

- Minor in Spanish and Latin American languages, literatures, and cultures (p. 408)

FACULTY

Professors P. Rollberg, R. Robin (*Chair*), S. Waisman

Associate Professors M. Belenky, C. Britt, Y. Captain-Hidalgo, L. Chang, M. de la Fuente, M.R. Gonglewski, D.B. Marshall (*Teaching*), M.B. Stein, L.L. Westwater

Assistant Professors H. Bamford, J. Brant, K. Kleppinger, G. Shatalina, A. Waberi

Adjunct Professors I. Alameda-Nieto, B. Bridaa, M. Camps-Calbet, S. Erradi, S. Hoepfl-Wellenhofer, B. Marguerre, B. Mazurkiewicz, L. Michael, E. Ovtcharenko, R.I. Pozos

Instructors A. Longoni, E. Parker, D.G. Perillan (*Teaching),* A Suarez-Touzon

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Placement examinations: A student who has not been granted advanced standing and who wishes to continue in college the language begun in high school must take a placement examination (http://departments.columbian.gwu.edu/rgsll) before registration. Upon completion of the examination, assignment is made to the appropriate course.

Note: In general, Romance language courses are conducted entirely in the language concerned. Oral comprehension, speaking, reading, and writing are the basis of all courses through FREN 2006 Language, Culture & Society II/ITAL 2006 Language, Culture & Society II/PORT 2006 Applied Portuguese Grammar/SPAN 2006 Advanced Spanish II, with culture integrated from the start as an essential dimension of language acquisition.

- French (FREN) (p. 1234)
- Germanic Language and Literature (GER) (p. 1242)
- Italian (ITAL) (p. 1286)
- Portuguese (PORT) (p. 1399)
- Slavic Language and Literature (SLAV) (p. 1453)
- Spanish (SPAN) (p. 1459)

BACHELOR OF ARTS WITH A MAJOR IN FRENCH LANGUAGE, LITERATURE, AND CULTURE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Prerequisite courses:		
FREN 1001	Basic French I	
FREN 1002	Basic French II	
FREN 1003	Intermediate French I	
FREN 1004	Intermediate French II	
FREN 2005	Language, Culture & Society I	

Code	Title	Credits
Required for the major:		
30 credits including:		
FREN 3100	Introduction to French Literature	
FREN 4910	Proseminar: Rdgs for the Major	
FREN 4920W	Proseminar II	
Select seven additional upper-division courses numbered 2006 and above, of which four must be in French literature and culture and, with approval of the major advisor, two may be in a related field. Two of the six additional courses must be from the French 4000 series.		
FREN 3010W	Advanced French Grammar and Style	
FREN 3020	Contemporary France	
FREN 3100W	Introduction to French Literature	
FREN 3210	Medieval and Early Modern French Literature in Context	
FREN 3220	Modern French Literature	
FREN 3290	Textual Analysis	
FREN 3300	Topics in French and FrancophoneLiteratures and Cultures in Translation	
FREN 3400	Studies in Genre	

FREN 3520	The Age of Classicism
FREN 3530	The Age of Enlightenment
FREN 3550	Studies in 20th-Century French Literature
FREN 3560	Topics in Contemporary Francophone Literature and Cinema
FREN 3600	Special Topics in French Literature
FREN 3700	History of French Cinema
FREN 4135	Folger Seminar
FREN 4470	Writing Women
FREN 4500	Studies in Medieval French Literature
FREN 4510	French Literature of the Renaissance
FREN 4540	19th-Century French Literature and Culture
FREN 4600	Special Topics in French Literature

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors in French language, literature, and culture, candidates must have attained a 3.75 GPA in the major and at least a 3.0 average overall. Qualified students may be invited to write an honors thesis by their major advisor and proseminar professor by the beginning of the fall semester of the senior year.

BACHELOR OF ARTS WITH A MAJOR IN GERMAN LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Prerequisites		
One of the following options:		
Option A:		
GER 1005 & GER 1006	Intensive Beginning German I and Intensive Beginning German II	
Option B:		
GER 1001 & GER 1002	First-Year German I and First-Year German II	
GER 1003 & GER 1004	Second-Year German I and Second-Year German II	
Code	**Title**	**Credits**
Required		
GER 2009 & GER 2010	Intermediate German I and Intermediate German II	
GER 2109 & GER 2110	Introduction to German Studies I and Introduction to German Studies II	
Two courses from the following:		
GER 2091 & GER 2092	Introduction to German Literature–in English I and Introduction to German Literature–in English II	
GER 2161 & GER 2162	German Culture–in English I and German Culture–in English II	
Electives		
Two courses from the following:		
GER 2111	Business German	
GER 2161 & GER 2162	German Culture–in English I and German Culture–in English II (if not taken above)	
GER 2165	20th-Century German Literature–in English	
GER 3181	History of German Cinema–in English	
GER 3182	The Fairy Tale from the Grimms to Disney–in English	
GER 3183	Berlin Before & After the Wall (in English)	
GER 3184	German Thought - in English	
GER 3185	Literary Voices and the Fascist Experience–in English	
GER 3186	German Women Writers of the 19th and 20th Centuries (in English)	
GER 3187	German Cinema after 1945 (in English)	
GER 3188	The Lives of East Germans (in English)	
Four courses from the following:		

GER 3189	Dealing with the Communist Past in Germany and Eastern Europe
GER 4171	The Age of Goethe-in German (in German)
GER 4172	From Romanticism to Realism (in German)
GER 4173	Naturalism to Expressionism (in German)
GER 4174	Inside/Outside the Third Reich (in German)
GER 4175	Literature of two Germanies (in German)
GER 4176	Contemporary German Literature (in German)

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, candidates must have attained a 3.5 grade-point average in the major and at least a 3.0 average overall. Students must apply for honors candidacy by the end of the first semester of the junior year; must attain speaking proficiency at the advanced level, as measured by the ACTFL (American Council on the Teaching of Foreign Languages) Oral Proficiency Interview; and must successfully complete an honors thesis (GER 4197 Senior Honors Thesis I–GER 4198 Senior Honors Thesis II).

BACHELOR OF ARTS WITH A MAJOR IN RUSSIAN LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Prerequisite		
All courses in one of the following options:		
Option A:		
SLAV 1012	Intensive Basic Russian I	
SLAV 1034	Intensive Basic Russian II	
Option B:		
SLAV 1001	First-Year Russian I	
SLAV 1002	First-Year Russian II	
SLAV 1003	Second-Year Russian I	
SLAV 1004	Second-Year Russian II	

Code	Title	Credits
Required in the major		
SLAV 1391	Introduction to Russian Literature I	
SLAV 1392	Introduction to Russian Literature II	
SLAV 2005	Intermediate Russian I	
SLAV 2006	Intermediate Russian I	
SLAV 2007	Russia Today: Topics in Advanced Russian I	
SLAV 2008	Russia Today: Topics in Advanced Russian II	
SLAV 2361	Russian Culture	
SLAV 2362	Russian Culture	
Two of the following:		
SLAV 2471	19th-Century Russian Prose	
SLAV 2472	19th-Century Russian Poetry	
SLAV 2473	20th-Century Russian Prose	
SLAV 2474	20th-Century Russian Poetry	
Two of the following:		
SLAV 2365	20th-Century Russian Literature to World War II	
SLAV 2366	Russian Literature from World War II to the Present	
SLAV 2785	Introduction to Russian Cinema I	
SLAV 2786	Introduction to Russian Cinema II	
SLAV 4595W	Special Topics	

Proficiency requirements for the Russian major: After completing SLAV 2006 Intermediate Russian I, students consult their advisor to choose one of the following two proficiency tracks:

1. Emphasis on proficiency in speaking—students choosing this track must attain speaking proficiency at the Intermediate High level, as measured by the ACTFL Oral Proficiency

Interview; a semester of intensive language study in Russia on an approved program is required unless waived by the department.

2. Emphasis on proficiency in reading—students choosing this track must attain reading proficiency at the Advanced level on the ACTFL scale, as measured by a departmental examination; SLAV 2015 Readings in the Russian Press I and SLAV 2016 Readings in the Russian Press II are required unless waived by the department.

1.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a candidate must have attained a 3.5 grade-point average in the major and at least a 3.0 average overall. Students must apply for honors candidacy by the end of the first semester of the junior year; must attain speaking proficiency at the advanced level, as measured by the ACTFL (American Council on the Teaching of Foreign Languages) Oral Proficiency Interview; and must successfully complete an honors thesis (SLAV 4597 Senior Honors Thesis I–SLAV 4598 Senior Honors Thesis II).

BACHELOR OF ARTS WITH A MAJOR IN SPANISH AND LATIN AMERICAN LANGUAGES, LITERATURES, AND CULTURES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Introductory language sequence (17 credits or equivalent):		
SPAN 1001 & SPAN 1002	Elementary Spanish I and Elementary Spanish II	
or SPAN 1012	Intensive Elementary Spanish	
SPAN 1003 & SPAN 1004	Intermediate Spanish I and Intermediate Spanish II	
or SPAN 1034	Intensive Intermediate Spanish	
SPAN 2005	Advanced Spanish I	
SPAN 2006	Advanced Spanish II	
or SPAN 2056	Intensive Advanced Spanish	
SPAN 3100	Readings in Spanish&LatinAmLit	
SPAN 4910W	Proseminar I (required of all Spanish majors in the fall semester of the senior year)	

Code	Title	Credits
Required		
Two courses (6 credits) from the following:		
SPAN 3500	Medieval Spanish Literature	
SPAN 3510	Golden Age Literature	
SPAN 3520	Latin American Colonial Literature	
SPAN 3530	The Enlightenment in Spain and Latin America	
SPAN 3600	Special Topics	
SPAN 4510	Cervantes Don Quixote	
Two courses (6 credits) from the following:		
SPAN 3410	Latin American Short Fiction	
SPAN 3420	The Essayist Tradition in Latin America	
SPAN 3650	Literature and Dictatorship	
SPAN 3700	Cinema of Spain and Latin America	
SPAN 4410	Contemporary Narrative in Latin America	
SPAN 4460	Southern Cone Literature and Culture	
SPAN 4520	Topics in the Avant-garde	
SPAN 4540	The Myth of the Two Spains	
SPAN 4550	1898-1998: Spain's First Century without Empire	
SPAN 4560	Modern Poetry of Spain and Latin America	
SPAN 4600	Special Topics	
SPAN 4700	Film as Text in Latin America	
Three additional courses from those listed above or from the following:		
SPAN 3010W	Advanced Spanish Writing	
SPAN 3022	Advanced Oral Proficiency: Environmental and Social Sustainability in Latin America	

SPAN 3040	Advanced Spanish Service-Learning
SPAN 3400	Theatre of Spain and Latin America
SPAN 3430	Afro-Latin America in the Diaspora
SPAN 3440	Caribbean Literature and Culture
SPAN 3540	Major Authors of Spain and Latin America
SPAN 3570	Latin American Women Writers
SPAN 4450	Mexican Literature and Culture
SPAN 4650	Literary Translation
SPAN 4800	Independent Study

Excluding courses taught at GW Study Centers abroad, no more than four courses taken abroad or at another institution may count toward the major.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors in Spanish and Latin American languages, literatures, and cultures, candidates must have attained a 3.75 GPA in the major and at least a 3.0 average overall. Qualified students may be invited to write an honors thesis by their major advisor and proseminar professor by the beginning of the fall semester of the senior year.

MINOR IN FRENCH LANGUAGE, LITERATURE, AND CULTURE

REQUIREMENTS

The following requirements must be fulfilled: 21 credits, including 15 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
FREN 2005	Language, Culture & Society I	
FREN 2006	Language, Culture & Society II	
FREN 3100	Introduction to French Literature	
FREN 3210	Medieval and Early Modern French Literature in Context	
FREN 3220	Modern French Literature	
Electives		
Two elective courses (6 credits) in FREN 3000 and/or FREN 4000 levels.		

Students who place out of FREN 2005 Language, Culture & Society I or FREN 2006 Language, Culture & Society II substitute more advanced literature courses; others may substitute more advanced literature courses with permission of the advisor.

MINOR IN GERMAN LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled: 34 credits, including 28 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
One of the following options:		
Option A:		
GER 1001	First-Year German I	
GER 1002	First-Year German II	
GER 1003	Second-Year German I	
GER 1004	Second-Year German II	
Option B		
GER 1005	Intensive Beginning German I	
GER 1006	Intensive Beginning German II	
One of the following:		
GER 2009 & GER 2010	Intermediate German I and Intermediate German II	
GER 2101 & GER 2102	Readings in Contemporary German I and Readings in Contemporary German II	
One of the following:		
GER 2091 & GER 2092	Introduction to German Literature–in English I and Introduction to German Literature–in English II	
GER 2109 & GER 2110	Introduction to German Studies I and Introduction to German Studies II	
GER 2161 & GER 2162	German Culture–in English I and German Culture–in English II	

Electives	
Two additional upper-division German (GER) courses excluding:	
GER 2101	Readings in Contemporary German I
GER 2102	Readings in Contemporary German II

MINOR IN ITALIAN LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
ITAL 2005	Language, Culture & Society I	
ITAL 2006	Language, Culture & Society II	
Electives		
Four of the following:		
ITAL 3201	History of Italian Literature from the Middle Ages Through the 17th Century	
ITAL 3202W	History of Italian Literature from the 18th Through the 20th Century	
ITAL 3290	Textual Analysis	
ITAL 3300	Italian Literature and Culture in Translation	
ITAL 3600	Special Topics in Italian Literature and Culture	
ITAL 4183	History of Italian Film	
ITAL 4380	Italian Journeys Medieval to Postmodern	
ITAL 4500	Studies in Medieval and Early Renaissance Literature	
ITAL 4560	Modern Italian Novel	
ITAL 4800	Independent Study	
ITAL 3010	Advanced Italian Grammar and Style	
ITAL 3100W	Introduction to Italian Literature	

MINOR IN RUSSIAN LANGUAGE AND LITERATURE

REQUIREMENTS

Required courses:	
One of the following options:	
Option A:	
SLAV 1001	First-Year Russian I
SLAV 1002	First-Year Russian II
SLAV 1003	Second-Year Russian I
SLAV 1004	Second-Year Russian II
Option B	
SLAV 1012	Intensive Basic Russian I
SLAV 1034	Intensive Basic Russian II
One of the following:	
SLAV 2005 & SLAV 2006	Intermediate Russian I and Intermediate Russian I
SLAV 2015 & SLAV 2016	Readings in the Russian Press I and Readings in the Russian Press II
Four courses from the following:	
SLAV 1391	Introduction to Russian Literature I
SLAV 1392	Introduction to Russian Literature II
SLAV 2361	Russian Culture
SLAV 2362	Russian Culture
SLAV 2365	20th-Century Russian Literature to World War II
SLAV 2366	Russian Literature from World War II to the Present
SLAV 2471	19th-Century Russian Prose
SLAV 2472	19th-Century Russian Poetry
SLAV 2473	20th-Century Russian Prose
SLAV 2474	20th-Century Russian Poetry
SLAV 2785	Introduction to Russian Cinema I
SLAV 2786	Introduction to Russian Cinema II

MINOR IN SPANISH AND LATIN AMERICAN LANGUAGES, LITERATURES, AND CULTURES

REQUIREMENTS

Code	Title	Credits
Introductory language sequence (12-14 credits or equivalent)		
SPAN 1001 & SPAN 1002	Elementary Spanish I and Elementary Spanish II	
or SPAN 1012	Intensive Elementary Spanish	
SPAN 1003 & SPAN 1004	Intermediate Spanish I and Intermediate Spanish II	
or SPAN 1034	Intensive Intermediate Spanish	

Code	Title	Credits
Three courses (9 credits) from the following:		
SPAN 2005	Advanced Spanish I	
SPAN 2006	Advanced Spanish II	
SPAN 2056	Intensive Advanced Spanish	
SPAN 2100	Spain/LatinAm:Culture DC	
SPAN 3005	Experiencing Cuba: Past and Present	
SPAN 3010W	Advanced Spanish Writing	
SPAN 3011	Spanish for Development Studies	
SPAN 3015	Spanish for Heritage Speakers	
SPAN 3020	Spanish for Oral Communication	
SPAN 3021	Advanced Spanish for Oral Communication–Latin America	
SPAN 3022	Advanced Oral Proficiency: Environmental and Social Sustainability in Latin America	
SPAN 3030	Business & Commercial Spanish	
SPAN 3035	Spanish Language and Culture: Advanced	
SPAN 3040	Advanced Spanish Service-Learning	
Required course (3 credits):		
SPAN 3100	Readings in Spanish&LatinAmLit	
Two courses (6 credits) from the following:		
SPAN 3400	Theatre of Spain and Latin America	
SPAN 3420	The Essayist Tradition in Latin America	
SPAN 3430	Afro-Latin America in the Diaspora	
SPAN 3440	Caribbean Literature and Culture	
SPAN 3500	Medieval Spanish Literature	
SPAN 3510	Golden Age Literature	
SPAN 3520	Latin American Colonial Literature	
SPAN 3530	The Enlightenment in Spain and Latin America	
SPAN 3540	Major Authors of Spain and Latin America	
SPAN 3570	Latin American Women Writers	
SPAN 3650	Literature and Dictatorship	
SPAN 3700	Cinema of Spain and Latin America	
SPAN 4410	Contemporary Narrative in Latin America	
SPAN 4450	Mexican Literature and Culture	
SPAN 4460	Southern Cone Literature and Culture	
SPAN 4470	Exploration and Travel Writing in Latin America	
SPAN 4510	Cervantes Don Quixote	
SPAN 4520	Topics in the Avant-garde	
SPAN 4540	The Myth of the Two Spains	
SPAN 4550	1898-1998: Spain's First Century without Empire	
SPAN 4560	Modern Poetry of Spain and Latin America	
SPAN 4600	Special Topics	
SPAN 4650	Literary Translation	
SPAN 4700	Film as Text in Latin America	

Note: No more than three courses taken abroad may count toward the minor (excluding GW Study Centers in Chile and Spain).

SOCIOLOGY

One of the social and behavioral sciences disciplines in the Columbian College of Arts and Sciences, the sociology program offers undergraduate and graduate degree programs and a range of courses, from deviant behavior to sociology of sport. It is designed to strengthen a student's knowledge about human social structure and activity. By living in a city that offers a rich social laboratory, students gain real-life experience conducting quantitative and qualitative research and developing skills in sociological observation and analysis.

Visit the Department of Sociology website (http://sociology.columbian.gwu.edu) for additional information.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in sociology (p. 411)
- Bachelor of Arts with a major in criminal justice (p. 409)
- Bachelor of Arts with a major in human services and social justice (p. 410)
- Combined programs (p. 411)

Minors

- Minor in sociology (p. 413)
- Minor in criminal justice (p. 411)
- Minor in law and society (p. 412)
- Minor in human services and social justice (p. 412)

GRADUATE

Master's programs

- Master of Arts in the field of sociology (p. 413)
- Master of Arts in the field of criminology (p. 413)

FACULTY

University Professor A. Etzioni

Professors R.J. Cottrol, P.H.M. Lengermann (*Research*), G.D. Squires, S.A. Tuch, R. Weitzer, R. Whitaker

Associate Professors C. Deitch, D.S. Eglitis, H. Ishizawa, I. Ken *(Interim Chair)*

Assistant Professors F. Buntman, A. Jones, M. Kelso, D. Martinez, E. Morrison, V. Rankin (*Research*)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean and advising office

- Human Services and Social (HSSJ (p. 1272))
- Sociology (SOC) (p. 1455)

BACHELOR OF ARTS WITH A MAJOR IN CRIMINAL JUSTICE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Achievement of a grade of C- or higher in any course that counts toward the degree.

Code	Title	Credits
Prerequisites		
SOC 1001	Introduction to Sociology	
or SOC 1002	The Sociological Imagination	
SOC 1003	Introduction to Criminal Justice	

Code	Title	Credits
Required		
SOC 2101	Social Research Methods (recommended to be taken before the senior year)	
SOC 2102	Techniques of Data Analysis (recommended to be taken before the senior year)	
SOC 2135	Youth and Delinquency	
SOC 2136	Criminology	
SOC 2145	Criminal Law	
SOC 4192	Advanced Seminar in Criminal Justice	
Electives		
Five of the following, including at least one Sociology (SOC) course and at least one non-Sociology course:		
ANTH 3513	Anthropology of Human Rights	
ECON 2167	Economics of Crime	

FORS 2104	Introduction to Forensic Sciences
HIST 3370	US Constitutional History
PSC 2213	Judicial Politics
PSC 2215	U.S. Constitutional Law and Politics II
PSC 2217	Executive Branch Politics
or PPPA 2117	Executive Branch Politics
PSYC 2011	Abnormal Psychology
PSYC 3154	Psychology of Crime and Violence
SOC 2137	Transnational Crime
SOC 2139	Alternatives to Imprisonment
SOC 2146	The Bill of Rights and Criminal Justice
SOC 2164	Sociology of the Holocaust and Genocide
SOC 2167	Sociology of Law
SOC 2177	Sociology of the Sex Industry
SOC 2178	Deviance and Control
SOC 2184	Violence and the Family
SOC 2189	Special Topic-Criminal Justice

Note: A student majoring in sociology may not declare a second major or a minor in criminal justice, or vice versa.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must maintain a 3.5 grade-point average in the major, must be registered for 3 credits of SOC 3195 Research during the senior year, and must receive a grade of *A* on the research paper.

BACHELOR OF ARTS WITH A MAJOR IN HUMAN SERVICES AND SOCIAL JUSTICE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73)

Achievement of a minimum grade of C- in any course that counts toward the degree.

Code	Title	Credits
Prerequisites		
SOC 1001	Introduction to Sociology	
or SOC 1002	The Sociological Imagination	
HSSJ 1100	Introduction to Human Services and Social Justice	

Code	Title	Credits
Required		
HSSJ 1177	Organizing for Social Justice in Human Services	
HSSJ 2170	Interpersonal Relationships in Human Services	
HSSJ 2171	Human Interactions: Child and Adolescent Development	
HSSJ 2172	Human Interactions: Adult Development	
HSSJ 2200	Principles of Ethical Leadership	
HSSJ 3100W	Program Planning & Evaluation	
HSSJ 3110W	Nonprofit and Organizational Management	
HSSJ 3152	Fact, Field & Fiction in Human Services & Social Justice	
HSSJ 4193	Research and Independent Study (Only required for Special Honors)	
HSSJ 4195	Capstone Seminar in Human Services and Social Justice	
SOC 2101	Social Research Methods	
SOC 2170	Class and Inequality in American Society	
or SOC 2179	Race and Minority Relations	
Elective		
One of the following:		
SOC 2104	Contemporary Sociological Theory	
SOC 2175	Sociology of Sex and Gender	

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with

Special Honors, students must maintain a 3.5 grade-point average in the major, must be registered in HSSJ 4193 Research and Independent Study during the senior year (fall and spring), and must receive an *A* grade on the research paper.

BACHELOR OF ARTS WITH A MAJOR IN SOCIOLOGY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Achievement of a minimum grade of C- in any course that counts toward the degree.

Code	Title	Credits
Prerequisites		
SOC 1001	Introduction to Sociology	
or SOC 1002	The Sociological Imagination	

Code	Title	Credits
Required		
SOC 2101	Social Research Methods (recommended to be taken before the senior year)	
SOC 2102	Techniques of Data Analysis (recommended to be taken before the senior year)	
SOC 2103	Classical Sociological Theory	
SOC 2104	Contemporary Sociological Theory	
SOC 4195	Senior Research Seminar	
Electives		
Seven additional upper-division Sociology (SOC) courses, including at least two courses in the 2160s or 2170s.		

Note: A student majoring in sociology may not declare a second major or a minor in criminal justice, or vice versa.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations (http://bulletin.gwu.edu/university-regulations), in order to be considered for graduation with Special Honors, students must maintain a 3.5 grade-point average in the major, must be registered in SOC 4195 Senior Research Seminar during the senior year, and must receive an *A* grade on the research paper.

COMBINED PROGRAMS, SOCIOLOGY

REQUIREMENTS

The Department of Sociology offers four programs leading to combined bachelor's and master's degrees. The programs allow students to take a specified number of graduate credits as part of their undergraduate degree, thereby decreasing the number of credits normally required for the master's degree.

- Bachelor of Arts and Master of Arts in Sociology
- Bachelor of Arts and Master of Arts in Criminal Justice/ Criminology
- Bachelor of Arts in Criminal Justice and Master of Public Administration
- Bachelor of Arts in Human Services and Social Justice and Master of Arts in Public Administration

Interested students should contact their advisor. Visit the department website (http://sociology.columbian.gwu.edu/combined-degree-bama-programs) for application deadlines and other program information.

MINOR IN CRIMINAL JUSTICE

REQUIREMENTS

The following requirements must be fulfilled:

Achievement of a grade of C- or better in any course that counts toward the minor.

18 credits, including 12 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
SOC 1001	Introduction to Sociology	
or SOC 1002	The Sociological Imagination	
SOC 1003	Introduction to Criminal Justice	
SOC 2136	Criminology	
SOC 2145	Criminal Law	
Electives		
Two of the following courses (6 credits), at least one of which must be a Sociology (SOC) course.		
ANTH 3513	Anthropology of Human Rights	

FORS 2104	Introduction to Forensic Sciences
HIST 3370	US Constitutional History
PPPA 2117	Executive Branch Politics
PSC 2213	Judicial Politics
PSC 2215	U.S. Constitutional Law and Politics II
PSC 2217	Executive Branch Politics
PSYC 2011	Abnormal Psychology
PSYC 3154	Psychology of Crime and Violence
SOC 2135	Youth and Delinquency
SOC 2137	Transnational Crime
SOC 2139	Alternatives to Imprisonment
SOC 2146	The Bill of Rights and Criminal Justice
SOC 2164	Sociology of the Holocaust and Genocide
SOC 2167	Sociology of Law
SOC 2177	Sociology of the Sex Industry
SOC 2178	Deviance and Control
SOC 2184	Violence and the Family
SOC 2189	Special Topic-Criminal Justice

Note: A student majoring in sociology may not declare a second major or a minor in criminal justice, or vice versa.

MINOR IN HUMAN SERVICES AND SOCIAL JUSTICE

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 9 credits in required courses and 9 credits in elective courses.

Achievement of a minimum grade of *C-* in any course that counts toward the degree.

Code	Title	Credits
Required		
HSSJ 1100	Introduction to Human Services and Social Justice	
HSSJ 3152	Fact, Field & Fiction in Human Services & Social Justice (taken for 6 credits)	
Electives		
Three HSSJ courses (at least 9 credits total), with no more than one elective course at the 1000 level, selected in consultation with the program director.		

MINOR IN LAW AND SOCIETY

REQUIREMENTS

Admission to this minor requires a minimum 3.3 GPA based on at least 30 credits of course work at GW.

The following requirements must be fulfilled:

Achievement of a grade of C- or above in any course that counts toward the minor.

19 credits, including 7 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
SOC 2167	Sociology of Law	
UW 2031	Equality & the Law	
or UW 2031W	Equality & the Law	
One of the following:		
AMST 1160	Race, Gender and Law	
PHIL 3142	Philosophy of Law	
PSC 2214	U.S. Constitutional Law and Politics I	
PSC 2215	U.S. Constitutional Law and Politics II	
Three courses (9 credits), which may include any of the three remaining courses listed immediately above and/or the courses listed below.		
BADM 4101	Business Law and Ethics	
ECON 3190	Law and Economics	
HIST 3370	US Constitutional History	
MAE 3171	Patent Law for Engineers	
PSC 2213	Judicial Politics	
PSC 2444	Public International Law	
PUBH 3136	Health Law	
SMPA 2173	Media Law	
SOC 2145	Criminal Law	

SOC 2146	The Bill of Rights and Criminal Justice
SOC 2988	Internship in Law and Society
or PSC 2988	Internship in Law & Society
WSTU 3470	Sexuality and Law (or Selected Topic: Sexuality and Law)
or WSTU 3170	Selected Topics

A student may take a maximum of two courses from any one department (except for SOC 2167 and SOC 2988 or PSC 2988). No more than two courses may be counted both for this minor and any other major or minor.

MINOR IN SOCIOLOGY

REQUIREMENTS

The following requirements must be fulfilled:

Achievement of a grade of C- or higher in any course that counts toward the minor.

18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
SOC 1001	Introduction to Sociology	
or SOC 1002	The Sociological Imagination	
SOC 2103	Classical Sociological Theory	
or SOC 2104	Contemporary Sociological Theory	
Electives		
Four courses (12 credits) at the 2000 level or above; these may not include SOC 4192 or SOC 4195.		

Note: A student majoring in sociology may not declare a second major or a minor in criminal justice, or vice versa.

MASTER OF ARTS IN THE FIELD OF CRIMINOLOGY

REQUIREMENTS

This program is a joint offering of the Department of Sociology and the Department of Forensic Sciences.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled: Non-thesis option –36 credits, including 21 credits in required courses and 15 credits in elective courses; thesis option–36 credits, including 27 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
Required		
SOC 6230	Sociological Research Methods	
SOC 6231	Data Analysis	
SOC 6232	Qualitative Methodology: Doing Field Research	
or SOC 6240	Field Research in Organizational Settings	
SOC 6238	Development of Sociological Theory	
or SOC 6239	Contemporary Sociological Theory	
SOC 6257	Criminal Law for Forensic Scientists	
SOC 6258	Deviance and Control	
SOC 6259	Criminology	
Electives		
Five elective courses in criminology, of which at least two are in forensic sciences and at least one is selected from the following:		
SOC 6260	Special Topics in Criminal Justice	
SOC 6261	Sociology of Law	
SOC 6262	Corrections	
SOC 6263	Race and Crime	
SOC 6264	Organized Crime	
SOC 6266	Gender & Criminal Justice	
SOC 6273	The Sex Industry	
Thesis option		
Students choosing the thesis option substitute the following for two elective courses:		
SOC 6998	Thesis Research	
SOC 6999	Thesis Research	

MASTER OF ARTS IN THE FIELD OF SOCIOLOGY

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Prerequisite: a bachelor's degree.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 80).

36 credits, including 15 credits in required courses, 9 credits in primary and secondary field courses, six credits in elective courses, and 6 credits of thesis.

Code	Title	Credits
Required		
SOC 6230	Sociological Research Methods	
SOC 6231	Data Analysis	
SOC 6232	Qualitative Methodology: Doing Field Research	
or SOC 6240	Field Research in Organizational Settings	
SOC 6238	Development of Sociological Theory	
SOC 6239	Contemporary Sociological Theory	
Primary and secondary fields		
Students take two courses in a primary field of specialization and one course in a secondary field of specialization. Fields of specialization are criminology, social inequality, and urban sociology. With the consent of an advisor, one graduate course in a related department or program can be used for either one of the primary required courses or for the the secondary required course.		
Electives		
Any two other Sociology (SOC) courses at the 6000 level or above..		
SOC 6295 may be taken once (3 credits) toward degree requirements		
Thesis		
Six credits of the following taken in the final two semesters:		
SOC 6998	Thesis Research	
SOC 6999	Thesis Research	

SPEECH AND HEARING SCIENCE

Whether learning about communication sciences, the relationship between language and society, or preparing to become a Speech-language Pathologist, students studying in the Department of Speech and Hearing Sciences at GW receive in-depth knowledge of all aspects of communication and its disorders. As part of the social and behavioral sciences discipline in the Columbian College of Arts and Sciences, the program provides deep knowledge of language and communication, including the consequences of speech and hearing challenges to individuals and society, and the treatment of communication delays and disorders.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in speech, language, and hearing science (p. 418)s

Minor

- Minor in speech, language, and hearing sciences (p. 419)

GRADUATE

Master's programs

- Master of Arts in the field of speech–language pathology (p. 419), for students with an undergraduate degree in speech-language pathology
- Master of Arts in the field of speech–language pathology post-baccalaureate (p. 420) program, for students with an undergraduate degree in another field

FACULTY

Professors L. Bernstein, C.W. Linebaugh (*Chair*), J. Mahshie, G.M. Schulz

Associate Professors S. Brundage, A.B. Hancock, F. Subiaul

Assistant Professors S. Campbell (*Teaching*), C. Core, M.E. O'Donnell *(Teaching),* M. Thothathiri, G. Wallace

Adjunct Professors R. Pittmann

Professorial Lecturers M. Bamdad, M.E. Moody

Clinical Instructors K. Comer, G. Greenman, L. Jacobs-Condit, J. Kumar, J. McHugh, R. Neuman, L. Siegfriedt

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SPHR 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

SPHR 1011. Voice and Diction. 3 Credits.
Development of naturalness, correctness, and clarity in conversation through the study of phonetics, rate, volume, pitch, and quality in preparation for performance. Laboratory fee.

SPHR 1071. Foundations of Human Communication. 3 Credits.
An introduction to the fundamental principles of the biology of speech, hearing and language, language structure and use, and human communicative interaction. Practice in the identification of specific verbal and nonverbal aspects of communication behavior.

SPHR 1071W. Foundations of Human Communication. 3 Credits.
An introduction to the fundamental principles of the biology of speech, hearing and language, language structure and use, and human communicative interaction. Practice in the identification of specific verbal and nonverbal aspects of communication behavior.

SPHR 1072. Multicultural Issues in Human Communication. 3 Credits.
Consideration of the influences of culture and bilingualism on language development and use and on communicative interaction; experimental and ethnographic methods for studying language and communication in a multicultural society.

SPHR 1081. American Sign Language I. 3 Credits.
Development of basic communication skills, with appropriate vocabulary and grammatical structures; emphasis on comprehension skills.

SPHR 1082. American Sign Language II. 3 Credits.
Continuation of SPHR 1081. Development of basic communication skills, with appropriate vocabulary and grammatical structures; emphasis on comprehension skills. Prerequisite: SPHR 1081.

SPHR 1084. Perspectives in Deaf Culture. 3 Credits.
Introduction to the Deaf community as a linguistic and cultural minority group. The roles of deaf people in the larger society, including political activism. Generational differences concerning education, socioeconomic status, medical issues, and language.

SPHR 2083. American Sign Language III. 3 Credits.
Continuation of SPHR 1082. Development of basic communication skills, with appropriate vocabulary and grammatical structures; emphasis on comprehension skills. Prerequisite: SPHR 1082.

SPHR 2101. Research Methods. 3 Credits.
Introduction to fundamental research principles (e.g., hypothesis testing, sampling, validity and reliability), designs (e.g., experiments, case studies), and methods (e.g., behavioral observations, acoustic and physiologic measurements, neuro-imaging) used in the study of speech, language, and hearing. Prerequisites: SPHR 1071.

SPHR 2102. Neural Substrates-SpHr & Lang. 3 Credits.

SPHR 2104. Speech and Language Disorders. 3 Credits.
Survey of the nature and causes of developmental and acquired disorders of speech and language. Emphasis on prevention and effective communication with persons having a speech–language impairment.

SPHR 2104W. Speech and Language Disorders. 3 Credits.
Survey of the nature and causes of developmental and acquired disorders of speech and language. Emphasis on prevention and effective communication with persons having a speech–language impairment.

SPHR 2105. Anatomy and Physiology for Speech and Hearing I. 3 Credits.
Anatomy and physiology of the respiratory, phonatory, articulatory, and resonatory subsystems of speech; swallowing; and the cranial nerves.

SPHR 2106. Anatomy and Physiology for Speech and Hearing II. 3 Credits.
Anatomy of the auditory and vestibular systems; physiology of hearing; anatomy of the brain and spinal cord; physiology of the nervous system.

SPHR 2107. Acoustics. 3 Credits.
This course focuses on speech acoustics, with emphasis on how the speech signal is produced and the elements of speech important for speech perception. Recommended background: Students are advised to complete, or currently be taking, Phonetics (SPHR 2136) and Anatomy and Physiology (SPHR 2105) with this course.

SPHR 2108. Introduction to Audiology. 3 Credits.
Survey of the field of audiology, including the measurement of hearing, the nature and causes of hearing impairment, hearing aids and habilitation/rehabilitation of the hearing impaired. Prerequisite: SPHR 2107; prerequisite or corequisite: SPHR 2106. Laboratory fee.

SPHR 2117. Hearing & Perception. 3 Credits.
Consideration of the psychoacoustics of the normal auditory system in terms of auditory sensitivity, loudness, pitch, masking, and binaural hearing. Topics in speech perception that build upon psychoacoustics and speech acoustics. Prerequisite: SPHR 2108.

SPHR 2130. Phonetics and Phonological Development. 3 Credits.
Detailed study of English phonetics and phonology; prespeech vocalization and phonological development; multicultural issues in phonological development; intensive practice in phonetic transcription. Prerequisite or corequisite: SPHR 2105. Laboratory fee.

SPHR 2131. Language Acquisition and Development. 3 Credits.
Theories of language acquisition; development of language from birth through adolescence; emphasis on development of semantics, syntax, morphology, and pragmatics; multicultural issues in language development. Laboratory fee. Prerequisite: SPHR 2135.

SPHR 2132. Literacy. 3 Credits.
An overview of literacy development (thinking, listening, speaking, reading, spelling, writing) with emphasis on reading and writing development. Laboratory fee. Prerequisite: SPHR 1071.

SPHR 2133. Autism. 3 Credits.
How the study of autism and related disorders may shed light on the characteristics of the mind. The broad characteristics of autism spectrum disorders, including cognitive, behavioral, and neural aspects; definitions of typical vs. atypical development; and difficulties associated with diagnosis and treatment.

SPHR 2135. Language: Structure, Meaning, and Use. 3 Credits.
A survey of basic linguistic terminology and the components of language structures. Major topics will include language structure (syntax, morphology, phonology), meaning (semantics), and the use of language as a means of communication among individuals (pragmatics).

SPHR 2136. Phonetics. 2 Credits.
An overview of phonetics of American English and an introduction to sounds of languages of the world. General principles of phonetic description and analysis, speech production mechanisms, classification of consonants and vowels of English and other languages, suprasegmental aspects of speech, and acoustic characteristics of speech sounds. Allophonic variation and phonetic characteristics of connected speech and social and regional phonetic variation. Instruction and practice in transcription using the International Phonetic Alphabet.

SPHR 3116. Brain & Language. 3 Credits.
How the brain operates for language production and understanding and how damage to the brain can interrupt neural processes with a variety of neurolinguistic consequences. Neuroimaging and behavioral research that informs the understanding of the bases of neurolinguistic communication disorders. Prerequisite or corequisite: SPHR 2106.

SPHR 3199. Selected Topics. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

SPHR 4118. Senior Seminar. 3 Credits.
Critical evaluation of the research literature on speech and hearing; the process of scientific writing and analysis; how research can inform and improve clinical practice. For departmental majors in the senior year. Laboratory fee. Prerequisite: SPHR 1071 or SPHR 1071W or SPHR 2104 or SPHR 2104W.

SPHR 4118W. Senior Seminar. 3 Credits.
Critical evaluation of the research literature on speech and hearing; the process of scientific writing and analysis; how research can inform and improve clinical practice. For departmental majors in the senior year. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. Prerequisites: SPHR 1071 or SPHR 1071W or SPHR 2104 or SPHR 2104W.

SPHR 4119. Analysis and Modification of Communication Disorders. 3 Credits.
For department majors in their senior year. Assessment of speaker–listener behavior; acoustic, behavioral, and linguistic properties of speaker intelligibility and credibility; observation, analysis, and modification of speech and language comprehension and expression. Prerequisite: senior standing. Laboratory fee.

SPHR 4196. Independent Study. 1-6 Credits.
Independent research and special projects. Before students are permitted to register for SPHR 4196, they must submit a written proposal of the plan of study and obtain approval of the staff member who will direct the study and of the department chair.

SPHR 6201. Clinical Practicum in Speech–Language Pathology. 1-6 Credits.
Supervised clinical practice in the evaluation and treatment of speech and language disorders; counseling of clients and families; development of treatment plans and writing of evaluation and progress reports. Admission by permission of the instructor. May be repeated for up to 6 credit hours.

SPHR 6202. Clinical Practicum in Audiology. 1-6 Credits.
Supervised clinical practice in behavioral and electrophysiologic assessment of hearing, hearing aid assessment and fitting, and aural rehabilitation; counseling clients and families; writing evaluation and progress reports. Admission by permission of the instructor. May be repeated, but may not be taken for more than 6 credit hours.

SPHR 6205. Professional and Clinical Issues in Speech and Hearing. 1 Credit.

SPHR 6207. Diagnostic Procedures in Speech and Hearing. 3 Credits.
Fundamental philosophical and conceptual issues in the assessment of speech-language functioning across a wide range of disorders and diverse populations. Consideration of how assessment procedures guide treatment decisions.

SPHR 6210. Research in Communication Sciences and Disorders. 1,3 Credit.
Fundamental issues and methods in clinical research; group and single-subject experimental designs; application of clinical research methodology and findings to assessment and treatment. Non-thesis students register for 3 credits; thesis students register for 1 credit concurrent with SPHR 6211. Restricted to graduate students in speech and hearing sciences.

SPHR 6211. Preparing the Thesis Prospectus. 2 Credits.
For first-year graduate students. Introduction to the fundamentals of quantitative research design and procedures in the speech and hearing sciences. Critical evaluation of research in speech and hearing sciences; scientific writing skills; the process and expectations for conducting thesis research. Students register for SPHR 6210 for 1 credit. Restricted to speech and hearing sciences master's thesis students.

SPHR 6220. Disorders of Articulation and Phonology. 3 Credits.
Survey of the nature and causes of impairments of speech sound production in children and adults. Differential diagnosis of oral motor versus phonological disorders; treatment approaches; identification and modification of regional dialects and foreign accents. Laboratory fee.

SPHR 6221. Neurodevelopmental Disorders of Speech Production. 2 Credits.
Evaluation and treatment of infants and children with neurodevelopmental speech disorders, including cerebral palsy. Emphasis on management of prespeech oral motor and feeding impairments. Laboratory fee.

SPHR 6222. Acquired Neuromotor Disorders of Speech Production. 2 Credits.
Examination of the neuroanatomical and neurophysiological bases and acoustic and perceptual characteristics of acquired dysarthrias and apraxia of speech. Evidence-based approaches to the assessment, differential diagnosis, and treatment of these disorders. Laboratory fee.

SPHR 6230. Pediatric Language and Speech Disorders I. 3 Credits.
Survey of current approaches for assessing and treating language delays and disorders in infants, toddlers, preschoolers, school-age children, and adolescents. Review of standardized, observational, and ethnographic approaches used in language assessment; current models of intervention and service delivery. Laboratory fee.

SPHR 6231. Pediatric Language and Speech Disorders II. 3 Credits.

SPHR 6240. Neurogenic Communication Disorders. 3 Credits.
Differential diagnosis of acquired speech and language disorders, with an emphasis on the aphasias acquired in adulthood. Evidence-based approaches to the assessment and treatment of adult neurogenic language disorders. Laboratory fee.

SPHR 6241. Applied Neuroanatomy. 3 Credits.
Neuroanatomy and neurophysiology of systems underlying speech, language, and hearing. Neuroimaging techniques and investigations. Applications to the assessment and treatment of communication disorders. Laboratory fee.

SPHR 6250. Eval/Treatment-Speech Disorder. 3 Credits.

SPHR 6251. Seminar: Speech Fluency Disorders. 3 Credits.
Consideration of stuttering and other disorders of speech rate and rhythm from developmental, linguistic, physiological, and psychosocial points of view. Investigation of evidence-based approaches to assessment and treatment.

SPHR 6260. Voice Disorders: Evaluation and Treatment. 3 Credits.
Normal anatomy and physiology of the human vocal mechanism. Nature, causes, and clinical management of functional and organic voice disorders, including laryngectomy. Laboratory fee.

SPHR 6261. Seminar: Voice Disorders. 2 Credits.

SPHR 6276. Aural Rehabilitation. 3 Credits.
Habilitation/rehabilitation of the hearing impaired, including auditory training, speech reading, hearing aids, assistive listening devices, communication strategies, and counseling. Laboratory fee.

SPHR 6277. Psychoeducational Management of Children With Hearing Impairment. 3 Credits.

SPHR 6281. Dysphagia. 2 Credits.
Anatomy and physiology of normal swallowing. Nature and causes of dysphagia in adults. Assessment, including clinical examination and radiologic methods; treatment. Laboratory fee.

SPHR 6282. Augmentative Communication and Computer Applications in Communication Disorders. 2 Credits.
Principles of assessment, development, and selection of augmentative and alternative communication systems; application through case studies. Computer applications, including review of selected hardware and software and selection criteria. Laboratory fee.

SPHR 6283. Multicultural Perspectives in Communication Development and Disorders. 2 Credits.
Application of culturally appropriate and theoretically based speech and language procedures to clinical assessment and intervention with multilingual/multicultural populations.

SPHR 6284. Autism. 2 Credits.
The various facets of Autism Spectrum Disorder (ASD); clinical aspects and how speech-language pathologists are involved in the assessment, diagnosis, and treatment of ASD; the relationship between typical cognitive and brain development throughout the lifespan and how it is manifested in ASD. Restricted to graduate students.

SPHR 6290. Selected Topics in Clinical Audiology. 1-3 Credits.
Advanced study of selected theoretical and clinical issues. May be repeated, but may not be taken for more than a total of 6 credits.

SPHR 6291. Selected Topics in Speech-Language Pathology. 1-3 Credits.
Advanced study of selected theoretical and clinical issues regarding various aspects of practice in speech–language pathology. May be repeated but not for more than a total of 6 credit hours.

SPHR 6295. Independent Research in Speech, Language, and Hearing. 1-12 Credits.

SPHR 6998. Thesis Research. 2 Credits.

SPHR 6999. Thesis Research. 2 Credits.

Needs to be added:

SPHR 6211: Preparing the Thesis Prospectus (2)

SPHR 6284: Autism (2)

BACHELOR OF ARTS WITH A MAJOR IN SPEECH, LANGUAGE, AND HEARING SCIENCES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Required (20 credits)

SPHR 1071	Foundations of Human Communication
SPHR 2101	Research Methods
SPHR 2131	Language Acquisition and Development
SPHR 2135	Language: Structure, Meaning, and Use
SPHR 2136	Phonetics
SPHR 4118W	Senior Seminar
STAT 1053	Introduction to Statistics in Social Science

Students must complete a concentration in either communication sciences and disorders, hearing and deafness, or language and communication sciences.

Communication Sciences and Disorders Concentration

Required

SPHR 2104	Speech and Language Disorders
or SPHR 2104W	Speech and Language Disorders
SPHR 2105	Anatomy and Physiology for Speech and Hearing I
SPHR 2106	Anatomy and Physiology for Speech and Hearing II
SPHR 2107	Acoustics
SPHR 2108	Introduction to Audiology
SPHR 4119	Analysis and Modification of Communication Disorders
Two electives from the following:	
SPHR 1072	Multicultural Issues in Human Communication
SPHR 1081 & SPHR 1082	American Sign Language I and American Sign Language II
SPHR 2132	Literacy
SPHR 2133	Autism
SPHR 3116	Brain & Language

Hearing and Deafness Concentration

Required

SPHR 1081	American Sign Language I
SPHR 1084	Perspectives in Deaf Culture
SPHR 2106	Anatomy and Physiology for Speech and Hearing II
SPHR 2107	Acoustics
SPHR 2108	Introduction to Audiology
SPHR 2117	Hearing & Perception
Two electives from the following:	
SPHR 1072	Multicultural Issues in Human Communication

SPHR 2104	Speech and Language Disorders
SPHR 2132	Literacy
SPHR 3116	Brain & Language

Language and Communication Sciences Concentration

Required	
PSYC 2014	Cognitive Psychology
SPHR 1072	Multicultural Issues in Human Communication
SPHR 2106	Anatomy and Physiology for Speech and Hearing II
SPHR 3116	Brain & Language
Four electives from the following:	
ANTH 1004	Language in Culture and Society
ANTH 3601	Language, Culture, and Cognition
ANTH 3602	Ethnographic Analysis of Speech
or ANTH 3602W	Ethnographic Analysis of Speech
ANTH 3603	Psycholinguistics
PSYC 2013	Developmental Psychology
PSYC 3118	Neuropsychology
PSYC 3121	Memory and Cognition
PSYC 3122	Cognitive Neuroscience
SPHR 2104	Speech and Language Disorders
SPHR 2105	Anatomy and Physiology for Speech and Hearing I
SPHR 2117	Hearing & Perception
SPHR 2132	Literacy
SPHR 2133	Autism

SPECIAL HONORS

To qualify for graduation with Special Honors, the student must fulfill the general requirements stated under University Regulations, submit an application to the department before the beginning of the senior year, register for at least 1 credit of SPHR 4196 Independent Study, and complete an independent study honors project with distinction. Students must confer with an advisor before beginning the work. A 3.75 grade-point average in the major and overall is required both for acceptance and for graduation with Special Honors.

MINOR IN SPEECH, LANGUAGE, AND HEARING SCIENCES

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 12 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
SPHR 1071	Foundations of Human Communication	
or SPHR 1071W	Foundations of Human Communication	
SPHR 2105	Anatomy and Physiology for Speech and Hearing I	
SPHR 2107	Acoustics	
SPHR 2135	Language: Structure, Meaning, and Use	
Electives		
Two of the following:		
SPHR 2104	Speech and Language Disorders	
or SPHR 2104W	Speech and Language Disorders	
SPHR 2106	Anatomy and Physiology for Speech and Hearing II	
SPHR 2108	Introduction to Audiology	
SPHR 2131	Language Acquisition and Development	
SPHR 2132	Literacy	
SPHR 2133	Autism	
SPHR 2136	Phonetics	
SPHR 3116	Brain & Language	

MASTER OF ARTS IN THE FIELD OF SPEECH-LANGUAGE PATHOLOGY

REQUIREMENTS

The **master of arts in the field of speech-language pathology** degree program is for students with an undergraduate degree in speech-language pathology. Specific

admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

42 credits: Non-thesis option—38 credits in required courses and 4 credits in elective courses; thesis option—36 credits in required courses and 6 credits of thesis. For all students, satisfactory completion of a supervised practicum and a master's comprehensive examination is required.

Code	Title	Credits
Required		
SPHR 6201	Clinical Practicum in Speech-Language Pathology (taken once each semester for a total of 5 credits)	
SPHR 6205	Professional and Clinical Issues in Speech and Hearing	
SPHR 6207	Diagnostic Procedures in Speech and Hearing	
SPHR 6210	Research in Communication Sciences and Disorders (students selecting the thesis option register for 1 credit)	
SPHR 6220	Disorders of Articulation and Phonology	
SPHR 6230	Pediatric Language and Speech Disorders I	
SPHR 6231	Pediatric Language and Speech Disorders II	
SPHR 6240	Neurogenic Communication Disorders	
SPHR 6241	Applied Neuroanatomy	
SPHR 6251	Seminar: Speech Fluency Disorders	
SPHR 6260	Voice Disorders: Evaluation and Treatment	
SPHR 6276	Aural Rehabilitation	
SPHR 6281	Dysphagia	
Electives		
Students selecting the non-thesis option take 4 credits in elective courses.		
Thesis		
Students selecting the thesis option take the following in place of elective courses.		
SPHR 6211	Preparing the Thesis Prospectus	
SPHR 6998	Thesis Research	
SPHR 6999	Thesis Research	
All students must satisfy the academic and supervised practicum requirements of the Certificate of Clinical Competence awarded by the American Speech–Language–Hearing Association and satisfactorily complete a master's comprehensive examination.		

SPEECH-LANGUAGE PATHOLOGY POST-BACCALAUREATE PROGRAM

The Master of Arts in the field of speech-language pathology post-baccalaureate program is designed for persons wishing to enter the profession of speech-language pathology, but whose undergraduate major was in another field.

Students wishing to participate in the post-baccalaureate program apply to the master's degree program and may be granted "conditional admission" to the graduate program. Conditional admission requires that students complete nine prerequisite courses (scheduled on Tuesdays and Thursdays). Completion of the post-baccalaureate program, including the master's degree, usually requires 33 months of full-time study. The courses of the post-baccalaureate program must be completed with a grade of B- or better in each course and a cumulative GPA of 3.0 or better, within a student's first year of the graduate program. No other grades, including *I* (incomplete), *W* (authorized withdraw), or *Z* (unauthorized withdraw) are acceptable for these courses. Failure to meet these conditions will result in the termination of a student's degree candidacy.

The post-baccalaureate program of study includes the following courses:

Required		
SPHR 2104	Speech and Language Disorders	
SPHR 2105	Anatomy and Physiology for Speech and Hearing I	
SPHR 2106	Anatomy and Physiology for Speech and Hearing II	
SPHR 2107	Acoustics	
SPHR 2131	Language Acquisition and Development	
SPHR 2135	Language: Structure, Meaning, and Use	
SPHR 2136	Phonetics	

SPHR 4119	Analysis and Modification of Communication Disorders

STATISTICS

Statistics is one of the natural, mathematical, and biomedical sciences programs in the Columbian College of Arts and Sciences. The curriculum emphasizes the important role of statistics as it provides methodologies for making advances in medicine, genetics, and other research arenas and supports decision making in business and public policy. Students learn reasoning skills and methods for analyzing and understanding data and how these skills can be applied to develop new initiatives.

UNDERGRADUATE

Bachelor's program

- Bachelor of Science with a major in statistics (p. 425)

Minor

- Minor in statistics (p. 426)

GRADUATE

Master's programs

- Master of Science in the field of biostatistics (p. 930) (jointly administered by the Department of Statistics in CCAS and the Department of Epidemiology and Biostatistics in SPH)
- Master of Science in the field of statistics (p. 426)

Combined program

- Dual Master of Professional Studies in the field of political management and graduate certificate in survey design and analysis (p. 870) (jointly administered by the Department of Statistics in CCAS and the Graduate School of Political Management in CPS)

Doctoral programs

- Doctor of Philosophy in the field of biostatistics (p. 935) (jointly administered by the Department of Statistics in CCAS and the Department of Epidemiology and Biostatistics in SPH)
- Doctor of Philosophy in the field of statistics (p. 426)

CERTIFICATE

- Graduate certificate in survey design and data analysis (p. 427)

FACULTY

Professors E. Bura, J. Chandra (*Research*), J.L. Gastwirth, F. Hu, J.M. Lachin III, M. Larsen, Z. Li, D.L. Lipscomb, H.M. Mahmoud, R. Modarres, T.K. Nayak (*Chair*)

Associate Professors T. Apanasovich, S. Bose, S. Kundu, Y. Lai, Q. Pan, H.J. Wang

Assistant Professors S. Balaji, A.E. Barut, W. Barta, J. Landon

Adjunct Professors A. Amini

Professorial Lecturers P. Chandhok, C.M. Fleming, F. Ponti

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: STAT 1051 Introduction to Business and Economic Statistics, STAT 1053 Introduction to Statistics in Social Science, STAT 1111 Business and Economic Statistics I, and STAT 1127 Statistics for the Biological Sciences are related in their subject matter, and credit for only one of these courses may be applied toward a degree. One entrance unit in algebra is prerequisite to all courses in statistics.

STAT 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. See the Schedule of Classes for more details. Restricted to First-year students in CCAS.

STAT 1051. Introduction to Business and Economic Statistics. 3 Credits.
Lecture (3 hours), laboratory (1 hour). Frequency distributions, descriptive measures, probability, probability distributions, sampling, estimation, tests of hypotheses, regression and correlation, with applications to business.

STAT 1053. Introduction to Statistics in Social Science. 3 Credits.
Lecture (3 hours), laboratory (1 hour). Frequency distributions, descriptive measures, probability, sampling, estimation, tests of hypotheses, regression and correlation, with applications to social sciences.

STAT 1091. Principles-Statistical Methods. 3 Credits.

STAT 1111. Business and Economic Statistics I. 3 Credits.
Descriptive statistics, graphical methods, probability, special distributions, random variables, sampling, estimation and confidence intervals, hypothesis testing, correlation and regression.

STAT 1127. Statistics for the Biological Sciences. 3 Credits.
Introduction to statistical techniques and reasoning applicable to the biomedical and related sciences. Properties of basic probability functions: binomial, Poisson, and normal. Data analysis, inference, and experimental design.

STAT 1129. Introduction to Computing. 3 Credits.
Introduction to elements of computer programming and problem-solving using Pascal. Hands-on experience will be acquired through computer programming projects, including some simple statistical applications.

STAT 2105. Statistics in the Behavioral Sciences. 3 Credits.
Lecture (3 hours), laboratory (1 hour). Advanced study of statistical techniques for research problems. Analysis of variance, correlation techniques, nonparametric techniques, sampling theory. Prerequisite: an introductory statistics course and satisfactory performance on a placement examination.

STAT 2112. Business and Economic Statistics II. 3 Credits.
Continuation of STAT 1111. Emphasis on techniques of regression, chi-square, nonparametric inference, index numbers, time series, decision analysis, and other topics relevant to economics and business. Prerequisite: STAT 1111.

STAT 2118. Regression Analysis. 3 Credits.
Lecture (3 hours), laboratory (1 hour). Simple and multiple linear regression, partial correlation, residual analysis, stepwise model building, multicollinearity and diagnostic methods, indicator variables. Prerequisites: STAT 1111 or equivalent.

STAT 2123. Introduction to Econometrics. 3 Credits.
Same as Econ 2123.

STAT 2183. Intermediate Stat Lab/Packages. 3 Credits.
Application of program packages (e.g., SAS, SPSS) to the solution of one-, two- and k-sample parametric and nonparametric statistical problems. Basic concepts in data preparation, modification, analysis and interpretation of results. Prerequisite: an introductory statistics course.

STAT 2183W. Intermediate Statistical Laboratory: Statistical Computing Packages. 3 Credits.
Application of program packages (e.g., SAS, SPSS) to the solution of one-, two- and k-sample parametric and nonparametric statistical problems. Basic concepts in data preparation, modification, analysis and interpretation of results. Prerequisite: an introductory statistics course.

STAT 3119. Analysis of Variance. 3 Credits.
Lecture (3 hours), laboratory (1 hour). Introduction to the design of experiments and analysis of variance; randomized block, factorial, Latin square designs, and analysis of covariance. Prerequisite: STAT 2118.

STAT 3187. Introduction to Sampling. 3 Credits.
Problems of sampling and sample design. Simple random, stratified, systematic, cluster, and multistate designs; control of sampling and non-sampling errors. Prerequisite: STAT 1051 .

STAT 4157. Introduction to Mathematical Statistics I. 3 Credits.
Basic concepts of probability theory, including random variables, independence, distribution theory, and sampling theory. Prerequisite: MATH 1232 .

STAT 4158. Introduction to Mathematical Statistics II. 3 Credits.
Continuation of STAT 4157. Inference procedures, including estimation, hypothesis testing, regression analysis, and experimental design. Prerequisite: MATH 1232 .

STAT 4181. Applied Time Series Analysis. 3 Credits.
Autoregressive integrated moving average (ARIMA) modeling and forecasting of univariate time series. Estimation of spectral density functions, white noise tests, and tests for periodicities. Theory and applications using SAS. Prerequisite: MATH 2233, STAT 4157– STAT 4158 or STAT 2118.

STAT 4188. Nonparametric Stat Inference. 3 Credits.
Statistical inference when the form of the underlying distribution is not fully specified. Nonparametric procedures for estimation and testing hypotheses. An introduction to robust procedures. Prerequisite: STAT 1051 .

STAT 4189. Mathematical Probability and Applications I. 3 Credits.
Probability theory, including combinatorial analysis, conditional probability, and stochastic independence. Random variables and their distributions; laws of large numbers and central limit theorem. Application of concepts to elementary stochastic processes (coin-tossing sequences, branching processes, Markov chains). Prerequisite: MATH 1232 .

STAT 4190. Mathematical Probability and Applications II. 3 Credits.
Continuation of STAT 4189. Probability theory, including combinatorial analysis, conditional probability, and stochastic independence. Random variables and their distributions; laws of large numbers and central limit theorem. Application of concepts to elementary stochastic processes (coin-tossing sequences, branching processes, Markov chains). Prerequisite: MATH 1232 .

STAT 4195. Reading and Research. 1-12 Credits.
May be repeated once for credit. Admission by permission of department chair.

STAT 4197. Fundamentals of SAS Programming for Data Management. 3 Credits.
Fundamentals of the SAS system for data management, statistical analysis, and report writing. Data modification; programming; file handling; and macro writing. Prerequisite: An introductory statistics course and STAT 1129.

STAT 4198. Special Topics. 3 Credits.
Topic to be announced in the Schedule of Classes. May be repeated for credit provided the content differs.

STAT 6104. Statistics in Management, Administration, and Policy Studies. 3 Credits.
Introductory study of statistical techniques for research problems. For graduate students in fields other than statistics who have no previous statistics training. May not be taken by graduate students in statistics.

STAT 6197. Fundamentals of SAS Programming for Data Management. 3 Credits.
Fundamentals of Statistical Analysis System (SAS) software for data management, statistical analysis, and report writing. Data modification, programming, file handling, and macro writing. Recommended background: An introductory statistics course and knowledge of computer programming.

STAT 6201. Mathematical Statistics I. 3 Credits.
Probability, distribution theory, sampling theory, estimation, sufficient statistics, hypothesis testing, analysis of variance, multivariate normal distribution. Prerequisite: MATH 2233, MATH 2184.

STAT 6202. Mathematical Statistics II. 3 Credits.
Continuation of STAT 6201. Probability, distribution theory, sampling theory, estimation, sufficient statistics, hypothesis testing, analysis of variance, multivariate normal distribution. Prerequisite: MATH 2233, MATH 2184.

STAT 6207. Methods of Statistical Computing I. 3 Credits.
Error analysis, computational aspects of linear models, sweep operator, random number generation, simulation, resampling. Optimization, numerical integration (Gaussian quadrature, Simpson's rule); E–M algorithm. Prerequisite: STAT 2118, STAT 4157– STAT 4158; MATH 2184; knowledge of a programming language.

STAT 6208. Methods of Statistical Computing II. 3 Credits.
Numerical linear algebra, matrix decomposition and eigenvalue problems. Smoothing and density estimation. Graphics, interactive and dynamic techniques for data display. Object-oriented programming. Prerequisite: STAT 2118, STAT 4157– STAT 4158; MATH 2184; knowledge of a programming language.

STAT 6210. Data Analysis. 3 Credits.
Review of statistical principles of data analysis, using computerized statistical procedures. Multiple regression and the general linear model, analysis of contingency tables and categorical data, logistic regression for qualitative responses. Prerequisite: STAT 2118, STAT 4157 or STAT 6201, and STAT 2183 .

STAT 6213. Intermediate Probability and Stochastic Processes. 3 Credits.
Discrete and continuous random variables and their distributions, conditional distributions and conditional expectation, generating functions and their applications, convergence of random variables; introduction to Brownian motion, homogeneous and nonhomogeneous Poisson processes and martingales. Prerequisite: STAT 6201– STAT 6202 .

STAT 6214. Applied Linear Models. 3 Credits.
Introduction to regression techniques for discrete and continuous response variables. The course includes a computing component using SAS and S> Prerequisite: MATH 2233 and MATH 2184.

STAT 6215. Applied Multivariate Analysis I. 3 Credits.
Application of multivariate statistical techniques to multidimensional research data from the behavioral, social, biological, medical, and physical sciences. Prerequisite: STAT 3119, STAT 4157– STAT 4158; MATH 2184.

STAT 6216. Applied Multivariate Analysis II. 3 Credits.
Continuation of STAT 6215. Application of multivariate statistical techniques to multidimensional research data from the behavioral, social, biological, medical, and physical sciences. Prerequisite: STAT 3119, STAT 4157– STAT 4158; MATH 2184.

STAT 6217. Design of Experiments. 3 Credits.
Design and analysis of single- and multiple-factor experiments. Includes block designs, repeated measures, factorial and fractional factorial experiments, response surface experimentation. Prerequisite: STAT 4157–STAT 4158; MATH 2184.

STAT 6218. Linear Models. 3 Credits.
Theory of the general linear parametric model. Includes least squares estimation, multiple comparisons procedures, variance components estimation. Prerequisite: STAT 6201– STAT 6202; MATH 2184.

STAT 6221. Design of Experiments for Behavioral Sciences. 3 Credits.
Applications of advanced experimental design to research problems in behavioral sciences and education. Prerequisite: STAT 2105 or STAT 2118 and permission of instructor. Not open to graduate students in statistics.

STAT 6223. Bayesian Statistics: Theory and Applications. 3 Credits.
An overview of Bayesian statistics, including its foundational issues, decision under uncertainty, linear models, expert opinion, and computational issues. Prerequisite: STAT 6201–STAT 6202.

STAT 6227. Survival Analysis. 3 Credits.
Parametric and nonparametric methods for the analysis of events observed in time (survival data), including Kaplan–Meier estimate of survival functions, logrank and generalized Wilcoxon tests, the Cox proportional hazards model and an introduction to counting processes. Prerequisite: STAT 6201–STAT 6202 or permission of instructor.

STAT 6231. Contingency Table Analysis. 3 Credits.
A study of the theoretical bases underlying the analysis of categorical data. Measures and tests of association; Mantel-Haenszel procedure; weighted least squares and maximum likelihood estimators in linear models; estimating equations; logistic regression; loglinear models. Prerequisite: STAT 6201–STAT 6202.

STAT 6233. Questionnaire Design. 3 Credits.
Questionnaire development from the perspective of cognitive techniques. Questionnaire issues range from choosing the mode of data collection (mail, telephone, or in-person) to selecting the respondent to the differences between asking attitude and factual questions. Pretesting the instrument chosen.

STAT 6234. Intermediate Statistical Laboratory: Statistical Computing Packages. 3 Credits.
Application of program packages (e.g., SAS, SPSS) to the solution of one-, two- and k-sample parametric and nonparametric statistical problems. Basic concepts in data preparation, modification, analysis and interpretation of results. Prerequisite: an introductory statistics course.

STAT 6236. Applied Sampling Techniques. 3 Credits.
Problems of sampling and sample design. Simple random, stratified, systematic, cluster, and multistate designs; control of sampling and non-sampling errors. Prerequisite: STAT 1051.

STAT 6238. Survey Management. 3 Credits.
Tools used in the management of a survey operation from the initial customer contacts through training, fieldwork, data processing, data analysis, report writing, and presentation of results. Issues in budgeting, staffing, and scheduling, with emphasis on quality management.

STAT 6242. Regression Graphics/Nonparametric Regression. 3 Credits.
Linear regression, nonparametric regression, smoothing techniques, additive models, regression trees, neural networks, and dimension reduction methods. Prerequisite: STAT 2118; MATH 2233, MATH 2184.

STAT 6251. Risk and Reliability. 3 Credits.

STAT 6252. Statistical Methods in Bioinformatics and Computational Biology. 3 Credits.

STAT 6253. Legal Statistics. 3 Credits.

STAT 6254. Statistical Genetics. 3 Credits.

STAT 6282. Foundational Issues in Risk Analysis. 3 Credits.
Descriptive statistics, classical probability, Venn diagrams, conditional probability, Bayes' law and law of total probability. Independence and interdependence, discrete and continuous random variables. Probability models, correlation, interpretation of probability (physical, logical, personal, and subjective). The likelihood function and personal probability. Statistical inference (frequentist and Bayesian).

STAT 6283. Essentials of Risk Analysis. 3 Credits.
Utility and risk. The psychology of risk. Decision trees and decision making under uncertainty. Fault and event trees. Decision trees in risk, safety analysis, infrastructure protection. Simulating rare events. The failure rate functions. The cumulative hazard and survival function. Univariate and multivariate failure models. Causal, cascading, and interdependent failure events. Graphical analysis. Network survivability assessments.

STAT 6284. 9/11 Case Studies. 3 Credits.
Focus on 9/11-like risks to U.S. Critical Infrastructure Key Resources (CIKR). Critical overview of many approaches used in estimating risk in the CIKR arena. Real-time statistical and computer risk modeling. Topics include 18 CIKR sectors, basic risk models for CIKR assets, risk of complex targets and systems, and current state of practice.

STAT 6285. Case Studies: Environmental, Health, and Financial Risk. 3 Credits.
Risks encountered in financial markets, sustainability and climate change, and drug safety and health delivery systems. Development of models and reliable tools for optimal decision-making.

STAT 6287. Modern Theory of Sample Surveys. 3 Credits.
Application of statistical theory to the sampling of finite populations. Simple, stratified, cluster, double and subsampling. Special topics, including super-populations and randomized response. Prerequisite: STAT 4157– STAT 4158 .

STAT 6289. Topics in Statistics. 3 Credits.

STAT 6290. Principles of Demography. 3 Credits.
Introduction to basic demographic perspectives and data; methods for analysis of population size, distribution, and composition; determinants and consequences of population trends. Departmental prerequisite waived. Same as ECON 6290.

STAT 6291. Methods of Demographic Analysis. 3 Credits.
Basic methods for analysis of mortality, natality, and migration; population estimates and projections; estimation of demographic measures from incomplete data. Departmental prerequisite waived. Same as ECON 6291.

STAT 6295. Reading and Research. 3 Credits.
May be repeated once for credit.

STAT 6298. Seminar: Special Topics. 3 Credits.

STAT 6998. Thesis Research. 3 Credits.

STAT 6999. Thesis Research. 3 Credits.

STAT 8226. Advanced Biostatistical Methods. 3 Credits.
Statistical methods for the analysis of longitudinal data: nonparametric, fixed effects, mixed effects, generalized estimating equations. Methods for the analysis of emerging data: group sequential analysis, Brownian motion, Bayesian methods, and stochastic curtailment. Other advanced topics of current research in biostatistics. Prerequisite: STAT 6201–STAT 6202 or permission of instructor.

STAT 8257. Probability. 3 Credits.
Probabilistic foundations of statistics, probability distributions, random variables, moments, characteristic functions, modes of convergence, limit theorems, probability bounds. Prerequisite: STAT 6201– STAT 6202, knowledge of calculus through functions of several variables and series.

STAT 8258. Distribution Theory. 3 Credits.
Special distributions of statistics, small and large sample theory, order statistics, and spacings. Prerequisite: STAT 8257.

STAT 8259. Advanced Probability. 3 Credits.
Conditional expectation and martingales; weak convergence in general metric spaces and functional central limit theorems for i.i.d. random variables and martingales; applications to biostatistics. Prerequisite: STAT 8257 or an equivalent measure-theoretic introduction to probability.

STAT 8262. Nonparametric Inference. 3 Credits.
Inference when the form of the underlying distribution is unspecified. Prerequisite: STAT 6201– STAT 6202.

STAT 8263. Advanced Statistical Theory I. 3 Credits.
Decision theoretic estimation, classical point estimation, hypothesis testing. Prerequisite: STAT 6201– STAT 6202.

STAT 8264. Advanced Statistical Theory II. 3 Credits.
Asymptotic theory, hypothesis testing, confidence regions. Prerequisite: STAT 8257, STAT 8263.

STAT 8265. Multivariate Analysis. 3 Credits.
Multivariate normal distribution. Hotelling's T2 and generalized T20, Wishart distribution, discrimination and classification. Prerequisite: STAT 6201– STAT 6202.

STAT 8266. Topics-Multivariate Analysis. 3 Credits.

STAT 8271. Foundational and Philosophical Issues in Statistics. 3 Credits.
Axiomatic underpinnings of Bayesian statistics, including subjective probability, belief, utility, decision and games, likelihood principle, and stopping rules. Examples from legal, forensic, biological, and engineering sciences. Students are expected to have a background in computer science, economics, mathematics, or operations research. Prerequisite: STAT 6201– STAT 6202.

STAT 8273. Stochastic Processes I. 3 Credits.
Fundamental notions of Markov chains and processes, generating functions, recurrence, limit theorems, random walks, Poisson processes, birth and death processes, applications. Prerequisite: STAT 6201– STAT 6202.

STAT 8274. Stochastic Processes II. 3 Credits.
Continuation of STAT 8273. Fundamental notions of Markov chains and processes, generating functions, recurrence, limit theorems, random walks, Poisson processes, birth and death processes, applications. Prerequisites: STAT 6201– STAT 6202.

STAT 8281. Advanced Time Series Analysis. 3 Credits.
Autoregressive integrated moving average (ARIMA) modeling and forecasting of univariate and multivariate time series. Statespace or Kalman filter models, spectral analysis of multiple time series. Theory and applications using the University computer. Prerequisite: MATH 2233, STAT 6201– STAT 6202 .

STAT 8288. Modern Theory/Sample Surveys. 3 Credits.

STAT 8289. Seminar. 3 Credits.
Admission by permission of instructor.

STAT 8375. Econometrics I. 3 Credits.
Statistical foundations for econometrics; standard methods of estimation and inference for classical and generalized regression models. Same as ECON 8375.

STAT 8376. Econometrics II. 3 Credits.
Topics may include asymptotic theory, statistical endogeneity, instrumental variables estimation, discrete and limited dependent variable models, and time-series models. Same as ECON 8376. Prerequisite: STAT 8375.

STAT 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

STAT 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

BACHELOR OF SCIENCE WITH A MAJOR IN STATISTICS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Prerequisite courses:

MATH 1231	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
MATH 2233	Multivariable Calculus
STAT 1051	Introduction to Business and Economic Statistics (or equivalent)
or STAT 1053	Introduction to Statistics in Social Science
STAT 1129	Introduction to Computing (or equivalent)
or CSCI 1121	Introduction to C Programming

Required courses in the major:

MATH 2184	Linear Algebra I
or MATH 2185	Linear Algebra I for Math Majors
STAT 2118	Regression Analysis
STAT 3119	Analysis of Variance
STAT 4157	Introduction to Mathematical Statistics I
STAT 4158	Introduction to Mathematical Statistics I
STAT 2183	Statistical Computing Packages
or STAT 4197	Fundamentals of SAS Programming for Data Management

Four approved upper-division courses, some of which, in special circumstances, may be taken in other departments. To assure a balanced program, departmental approval of electives is required for all majors. Some suggested electives are:	
STAT 2112	Business and Economic Statistics II
STAT 3187	Introduction to Sampling
STAT 4181	Applied Time Series Analysis
STAT 4188	Nonparametric Stat Inference
STAT 4189	Mathematical Probability and Applications I
STAT 4198	Special Topics

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students who seek Special Honors in statistics should check with the Department.

MINOR IN STATISTICS

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 9 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
Required:		
One of the following introductory courses:		
STAT 1051	Introduction to Business and Economic Statistics	
STAT 1053	Introduction to Statistics in Social Science	
STAT 1111	Business and Economic Statistics I	
STAT 1127	Statistics for the Biological Sciences	
Both of the following courses:		
STAT 2118	Regression Analysis	
or STAT 2123	Introduction to Econometrics	
STAT 2183	Intermediate Stat Lab/Packages	
or STAT 4197	Fundamentals of SAS Programming for Data Management	
Electives		
Three courses (9 credits) of approved Statistics (STAT) courses.		

MASTER OF SCIENCE IN THE FIELD OF STATISTICS

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

General prerequisite: course work in multivariate calculus, matrix theory, and at least two undergraduate statistics courses.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

30 credits. For the non-thesis option–6 credits in required courses and 24 credits in elective courses; thesis option–6 credits in required courses, 18 credits in elective courses, and 6 credits of thesis.

Code	Title	Credits
Required		
STAT 6201	Mathematical Statistics I	
STAT 6202	Mathematical Statistics II	
Required for students pursing the thesis option		
STAT 6998	Thesis Research	
STAT 6999	Thesis Research	
Electives		
24 credits for non-thesis option, 18 credits for thesis option		
Elective courses may be taken in related fields, such as economics, mathematics, finance, management, computer science, engineering, public health, and data science. All electives are selected in consultation with the advisor.		

*Students must have departmental approval in order to pursue the thesis option.

DOCTOR OF PHILOSOPHY IN THE FIELD OF STATISTICS

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Prerequisite: a master's degree in statistics or a related discipline. The main requirement is a strong background

in mathematics, including courses in advanced calculus, linear algebra, probability and mathematical statistics. Some deficiencies may be made up concurrently during the student's first year. In some instances, a student may enter the Ph.D. program with a bachelor's degree.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

The requirements for the Doctor of Philosophy Program (p. 82)

Required	
STAT 6201	Mathematical Statistics I
STAT 6202	Mathematical Statistics II
STAT 6223	Bayesian Statistics: Theory and Applications
STAT 8257	Probability
STAT 8258	Distribution Theory
STAT 8263	Advanced Statistical Theory I
STAT 8264	Advanced Statistical Theory II
At least two of the following:	
STAT 6218	Linear Models
STAT 8226	Advanced Biostatistical Methods
STAT 8259	Advanced Probability
STAT 8262	Nonparametric Inference
STAT 8265	Multivariate Analysis
STAT 8273	Stochastic Processes I
STAT 8274	Stochastic Processes II
STAT 8281	Advanced Time Series Analysis
A minimum of 21 additional credits as determined by consultation with the departmental doctoral committee	
The General Examination, consisting of two parts:	
A. A written qualifying examination that must be taken within 24 months from the date of enrollment in the program and is based on:	
STAT 6201	Mathematical Statistics I
STAT 6202	Mathematical Statistics II
STAT 8257	Probability
STAT 8263	Advanced Statistical Theory I
B. An examination to determine the student's readiness to carry out the proposed dissertation research	
A dissertation demonstrating the candidate's ability to do original research in one area of probability or statistics.	

GRADUATE CERTIFICATE IN SURVEY DESIGN AND DATA ANALYSIS

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
STAT 6233	Questionnaire Design	
STAT 6234	Intermediate Statistical Laboratory: Statistical Computing Packages	
STAT 6236	Applied Sampling Techniques	
STAT 6238	Survey Management	

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (http://statistics.columbian.gwu.edu/graduate-certificate-survey-design-and-data-analysis) for additional information.

THEATRE AND DANCE

The Department of Theatre and Dance, an interdisciplinary liberal arts program, offers instruction in how to acquire the tools and knowledge to fully appreciate the value of these performance art forms. Students strengthen their ability to apply critical thinking and discussion to the creation and understanding of theatre and dance, as well as the understanding of other peoples and cultures. The curriculum is supplemented as students create live performances and original productions that stimulate and involve the university community, as well as the community beyond the campus. Through creative endeavor and scholarly research, the program also develops the interests and talents of students seeking careers or advanced study in theatre and dance.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in theatre (p. 433)

- Bachelor of Arts with a major in dance (p. 432)

Minors

- Minor in theatre (p. 435)
- Minor in dance (p. 434)

GRADUATE

Master's programs

- Master of Fine Arts in the field of dance (p. 435)
- Master of Fine Arts in the field of production design (p. 436)

FACULTY

Professors DT.S. Burgess *(Chair)*, L.B. Jacobson, A. Wade, M.R. Withers

Associate Professors M.A. Buckley, C.F. Gudenius, J.I. Kanter

Assistant Professors S. Johannesdottir, J. Traub, T.W. Wetenhall

Adjunct Professors E. Kitsos-Kang, A.C. Stokes

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: Courses in the 1000s series are primarily for nonmajors.

Departmental prerequisite: Prerequisite to all graduate TRDA courses: M.F.A. candidacy and permission of instructor.

TRDA 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

TRDA 1015. Understanding the Dance. 3 Credits.
The art of dance—a lecture and experiential approach to its cultural importance, history, and creative processes. The contributions of the choreographer and dancer to society. Attendance at performances and presentations, and viewing video. Laboratory fee.

TRDA 1020. Women and the Creative Process. 3 Credits.
Consideration of questions of aesthetics and creativity through the study of art produced by women since the mid-20th century. The creation, meaning, and impact of work across the fields of visual art, dance, theatre, and music.

TRDA 1025. Understanding the Theatre. 3 Credits.
The art of the theatre; its literature, history, aesthetics, and mechanics. Contributions of the playwright, actor, director, and designer. Attendance at assigned theatrical performances.

TRDA 1035. Theatre Production. 3 Credits.
Understanding of the basic elements of theatrical production (performance, technical and management) and the collaborative artist/artisan process through discussion, observation, and practical application. Laboratory fee.

TRDA 1151. Beginning/Intermediate Ballet. 1 Credit.
Introduction to modern dance technique inclusive of basic concepts of dynamic alignment, stretch, strength, improvisation and musicality. Laboratory fee.

TRDA 1152. Beginning Modern/Postmodern Dance. 1 Credit.
Introduction to modern dance technique inclusive of basic concepts of dynamic alignment, stretch, strength, improvisation and musicality. Laboratory fee.

TRDA 1153. Beginning/Intermediate Modern/Postmodern Dance. 1 Credit.
Introduction to modern dance technique inclusive of basic concepts of dynamic alignment, stretch, strength, improvisation and musicality. Laboratory fee.

TRDA 1170. Intermediate Modern/Postmodern Dance I. 2-3 Credits.
Recommended for students with previous dance experience in jazz, ballet, hip hop, modern, or other styles. May be repeated for credit. Laboratory fee.

TRDA 1171. Intermediate Modern/Postmodern Dance II. 2-3 Credits.
Continuation of TRDA 1170. Recommended for students with previous dance experience in jazz, ballet, hip hop, modern, or other styles. May be repeated for credit. Prerequisite: TRDA 1170, or permission of instructor. Laboratory fee.

TRDA 1214. Beginning Acting. 3 Credits.
An introduction to the process of acting. Students will learn to make choices using various acting techniques to create characters and learn about the process.

TRDA 1240. Performance Theory. 3 Credits.
Examination of the ways in which the practices and heuristics of performance have been used to understand a wide range of cultural activities; expansion of the notion of aesthetic performance proper to include sources, subjects, and forms historically considered non-dramatic; and underlying questions concerning what performance is, what it does, and what value it holds.

TRDA 1330. Basics of Production Design. 3 Credits.
Basic elements of production design and technical execution. Laboratory required. Laboratory fee.

TRDA 2160. Intermediate Ballet II. 2-3 Credits.
May be repeated for credit. Prerequisite: TRDA 1151, or permission of instructor. Laboratory fee.

TRDA 2172. Intermediate/Advanced Modern/Postmodern Dance I. 2-3 Credits.
May be repeated for credit. Prerequisite: TRDA 1171, or permission of instructor. Laboratory fee.

TRDA 2173. Intermediate/Advanced Modern/Postmodern Dance II. 2-3 Credits.
Continuation of TRDA 2172. May be repeated for credit. Prerequisite: TRDA 2172, or permission of instructor. Laboratory fee.

TRDA 2179. Contact Improvisation. 2 Credits.
A movement form that arises from the point of contact between partners who explore gravity, space, and timing in the spontaneous moment-to-moment exchange of the dance. Exploring the improvisational state of body/mind through the use of imagery, tuning the senses, mindfulness practices, and play. Laboratory fee.

TRDA 2180. Movement Improvisation/Perform. 3 Credits.
Exploring the body and its surroundings in movement, use of language, narrative, environments and contexts for creative expression, developing event and performance structures from improvisation. May be repeated for credit. Laboratory fee.

TRDA 2185. Trends in Performance. 3 Credits.
Study of the theory and practice of contemporary performance art movements and artists; political and artistic activism; scripting and scoring to create performance works based on a single art discipline or interdisciplinary arts. Laboratory fee.

TRDA 2188. African Dance. 1 Credit.
African/Caribbean dance styles and techniques, with warm-ups and center floor work of long and short movement phrases. Basic/modern/jazz terminology and definitions appropriate to intermediate/advanced/African dance are used. Emphasis on alignment, execution, musical phrasing, and the importance of rhythmic timing and nuance.

TRDA 2189. World Dance. 3 Credits.

TRDA 2190. Gender/Indian Classical Dance. 3 Credits.

TRDA 2191. Dance History. 3 Credits.
The history of Western theatrical dance from the late 18th century to the present. The major choreographers and their dance works through readings, lectures, video, and discussion.

TRDA 2191W. Dance History. 3 Credits.
The history of Western theatrical dance from the late 18th century to the present. The major choreographers and their dance works through readings, lectures, video, and discussion.

TRDA 2192. Repertory/Performance. 1,2 Credit.
Participation in the processes of learning and performing dance repertory or new dance works. Audition required. Laboratory required. May be repeated for credit. Laboratory fee.

TRDA 2193. Dance Styles I. 1-12 Credits.
Forms of theatrical dance other than ballet or modern, including African dance, Angola Capoeira, music theatre, Spanish dance, world dance, Middle Eastern dance, and others. May be repeated for credit provided the topic differs. Laboratory fee.

TRDA 2194. Dance Styles II. 1-12 Credits.
Continuation of TRDA 2193. Forms of theatrical dance other than ballet or modern, including African dance, Angola Capoeira, music theatre, Spanish dance, world dance, Middle Eastern dance, and others. May be repeated for credit provided the topic differs. Laboratory fee.

TRDA 2195. Global Dance History. 3 Credits.
The role of dance globally in relation to socio-cultural and artistic histories. Importance of certain artists and dance forms contextualized by major world events as seen through the geography of immigration. Perspectives from the Americas, Africa, the Middle East, and Asia.

TRDA 2215. Intermediate Acting. 3 Credits.
Students continue to develop acting techniques introduced in TRDA 1214 through scripted scene work. Students learn to make choices through text exploration, use various acting techniques to create characters and develop clear character relationships, and stage completed scenes. Prerequisites: TRDA 1214 or HONR 2059.

TRDA 2216. Scene Study: Voice & Character. 3 Credits.
The practice and application of voice production with reference to skeletal alignment, breathing, resonance, and articulation. Emphasis on the process of voice production and its application to performance through work on scenes and monologues. Prerequisite: TRDA 2215. Laboratory fee.

TRDA 2240. Play Analysis. 3 Credits.
Traditional and nontraditional (Aristotelian and non-Aristotelian) approaches to the analysis of dramatic literature; literary and theatrical techniques used by playwrights. Same as ENGL 2240.

TRDA 2250. Dramatic Writing. 3 Credits.
A workshop in playwriting and screenwriting, with emphasis on dramatic structure. Same as ENGL 2250. Recommended preparation: Engl 1210 and two semesters of literature courses.

TRDA 2339. Theatre Practicum. 1 Credit.
Participation in department mainstage productions in a production or management capacity under the supervision of a member of the faculty. Prerequisite: TRDA 1330. After two practicums have been completed, participation may also include performance positions, for which TRDA 1214 is prerequisite. May be repeated for a total of 6 credits. Laboratory fee.

TRDA 3131W. Theatre of Social Change. 3 Credits.
Focuses on theatre of social change as practiced in the second half of the 20th and in the early 21st centuries; exploring additional case studies from South Africa, Europe, and the US.

TRDA 3156. Dance & Arts Management. 3 Credits.
Examination of dance in Washington area communities. Students are required to site visit and engage with individuals and organizations that focus on dance as it pertains to performance, therapy, management, and education. Participation in activities with a dance artist/practitioner or with a producing/service organization is required. Laboratory fee.

TRDA 3174. Advanced Modern/Postmodern Dance I. 2-3 Credits.
May be repeated for credit. Prerequisite: TRDA 2173, or permission of instructor. Laboratory fee.

TRDA 3175. Advanced Modern/Postmodern Dance II. 2-3 Credits.
Continuation of TRDA 3174. May be repeated for credit. Prerequisite: TRDA 3174, or permission of instructor. Laboratory fee.

TRDA 3182. Dance Composition I. 3 Credits.
Problems in structural and conceptual aspects of constructing dances and shaping and forming movement materials. Prerequisite: TRDA 2180; recommended: TRDA 2185. Laboratory fee.

TRDA 3183. Dance Composition II. 3 Credits.
Continuation of TRDA 3182. Emphasis on intention and content in making dances. Prerequisite: TRDA 2180; recommended: TRDA 2185. Laboratory fee.

TRDA 3186. Dance Anatomy & Kinesiology. 3 Credits.
An experiential and theoretical approach to dynamic anatomy and kinesiology as they pertain to the dancer. The student is encouraged to reach full movement potential in relation to contemporary dance techniques, performance, and injury prevention. Laboratory fee.

TRDA 3222. Topics in Advanced Acting. 3 Credits.
The actor's approach to various styles and genres and to non-literary theatrical forms. Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Studio fee. Prerequisite: TRDA 2215.

TRDA 3223. Physical Performance Skills. 3 Credits.
Introduction to a variety of techniques needed by actors and performers, including mime, clowning, slapstick, mask work, and basic stage combat skills. Prerequisite: TRDA 2215. Laboratory fee.

TRDA 3229. Audition Techniques. 3 Credits.
All aspects of the audition process, including selection and rehearsal of audition monologues and handling of cold reading. Laboratory fee. Prerequisite: TRDA 2215.

TRDA 3240. Introduction to Dramaturgy. 3 Credits.
Fundamentals of classical and contemporary dramaturgical practice, including analyzing plays, doing research, supporting directors and actors in rehearsal, writing program notes, and leading post-show discussions. Same as ENGL 3240.

TRDA 3245. History of the Theatre I. 3 Credits.
A dramaturg's approach to case studies of theatre in historical context. Ancient Greece through the 17th century.

TRDA 3245W. History of the Theatre I. 3 Credits.
A dramaturg's approach to case studies of theatre in historical context. Ancient Greece through the 17th century.

TRDA 3246. History of the Theatre II. 3 Credits.
Continuation of TRDA 3245. A dramaturg's approach to case studies of theatre in historical context. The 18th century through the present.

TRDA 3246W. History of the Theatre II. 3 Credits.
Continuation of TRDA 3245. A dramaturg's approach to case studies of theatre in historical context. The 18th century through the present.

TRDA 3248. Theatre Criticism. 3 Credits.
Discussion and witnessing of plays in performance, resulting in written criticism modeled on contemporary journalistic practices. Prerequisite: TRDA 3245 or TRDA 3246 or TRDA 2240/ ENGL 2240. Laboratory fee.

TRDA 3248W. Theatre Criticism. 3 Credits.
Discussion and witnessing of plays in performance, resulting in written criticism modeled on contemporary journalistic practices. Prerequisite: TRDA 3245 or TRDA 3246 or TRDA 2240/ ENGL 2240. Laboratory fee.

TRDA 3250. Intermediate Dramatic Writing. 3 Credits.
A workshop developing scripts for both theatre and film. Same as ENGL 3250. Prerequisite: ENGL 2250 or equivalent. May be repeated for credit with departmental approval.

TRDA 3331. Introduction to Lighting. 3 Credits.
Theories and practical application of lighting for theatre and dance. Laboratory fee. Prerequisite: TRDA 1330.

TRDA 3332. Theatrical Makeup Design. 3 Credits.
Theory and practice in the art of stage makeup design, including latex and crepe hair. Materials fee. Prerequisite: TRDA 1330.

TRDA 3333. Stage Management. 3 Credits.
The role and function of the stage manager in theatrical production. The basic skills needed to begin work in stage management. Emphasis on organization, documentation, and dissemination of information. Prerequisite: TRDA 1330. Laboratory fee.

TRDA 3334. Introduction to Audio Design. 3 Credits.
The basic elements of audio design and production through discussion, observation, and practical application. Laboratory required. Laboratory fee. Prerequisites: TRDA 1330.

TRDA 3335. Introduction to Scene Design. 3 Credits.
Fundamental study of scenic design, including historic overview, basic draw-ing, and rendering techniques, through the use of various mediums and script analysis. Laboratory fee. Prerequisite: TRDA 1330.

TRDA 3336. Introduction to Costuming. 3 Credits.
History of fashion in Western civilization from ancient Greece to the 20th century. Fundamental study of costume construction through specific projects. Costume construction. Prerequisite: TRDA 1330. Laboratory fee.

TRDA 3710W. Contemporary Drama. 3 Credits.

TRDA 4184. Choreography and Performance. 1-3 Credits.
Create a dance or a performance work of individual design, including casting, rehearsal procedures, staging aspects, and public presentation. Prerequisite: TRDA 3182; recommended: TRDA 1330, TRDA 2185. May be repeated for credit. Laboratory fee.

TRDA 4191. Paris Modernism & the Arts. 3 Credits.

TRDA 4204. Personal Aesthetics II: The Environment. 3 Credits.
This course fosters individual investigation of movement research and studio practice in order to develop an individual dance aesthetic.TRDA 6204 Personal Aesthetics – Environment (2-3) engages the artist/student in creative activities general related to alternative spaces and events related to "live" art, performance art, dance and related arts with less formal production/presentation elements. Prerequisites: M.F.A. candidacy or permission of instructor. (Same as TRDA 6204).

TRDA 4275. Directing for the Theatre. 3 Credits.
Fundamentals of script analysis, staging, casting, and rehearsal techniques. Prerequisite: TRDA 1214, TRDA 1330; TRDA 2240/ ENGL 2240 or TRDA 3240/ ENGL 3240. Laboratory fee.

TRDA 4338. Scene Painting. 3 Credits.
The techniques and materials used in creating character in the various elements of set design. Methods include set preparation, coating, mixing, palette preparation, spraying, transfer, texturing, finishing, and wallpapering. Prerequisite: TRDA 1330. Laboratory fee.

TRDA 4595. Selected Topics. 1-3 Credits.
Topics of current interest in theatre or dance. Topics (and course fee, when charged) announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

TRDA 4595W. Selected Topics. 1-3 Credits.
Topics of current interest in theatre or dance. Topics (and course fee, when charged) announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Laboratory fee.

TRDA 4596. Independent Study. 1-6 Credits.
Independent research and special projects. Open to qualified juniors or seniors majoring or minoring in theatre or dance. Before students are permitted to register for TRDA 4596, they must submit a written proposal of the plan of study and obtain approval of the faculty member who is directing the study and the department chair.

TRDA 4597. Senior Project. 3 Credits.
A capstone project related to the student's particular concentration. The project may be in the form of a performance, theoretical or realized design for the theatre, directorial project, playscript, stage management experience, dramaturgical project, choregraphic project, or other approved area. Restricted to TRDA majors with senior standing.

TRDA 4598. Internship. 3,6 Credits.
Open to qualified seniors majoring or minoring in theatre or dance. Work placements with not-for-profit and commercial theatre and dance organizations for an approved number of hours per week. Admission requires departmental approval. May be taken for a maximum of 6 credits.

TRDA 4599. Honors Thesis. 3 Credits.
Directed research and/or creative project. Open to qualified seniors by permission. Arrangements must be made with a sponsoring faculty member in the department and applications must be completed early in the second semester of the junior year.

TRDA 6200. Portfolio I:Performance. 1-5 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6201. Personal Aesthetics I: The Body. 5 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6202. Contemporary Dance History and Criticism. 4 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6203. Portfolio II: Choreography/Creativity. 1-5 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6204. Personal Aesthetics II: The Environment. 2 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6205. Choreography. 4 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6206. Dance Pedagogy. 4 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6207. Portfolio III: Artistic Initiative. 1-5 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6208. New Media & Dance. 5 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6209. Cultural Communities of Dance. 4 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6210. Personal Aesthetics III: Integration. 4 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6211. Career Networks in Dance. 4 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6212. Portfolio Review I: Performance. 1-5 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6213. Portfolio Review II: Choreography/Creativity. 1-5 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6214. Portfolio Review III: Artistic Initiatives. 1-5 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6296. Research Project I. 4 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6299. Research Project II. 5 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6331. Intermediate Lighting Design. 3 Credits.
Theory and execution of lighting design for theatre and dance. May be repeated for credit. Laboratory fee. Restricted to MFA candidates; permission of the instructor may be substituted.

TRDA 6335. Intermediate Scene Design. 3 Credits.
Development of advanced skills of scenic design, including script analysis, needs assessment, research techniques, conceptual design development, drawing and rendering techniques, preparation of construction documentation and fabrication management. Laboratory fee. Restricted to MFA candidates except by permission of the instructor.

TRDA 6336. Intermediate Costume. 3 Credits.
Basic techniques of costume design through specific projects. Various rendering techniques consistent with the historical period concerned. Laboratory fee. Restricted to MFA candidates; permission of the instructor may be substituted.

TRDA 6338. Scene Painting. 3 Credits.
Development the painting skills needed for the reproductive craft of theatrical painting. Restricted to MFA candidacy or permission of instructor.

TRDA 6340. Period Styles. 3 Credits.
A broad perspective of major European and American cultures through analysis of the interiors, furniture, textiles, fashion, and architecture of major civilizations and historical periods from Egypt to the present. Laboratory fee. Restricted to MFA candidates except by permission of the instructor.

TRDA 6342. Pattern Making. 3 Credits.
Pattern drafting and draping methods based on contemporary and historical clothing. Laboratory fee. Restricted to MFA candidacy or permission of instructor.

TRDA 6344. Production Drafting. 3 Credits.
Development of drafting skills for production. Ground plans and shop documents. Traditional hand drafting and computer assisted design. Laboratory fee. Restricted to MFA candidacy or permission of instructor.

TRDA 6346. Advanced Studies in Design: Collaborative Studies. 3 Credits.
Development of the skills needed to design and work within a collaborative or team-based environment through visual and verbal communication, script analysis, concept development, and research techniques. Laboratory fee. Restricted to MFA candidates or instructor's permission.

TRDA 6348. Techniques in Design Presentation. 3 Credits.
The various techniques used in costume and scenic design presentations, such as rendering with paint, pencil, ink, and electronic media. Restricted to MFA candidates; permission of instructor may be substituted.

TRDA 6595. Selected Topics. 1-3 Credits.
Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details. Restricted to MFA candidates; permission of instructor may be substituted.

TRDA 6596. Independent Research in TRDA. 1-12 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor. May be repeated for credit.

TRDA 6598. Internship. 1-12 Credits.
Internships with theatre companies or arts organizations, including conference and/or seminar. May be taken for a total of 12 credit hours. Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6998. Thesis Research. 3 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6999. Thesis Research. 3 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

BACHELOR OF ARTS WITH A MAJOR IN DANCE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Production design		
TRDA 1330	Basics of Production Design (3 credits)	
Dance technique		
13 credits from the following:		
TRDA 1170	Intermediate Modern/Postmodern Dance I	
TRDA 1171	Intermediate Modern/Postmodern Dance II	

TRDA 2172	Intermediate/Advanced Modern/ Postmodern Dance I
TRDA 2173	Intermediate/Advanced Modern/ Postmodern Dance II
TRDA 3174	Advanced Modern/Postmodern Dance I
TRDA 3175	Advanced Modern/Postmodern Dance II
Creative process, performance, and theory	
18 credits from following:	
TRDA 2180	Movement Improvisation/Perform
TRDA 2185	Trends in Performance
TRDA 2191	Dance History
or TRDA 2191W	Dance History
TRDA 2195	Global Dance History
TRDA 3156	Dance & Arts Management
TRDA 3182	Dance Composition I
TRDA 3183	Dance Composition II
TRDA 4184	Choreography and Performance
Five credits from the following:	
TRDA 1000	Dean's Seminar
TRDA 1015	Understanding the Dance
TRDA 2188	African Dance
TRDA 2189	World Dance
TRDA 2192	Repertory/Performance
TRDA 2193	Dance Styles I
TRDA 2194	Dance Styles II
TRDA 2339	Theatre Practicum
TRDA 3186	Dance Anatomy & Kinesiology
TRDA 3331	Introduction to Lighting
TRDA 4204	Personal Aesthetics II: The Environment
TRDA 4595	Selected Topics
or TRDA 4595W	Selected Topics
TRDA 4596	Independent Study
TRDA 4598	Internship
TRDA 4599	Honors Thesis

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors in Theatre or Dance, students must have a grade-point average of 3.4 in the major and complete TRDA 4599 Honors Thesis with a grade of *A*. They must consult a faculty advisor at the beginning of the second semester of the junior year to determine eligibility, area of study, and the director of the research or creative project.

BACHELOR OF ARTS WITH A MAJOR IN THEATRE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

42 credits, including 24 credits in required courses and 18 credits in limited elective courses.

Code	Title	Credits
Required courses (24 credits):		
TRDA 1214	Beginning Acting	
TRDA 1240	Performance Theory	
TRDA 1330	Basics of Production Design	
TRDA 2240	Play Analysis	
TRDA 2339	Theatre Practicum (3 credit hours)	
TRDA 3245	History of the Theatre I	
or TRDA 3245W	History of the Theatre I	
TRDA 3246	History of the Theatre II	
or TRDA 3246W	History of the Theatre II	
TRDA 4597	Senior Project	
or TRDA 4599	Honors Thesis	
Two courses (6 credits) from the following:		
TRDA 3331	Introduction to Lighting	
TRDA 3333	Stage Management	
TRDA 3335	Introduction to Scene Design	
TRDA 3336	Introduction to Costuming	

TRDA 4338	Scene Painting
Four courses (12 credits) from the following:	
TRDA 2180	Movement Improvisation/Perform
TRDA 2185	Trends in Performance
TRDA 2215	Intermediate Acting
TRDA 2216	Scene Study: Voice & Character
TRDA 3131W	Theatre of Social Change
TRDA 3222	Topics in Advanced Acting
TRDA 3223	Physical Performance Skills
TRDA 3229	Audition Techniques
TRDA 3240	Introduction to Dramaturgy
TRDA 3248	Theatre Criticism
TRDA 3332	Theatrical Makeup Design
TRDA 3710W	Contemporary Drama
TRDA 4275	Directing for the Theatre
TRDA 4595	Selected Topics
TRDA 4596	Independent Study
TRDA 4598	Internship

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors in Theatre, candidates must have a grade-point average of 3.4 in the major and complete TRDA 4599 Honors Thesis with a grade of *A*. They must consult with a faculty advisor at the beginning of the second semester of the junior year to determine eligibility, area of study, and the director of the research or creative project.

MINOR IN DANCE

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in elective courses.

Code	Title	Credits
Dance Technique		
3 to 9 credits from the following:		
TRDA 1152	Beginning Modern/Postmodern Dance	
TRDA 1153	Beginning/Intermediate Modern/ Postmodern Dance	
TRDA 1170	Intermediate Modern/Postmodern Dance I	
TRDA 1171	Intermediate Modern/Postmodern Dance II	
TRDA 2172	Intermediate/Advanced Modern/ Postmodern Dance I	
TRDA 2173	Intermediate/Advanced Modern/ Postmodern Dance II	
TRDA 3174	Advanced Modern/Postmodern Dance I	
TRDA 3175	Advanced Modern/Postmodern Dance II	
Dance Theory		
3 to 9 credits from the following:		
TRDA 1000	Dean's Seminar	
TRDA 1015	Understanding the Dance	
TRDA 2180	Movement Improvisation/Perform	
TRDA 2185	Trends in Performance	
TRDA 2191	Dance History	
or TRDA 2191W	Dance History	
TRDA 2195	Global Dance History	
TRDA 3156	Dance & Arts Management	
TRDA 3182	Dance Composition I	
TRDA 3183	Dance Composition II	
TRDA 3186	Dance Anatomy & Kinesiology	
TRDA 4184	Choreography and Performance	
Remaining credits from the following:		
TRDA 1330	Basics of Production Design	
TRDA 2188	African Dance	
TRDA 2189	World Dance	
TRDA 2192	Repertory/Performance	
TRDA 2193	Dance Styles I	
TRDA 2194	Dance Styles II	
TRDA 2339	Theatre Practicum	

TRDA 4204	Personal Aesthetics II: The Environment
TRDA 4595	Selected Topics
TRDA 4596	Independent Study
TRDA 4598	Internship

MINOR IN THEATRE

REQUIREMENTS

The following requirements must be fulfilled: 18 credits

Required courses (6 credits):

TRDA 3245	History of the Theatre I
or TRDA 3245W	History of the Theatre I
TRDA 3246	History of the Theatre II
or TRDA 3246W	History of the Theatre II

Four additional courses (12 credits), at least one of which is numbered 2000 or above, from the following:

TRDA 1025	Understanding the Theatre
TRDA 1035	Theatre Production
TRDA 1214	Beginning Acting
TRDA 1240	Performance Theory
TRDA 1330	Basics of Production Design
TRDA 2215	Intermediate Acting
TRDA 2216	Scene Study: Voice & Character
TRDA 2240	Play Analysis
TRDA 2250	Dramatic Writing
or ENGL 2250	Dramatic Writing
TRDA 2339	Theatre Practicum
TRDA 3131W	Theatre of Social Change
TRDA 3222	Advanced Acting
TRDA 3223	Physical Performance Skills
TRDA 3225	Stage Dialects
TRDA 3227	Acting for the Media
TRDA 3229	Audition Techniques
TRDA 3231W	Theatre of Social Change
TRDA 3240	Introduction to Dramaturgy
or ENGL 3240	Introduction to Dramaturgy
TRDA 3248	Theatre Criticism
or TRDA 3248W	Theatre Criticism
TRDA 3260	Adaptation for Performance
TRDA 3331	Introduction to Lighting
TRDA 3332	Makeup Design
TRDA 3333	Stage Management
TRDA 3335	Introduction to Scene Design
TRDA 3336	Introduction to Costuming
TRDA 3710W	Contemporary Drama
TRDA 4275	Directing for the Theatre
TRDA 4338	Scene Painting

MASTER OF FINE ARTS IN THE FIELD OF DANCE

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

60 credits in required courses.

Code	Title	Credits
Required		
TRDA 6200	Portfolio I:Performance	
TRDA 6201	Personal Aesthetics I: The Body	
TRDA 6202	Contemporary Dance History and Criticism	
TRDA 6203	Portfolio II: Choreography/Creativity	
TRDA 6204	Personal Aesthetics II: The Environment	
TRDA 6205	Choreography	
TRDA 6206	Dance Pedagogy	
TRDA 6207	Portfolio III: Artistic Initiative	

TRDA 6208	New Media & Dance
TRDA 6209	Cultural Communities of Dance
TRDA 6210	Personal Aesthetics III: Integration
TRDA 6211	Career Networks in Dance
TRDA 6296	Research Project I
TRDA 6299	Research Project II
Portfolio review	
Up to 15 credits of accelerated placement for high-level work is possible through three portfolio review courses:	
TRDA 6212	Portfolio Review I: Performance (for TRDA 6200)
TRDA 6213	Portfolio Review II: Choreography/ Creativity (for TRDA 6203)
TRDA 6214	Portfolio Review III: Artistic Initiatives (for TRDA 6207)

A committee consisting of dance faculty and an outside professional administer the portfolio review, using a strict assessment rubric to assist students with tracking their growth and placement level. Students who qualify for the full 5 credits for any or all of the portfolio review courses (TRDA 6212 Portfolio Review I: Performance, TRDA 6213 Portfolio Review II: Choreography/Creativity, and TRDA 6214 Portfolio Review III: Artistic Initiatives) are not required to take the corresponding portfolio course (TRDA 6200 Portfolio I:Performance, TRDA 6203 Portfolio II: Choreography/ Creativity, and TRDA 6207 Portfolio III: Artistic Initiative); students who receive fewer than 5 credits in any review courses must enroll for the remaining credits in the portfolio course(s). Visit the department website (http://theatredance.gwu.edu) for additional information.

MASTER OF FINE ARTS IN THE FIELD OF PRODUCTION DESIGN

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 73).

54 credits planned in consultation with the advisor.

The program of study consists of 54 credits of graduate and upper-division undergraduate course work in theatre and dance and in art, planned in consultation with the advisor, including a creative thesis (TRDA 6998 Thesis Research and TRDA 6999 Dance Thesis Research). The program may emphasize scenery, lighting, or costume. For listings of upper-division undergraduate courses, see the Undergraduate Programs Bulletin.

UNIVERSITY WRITING

The University Writing Program (http://www.gwu.edu/~uwp) provides comprehensive writing instruction to all bachelor's degree-seeking students in all schools and colleges of the University. In their freshman year, undergraduate students take UW 1020 University Writing, which is offered in a variety of topic-specific sections. Students subsequently take two Writing in the Disciplines (WID) courses—regular, content-area courses that include a writing component and are offered by departments and programs throughout the University. Ideally, students complete WID courses during their sophomore and junior years. Courses indicated with "W" in the Schedule of Classes fulfill the WID University Writing Program requirements. WID courses must total a minimum of 6 credits.

FACULTY

Associate Professors C. Gamber, D. Malone-France (*Executive Director*), M. Mullen, R. Riedner (*Chair*), P. Ryder, C. Smith, A. Wilkerson

Assistant Professors J. Donovan, J. Dueck, W. Fletcher *(Teaching)*, S. Friedman, C. Hayes, R. Kristensen, K.A. Larsen *(Teaching),* G. Mantler, J. McCaughey, P.S. Presser *(Teaching),* S. Salchak, H. Schell, M. Svoboda, P. Troutman, Z. Wolfe, C. Zink

Adjunct Professors E. Johnston, J.Y. Lee, B. Tomilson

Teaching Instructors K. Howell, R.A. Marcus, D.P. Myers, M. Riley

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

UW 1010. College Academic English. 3 Credits.

UW 1015. Writing Sem. Summer Scholars. 3 Credits.

UW 1020. University Writing. 4 Credits.
University-level, independent research and writing. Learning to frame research questions, identify and analyze supportive and contradictory evidence, employ a variety of research methods, and use the ideas of other writers appropriately. Developing strategies to draft and revise clear, engaging prose for a variety of purposes and audiences. Thematically oriented seminars; texts and course topics vary among instructors. For topics see www.gwu.edu/~uwp/fyw/uw20-courses.html.

UW 2020. Advanced Topics in Writing. 3 Credits.
For a variety of purposes and audiences, students frame scholarly research questions, identify and analyze supportive and contradictory evidence, employ a variety of research methods, and use the ideas of other writers appropriately. Focus on the norms of writing in particular fields, including rhetorical approaches and stylistic conventions.

UW 2020W. Advanced Topics in Writing. 3 Credits.
For a variety of purposes and audiences, students frame scholarly research questions, identify and analyze supportive and contradictory evidence, employ a variety of research methods, and use the ideas of other writers appropriately. Focus on the norms of writing in particular fields, including rhetorical approaches and stylistic conventions.

UW 2031. Equality & the Law. 3 Credits.
Introduction to how lawyers and legal scholars research and write about specific disputes that arise in the context of complex social issues. The institutional assumptions about the content and style of legal writings. Briefs, legal memoranda, law review articles, resolutions, and many other specialized legal writing forms.

UW 2031W. Equality & the Law. 3 Credits.

UW 2111. Preparation for Peer Tutors in Writing. 3 Credits.
For undergraduates accepted as tutors in the Writing Center: study and practice of techniques for prewriting, writing, and revision; readings on collaborative learning, the composing process, composition theory, cognitive psychology, critical thinking, and the teaching of writing; observation and exercises in writing, peer review, and tutoring. Limited to 15 students.

UW 2111W. Preparation for Peer Tutors in Writing. 3 Credits.
For undergraduates accepted as tutors in the Writing Center: study and practice of techniques for prewriting, writing, and revision; readings on collaborative learning, the composing process, composition theory, cognitive psychology, critical thinking, and the teaching of writing; observation and exercises in writing, peer review, and tutoring. Limited to 15 students.

UW 6213. Theory/Prac. Teaching Writing. 3 Credits.

WOMEN'S, GENDER, AND SEXUALITY STUDIES

Part of the Columbian College of Arts and Sciences' arts and humanities programs, the Women's, Gender, and Sexuality Studies program examines women's lives, literature, histories, and cultures through the lens of feminist theory and practice, establishing gender and sexuality as fundamental categories of analysis. Gender and sexuality are examined as they intersect with race, class, nationality, and ethnicity. The program strengthens a student's ability to gain knowledge of contemporary feminist theories and research methods, and provides interdisciplinary perspectives from which to study the diversity of the human experience. Classroom study is supplemented by the diverse resources of the nation's capital as students experience and participate in the making of women's history in Washington, D.C.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in women's, gender, and sexuality studies (p. 441)
- Combined programs (p. 443)

Minors

- Minor in LGBT and sexuality studies (p. 443)
- Minor in women's, gender, and sexuality studies (p. 443)

GRADUATE

Master's programs

- Master of Arts in the field of public policy-women's, gender, and sexuality studies (p. 444)
- Master of Arts in the field of women's, gender, and sexuality studies (p. 445)

CERTIFICATE

- Graduate certificate in women's, gender, and sexuality studies (p. 445)

FACULTY

Associate Professors E. Chapman, C. Deitch, K. Mikyong, D. Moshenberg (*Director*), K. Pemberton, R. Riedner

Assistant Professor J. Nash

Adjunct Professors B. Morris, T. Ramlow

Professorial Lecturer M. Frost

Committee on Women's Studies N. Cahn, E. Chacko, L. Chang, K. Daiya, C. Deitch, C. Gamber, B. Gault, C.E. Harrison, H. Hartmann, L. Jacobson, D. Moshenberg, J. Nash, B. Obler, K. Pemberton, R. Riedner, G. Weiss, S. Wolchik, A. Zucker

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: Excluding students enrolled in the Women's Studies Program, completion of WSTU 2120 Intro to Women's Studies and WSTU 2125 Varieties of Feminist Theory or equivalent, or permission of instructor, is prerequisite to all graduate-level women's studies courses.

WSTU 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

WSTU 1020. Approaches to Women's History. 3 Credits.
Exploration of critical periods of intellectual and cultural change in Western societies as influenced by and affecting women. Examination of images of women and of changing ideal types of femininity and masculinity. Aspects of law, religion, art, culture, work, and politics in relation to these topics. Same as HIST 1020.

WSTU 2120. Intro to Women's Studies. 3 Credits.
A multidisciplinary examination of historical conditions, cultural norms, and social institutions that define women's status in Western culture. Experiences of girls and women in various racial–ethnic, class, and age groups. Alternative visions for women's (and, by implication, men's) roles and status.

WSTU 2120W. Intro to Women's Studies. 3 Credits.
A multidisciplinary examination of historical conditions, cultural norms, and social institutions that define women's status in Western culture. Experiences of girls and women in various racial–ethnic, class, and age groups. Alternative visions for women's (and, by implication, men's) roles and status. Sophomore standing required.

WSTU 2121. The Anthropology of Gender: Cross-Cultural Perspectives. 3 Credits.
Anthropological representations of gender relations in "other" cultures have provided important case material for feminist theorizing of sex differences and gender roles and statuses. How a cross-cultural approach can inform our understanding of gender. Same as ANTH 2501.

WSTU 2125. Varieties of Feminist Theory. 3 Credits.
Classical and contemporary texts on feminist explanations of women's status. Relationships within the sex/gender system and arrangements based on class and race. Evaluation, through the lens of feminist theory, of several academic disciplines in the sciences, social sciences, and humanities. Prerequisite: WSTU 1020 or WSTU 2120 or permission of instructor.

WSTU 2135. A Study of Women and Media. 3 Credits.
The role media plays in women's lives. The limits and effects of a "dominant" media; representations of women in print media and television, especially advertising, and in books and film. How women have attempted to articulate a culture that serves their personal, political, and social interests.

WSTU 2380. Sexuality in US Cultural Hist. 3 Credits.
Examination of the changing social organization and meaning of sexual practices and desires in American culture, with particular attention to the relationship between sexuality and gendered racial and class identities and politics. Same as AMST 2380/ HIST 2380.

WSTU 3136. Chinese Women in Myth, Literature, and Film. 3 Credits.
Women's position in Chinese cultural and political life from prehistoric myth to the present time. Confucian writing, traditional theatre, and films and novels set in China. A general survey of Chinese history establishes the context for discussions of cultural and political phenomena, such as foot binding and the one-child policy. Course conducted in English. Same as CHIN 3136.

WSTU 3136W. Chinese Women in Myth, Literature, and Film. 3 Credits.
Women's position in Chinese cultural and political life from prehistoric myth to the present time. Confucian writing, traditional theatre, and films and novels set in China. A general survey of Chinese history establishes the context for discussions of cultural and political phenomena, such as foot binding and the one-child policy. Course conducted in English. (Same as CHIN 3136W).

WSTU 3170. Selected Topics. 0-4 Credits.
Examination and analysis of central issues in women's studies, such as women and difference, women in media, women and violence, athletics and gender. Topic changes each semester; may be repeated for credit.

WSTU 3170W. Selected Topics. 0-4 Credits.
Examination and analysis of central issues in women's studies, such as women and difference, women in media, women and violence, athletics and gender. Topic changes each semester; may be repeated for credit.

WSTU 3195. Undergraduate Research. 1-3 Credits.
A written proposal approved by the member of the faculty who will supervise the research is required prior to registration.

WSTU 3235. Women and Law. 3 Credits.
Contemporary legal issues that affect women in the United States. Using legal texts and related articles, the course considers a range of theories and documents that are relevant to issues such as violence against women, marriage and divorce, employment, immigration, and reproductive rights.

WSTU 3281. Women in Judaism. 3 Credits.
Jewish women's spirituality as reflected in personal writings, ritual, liturgy, and midrash. Jewish women's history and legal status. Same as REL 3281.

WSTU 3352. Women in the United States I. 3 Credits.
Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. (Same as AMST 3352, HIST 3352).

WSTU 3352W. Women in the United States I. 3 Credits.
Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. Same as HIST 3352/ AMST 3352.

WSTU 3353. Women in the United States II. 3 Credits.
Continuation of WSTU 3352. Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. (Same as AMST 3353, HIST 3353).

WSTU 3362. African American Women's History. 3 Credits.
Addresses the history of African American women's labor, cultural expression, institution-building, activism and strategies to combat oppression from the antebellum period through the late 20th century. Investigates the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement and African American women's experiences. (Same as HIST 3362, AMST 3362).

WSTU 3362W. African American Women's History. 3 Credits.
Addresses the history of African American women's labor, cultural expression, institution-building, activism and strategies to combat oppression from the antebellum period through the late 20th century. Investigates the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement and African American women's experiences. (Same as HIST 3362W, AMST 3362W).

WSTU 3410. Lesbian History and Culture. 3 Credits.
Examination of lesbian identity, community, and legal rights from a scholarly feminist perspective.

WSTU 3435. Queer Politics. 3 Credits.
The history of "Lesbian, Gay, Bisexual, Transgender, and Queer" (LGBTQ) politics in the United States. Analysis of influences and intersections of race and ethnicity, class, gender identity and expression, sexuality, sex, and age. Contemporary policy debates relevant to Queer politics.

WSTU 3470. Sexuality and Law. 3 Credits.
Exploration of the ways in which the law has affected individuals' ability to express their sexuality, with a primary focus on sexual orientation and issues such as marriage, adoption, voting rights, sexual harassment, and military service.

WSTU 3481. Women in Islam. 3 Credits.
The ways in which Islam has articulated gender identity and male–female relationships, and conversely, how women have constructed, interpreted, and articulated Islam and their places within it. Same as REL 3481.

WSTU 3530. Women in Africa. 3 Credits.
African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. Same as HIST 3530.

WSTU 3820. Global Domestic Labor. 3 Credits.
Consideration of women's paid and unpaid domestic labor, including care work, in the context of global and globalizing political and cultural economies.

WSTU 3845. Global Women's Prison. 3 Credits.
This course examines women's confinement and incarceration in the context of global and globalizing political and cultural economies.

WSTU 3881. Women, Gender, and Religion in China. 3 Credits.
A historical introduction to the concepts of body, gender, and womanhood in Confucian, Daoist, Buddhist, and popular Chinese religious traditions. Women's roles in religious ritual and practices; the influence of Christianity and modernity. Same as REL 3881.

WSTU 3981. Women in Western Religion. 3 Credits.

WSTU 4183. Practicum in Women's Studies. 3 Credits.
Study of the changing status of women through supervised placement in public and private agencies engaged in policymaking, education, political action, and research. Usually for seniors. Placement arrangements must be made the semester prior to registration; departmental permission is required. (Same as WSTU 6283).

WSTU 4199. Senior Seminar. 3 Credits.
For students completing a major or minor in women's studies. Writings of contemporary scholars and writers whose work provides critical frameworks for feminist scholarship and research. Individual or collaborative research projects are presented and submitted as written papers.

WSTU 6220. Fundamentals of Feminist Theory. 3 Credits.
A survey of historical theories significant to feminist thought, such as liberalism, socialism, evolution, psychoanalysis, and gendered spheres of social action. How these theories were revived and revised by the Second Wave of feminism since the 1960s. Brief examination of postmodernist and Third Wave feminist theorizing.

WSTU 6221. Research Issues in Women's Studies. 3 Credits.
Analysis of the contribution of feminist or gender-relations perspectives from humanities and social science disciplines to the issues and methods of social research and social policy and practice. Topics include a review of feminist frameworks, a critique and re-evaluation of traditional academic disciplines, and analysis of current research on and for women.

WSTU 6225. Contemporary Feminist Theory. 3 Credits.
Developments in feminist theory in the past ten years, with a primary focus on American feminism and its relationship to queer theory and sexuality studies.

WSTU 6230. Global Feminisms. 3 Credits.
The individuals, groups, and policies that shape global agenda for women; local and international fora in which global feminisms are forged.

WSTU 6238. Feminist Ethics and Policy Implications. 3 Credits.
Feminist critiques of traditional ethical reasoning; alternative feminist ethical frameworks examined and applied to contemporary social problems (e.g., respecting cultural differences, dependency, disability). Same as PHIL 6238. Prerequisite: Phil 2125 or 2131 or permission of instructor.

WSTU 6240. Women and Public Policy. 3 Credits.
Analysis of gender-related U.S. policy issues, such as domestic violence, military service, abortion rights, equal employment opportunity, child and dependent care, welfare, social security, and international development assistance.

WSTU 6241. Women and the Law. 3 Credits.
Legal status of women in the United States on both the federal and state levels. Emphasis on constitutional equality, employment law, family law, reproduction and sexuality, and the criminal justice system.

WSTU 6251. Women and Writing. 3 Credits.
Selected topics in the traditions, theory, and texts of women's literary production and culture. Same as ENGL 6540.

WSTU 6257. Gender and Sexuality. 3 Credits.
Study of new theoretical and methodological approaches developed in the anthropology of gender. Topics include postcolonialism, sexuality, and literary representations of gender. Same as ANTH 6501.

WSTU 6265. Women, Welfare & Poverty. 3 Credits.
Examination of how the causes and consequences of poverty differ for women and men; how race, class, and gender shape policy responses to poverty. The history of family assistance policy in the United States and the impact of various welfare reform efforts. Same as SOC 6265.

WSTU 6266. Gender & Criminal Justice. 3 Credits.
How understandings, practices, and theories of gender shape the workings of criminal justice systems, including issues of criminality and responses to crime, victimization and violence, and definitions of illegal behaviors. Same as SOC 6266.

WSTU 6268. Race, Gender and Class. 3 Credits.
How social structures are constructed through race, gender, and class and how they shape experience. The intersections of race, gender, and class in education, science, politics, labor markets, and social welfare policies. Same as SOC 6268.

WSTU 6270. Seminar: Selected Topics. 3 Credits.
Investigation of a current policy issue of particular concern to women, or consideration of women's status in a particular social system. Topics have included women and health; sexualities; women and Judaism; black women; gender, race, and class. May be repeated for credit.

WSTU 6271. Gender and Society. 3 Credits.
Examination of current empirical and theoretical work on gender as an organizing principle of social relations. Consideration of the relationship of gender to sex and sexuality. Same as SOC 6271.

WSTU 6280. Independent Study. 3 Credits.
May be repeated for credit. Arrangements must be made with sponsoring faculty member prior to registration.

WSTU 6283. Practicum in Women's Studies. 3-6 Credits.
Study of the changing status of women through supervised assignment to public and private agencies engaged in policymaking, education, political action, and research. Placement arrangements must be made the semester prior to registration. Graduate students may take the course for either 3 or 6 credits, with substantial additional research and writing of a case study required for 6 credits. (Same as WSTU 4183).

WSTU 6295. Independent Research in Women's Studies. 1-3 Credits.
Individual library or field research. Arrangements must be made with the sponsoring faculty member prior to registration; a written proposal is required.

WSTU 6430. Gender, Sexuality, and American Culture. 3 Credits.
The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. Pre-Columbian settlement to 1876. Same as AMST 6430/ HIST 6430.

WSTU 6431. Gender, Sexuality, and American Culture. 3 Credits.
Continuation of WSTU 6430. The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. 1877 to present. Same as AMST 6431/ HIST 6431.

WSTU 6435. Readings on Women in American History. 3 Credits.
Important works in American women's history; evolution of the field in historiographical context. Same as AMST6435/HIST 6435.

WSTU 6998. Thesis Research. 3 Credits.

WSTU 6999. Thesis Research. 3 Credits.

WSTU 8275. Women and Health. 3 Credits.
Theoretical and empirical analyses of women's health: how women's health is constructed by medical, psychological, and critical theorists; how sexism, racism, and classism contribute to women's health problems; and identification of conditions that lead to optimal health and well-being. Same as PSYC 8275.

BACHELOR OF ARTS WITH A MAJOR IN WOMEN'S, GENDER, AND SEXUALITY STUDIES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 73).

Code	Title	Credits
Required		
(9 credits)		
WSTU 2120	Intro to Women's Studies	
or WSTU 2120W	Intro to Women's Studies	
WSTU 2125	Varieties of Feminist Theory	
or AMST 2125	Varieties of Feminist Theory	
WSTU 4199	Senior Seminar	
One course from each of the following five groups (15 credits):		
Race, ethnicity, and class		
WSTU 3362	African American Women's History	
or WSTU 3362W	African American Women's History	
or AMST 3362	African American Women's History	
or AMST 3362W	Black Women in U.S. History	
or HIST 3362	African American Women's History	
or HIST 3362W	African American Women's History	
AMST 2410	20th-Century U.S. Immigration	
or HIST 2410	20th-Century U.S. Immigration	
ENGL 1610	Introduction to Black American Literature I	
or ENGL 1610W	Introduction to Black American Literature I	
ENGL 1611	Introduction to Black American Literature II	
or ENGL 1611W	Introduction to Black American Literature II	
ENGL 3570	19th-Century Black Literature	
ENGL 3960	Asian American Literature	
or ENGL 3960W	Asian American Literature	
HIST 3360	African American History to 1865	
or AMST 3360	African American History to 1865	
HIST 3361	African American History Since 1865	
or AMST 3361	African American History Since 1865	
PHIL 2125	Philosophy of Race and Gender	
or PHIL 2125W	Philosophy of Race and Gender	
Global/transnational		
CHIN 3136W	Chinese Women in Myth, Literature, and Film	
or WSTU 3136W	Chinese Women in Myth, Literature, and Film	
WSTU 2121	The Anthropology of Gender: Cross-Cultural Perspectives	
or ANTH 2501	The Anthropology of Gender: Cross-Cultural Perspectives	
WSTU 3481	Women in Islam	
or REL 3481	Women in Islam	
WSTU 3881	Women, Gender, and Religion in China	
or REL 3881	Women, Gender, and Religion in China	
WSTU 3820	Global Domestic Labor	
WSTU 3845	Global Women's Prison	
WSTU 3530	Women in Africa	
or HIST 3530	Women in Africa	
ENGL 1710	Introduction to Postcolonial Literature and Film I	
or ENGL 1710W	Introduction to Postcolonial Literature and Film I	
ENGL 1711	Introduction to Postcolonial Literature and Film II	

or ENGL 1711W	Introduction to Postcolonial Literature and Film II
ENGL 3730	Topics in Postcolonial Literature and Film
or ENGL 3730W	Topics in Postcolonial Literature
SPAN 3570	Latin American Women Writers
Sexualities	
WSTU 2380	Sexuality in US Cultural Hist
or HIST 2380	Sexuality in US Cultural Hist
or AMST 2380	Sexuality in US History
WSTU 3410	Lesbian History and Culture
WSTU 3435	Queer Politics
ENGL 3910	Disability Studies
WSTU 3470	Sexuality and Law
ENGL 3980	Queer Studies
or ENGL 3980W	Queer Studies
Humanities	
WSTU 1020	Approaches to Women's History
or HIST 1020	Approaches to Women's History
WSTU 2135	A Study of Women and Media
CHIN 3136W	Chinese Women in Myth, Literature, and Film
or WSTU 3136W	Chinese Women in Myth, Literature, and Film
WSTU 2380	Sexuality in US Cultural Hist
or HIST 2380	Sexuality in US Cultural Hist
or AMST 2380	Sexuality in US History
WSTU 3352	Women in the United States I
or HIST 3352	Women in the United States to 1865
or AMST 3352	Women in the United States to 1865
WSTU 3353	Women in the United States II
or HIST 3353	Women in the United States II
or AMST 3353	Women in the United States II
WSTU 3362	African American Women's History
or HIST 3362	African American Women’s History
or AMST 3362	African American Women's History
WSTU 3481	Women in Islam
or REL 3481	Women in Islam
WSTU 3530	Women in Africa
or HIST 3530	Women in Africa
WSTU 3981	Women in Western Religion
or REL 2981	Women in Western Religion
ENGL 3730	Topics in Postcolonial Literature and Film
or ENGL 3730W	Topics in Postcolonial Literature
ENGL 3840	Gender and Literature
or ENGL 3840W	Gender and Literature
ENGL 3980	Queer Studies
or ENGL 3980W	Queer Studies
SPAN 3570	Latin American Women Writers
PHIL 2125	Philosophy of Race and Gender
or PHIL 2125W	Philosophy of Race and Gender
Social science	
SOC 2175	Sociology of Sex and Gender
or SOC 2175W	Sociology of Sex and Gender
PSYC 3150	Psychology of Sex Differences
WSTU 2121	The Anthropology of Gender: Cross-Cultural Perspectives
or ANTH 2501	The Anthropology of Gender: Cross-Cultural Perspectives
WSTU 3981	Women in Western Religion
PSC 2225	Women and Politics
ANTH 3504	Illness, Healing, and Culture
ANTH 3507	Kinship, Family, and Community
ANTH 3513	Anthropology of Human Rights
or ANTH 3513W	Anthropology of Human Rights
WSTU 4183	Practicum in Women's Studies
Electives	

Three additional courses (9 credits) from any of the above lists or any women's, gender, and sexuality studies (WSTU/WGSS) courses.

No one course may count for more than one category.

At least 27 of the required 33 credits must be taken in courses at the 2000 level or above.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must attain a grade-point average of at least 3.7 in courses counted for the Women's Studies major and 3.3 overall; receive a grade of *A* in WSTU 4199 Senior Seminar ; and submit an honors paper to the Women's Studies Program. Upon faculty review of the honors paper, students may be recommended for graduation with Special Honors.

COMBINED PROGRAM, WOMEN'S, GENDER, AND SEXUALITY STUDIES

REQUIREMENTS

The Women's Studies program offers combined bachelor of arts with a major in women's, gender, and sexuality studies and master of arts in the field of women's, gender, and sexuality studies or in the field of public policy–women's, gender, and sexuality studies degree programs. Undergraduate students take a specified number of graduate credits as part of their degree program, thereby decreasing the number of credits normally required for the master's degree.

Students interested in either of these combined degree programs should consult the Women's Studies Program office (http://womensstudies.columbian.gwu.edu) for requirements by the beginning of their junior year.

MINOR IN LGBT AND SEXUALITY STUDIES

REQUIREMENTS

The following requirement must be fulfilled: 18 credits

Code	Title	Credits
At least two courses (6 credits) from the following:		
WSTU 2120	Intro to Women's Studies	
or WSTU 2120W	Intro to Women's Studies	
WSTU 2380	Sexuality in US Cultural Hist	
or AMST 2380	Sexuality in US History	
or HIST 2380	Sexuality in US Cultural Hist	
ENGL 3830	Topics in Literary Theory and Cultural Studies	
or ENGL 3830W	Topics in Literary Theory and Cultural Studies	
ENGL 3980	Queer Studies	
or ENGL 3980W	Queer Studies	
Four additional courses (12 credits) chosen from the courses listed above or following:		
ENGL 3840	Gender and Literature	
or ENGL 3840W	Gender and Literature	
PHIL 2125	Philosophy of Race and Gender	
or PHIL 2125W	Philosophy of Race and Gender	
SOC 2175	Sociology of Sex and Gender *	
WSTU 2121	The Anthropology of Gender: Cross-Cultural Perspectives	
or ANTH 2501	The Anthropology of Gender: Cross-Cultural Perspectives	
PSYC 3150	Psychology of Sex Differences *	
WSTU 3210	Athletics and Gender	
WSTU 3410	Lesbian History and Culture	
WSTU 3435	Queer Politics	
WSTU 3470	Sexuality and Law	

*Indicates course requires prerequisites or permission of instructor.

Note: No more than two courses (6 credits) may count towards a student's major and the LGBT and sexuality studies minor.

MINOR IN WOMEN'S, GENDER, AND SEXUALITY STUDIES

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
WSTU 2120	Intro to Women's Studies	

or WSTU 2120W	Intro to Women's Studies
WSTU 2125	Varieties of Feminist Theory
or AMST 2125	Varieties of Feminist Theory
Electives	
Four additional courses (12 credits), which may include WSTU courses, any of the courses listed below, or courses approved by an advisor. At least three courses (9 credits) must be at the 2000-level or above.*	
ENGL 3560	American Realism
or ENGL 3560W	American Realism
ENGL 3730	Topics in Postcolonial Literature and Film
or ENGL 3730W	Topics in Postcolonial Literature
ENGL 3840	Gender and Literature
or ENGL 3840W	Gender and Literature
PHIL 2125	Philosophy of Race and Gender
or PHIL 2125W	Philosophy of Race and Gender
PSC 2225	Women and Politics
PSYC 3150	Psychology of Sex Differences
SPAN 3570	Latin American Women Writers
SOC 2175	Sociology of Sex and Gender

*This statement reflects a change from the print version of the 2015-16 Bulletin.

MASTER OF ARTS IN THE FIELD OF PUBLIC POLICY WITH A CONCENTRATION IN WOMEN'S, GENDER, AND SEXUALITY STUDIES

OVERVIEW

A master's degree program in women's, gender, and sexuality studies offers a grounding in both feminist theory and empirical knowledge about the condition of women in the United States and around the world. Students may tailor an interdisciplinary program to meet a wide array of interests in either applied women's, gender, and sexuality studies or in advanced interdisciplinary or discipline-based scholarship.

Graduates of the program apply their knowledge and skills to careers in government and as teachers, researchers, lobbyists, public affairs specialists, and advocacy organizations staff members; approximately one-third of program graduates go on to earn doctoral or other professional degrees. Credits earned in this program may be applied toward the Ph.D. in public policy, gender and social policy (https://womensstudies.columbian.gwu.edu/phd-public-policy-gender-and-social-policy) degree program.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (https://womensstudies.columbian.gwu.edu/masters-program) for additional information.

Program Requirements

The following requirements must be fulfilled: 36 credits, with or without a thesis.
Required

WGSS 6220: Fundamentals of Feminist Theory (or alternative approved by advisor)

WGSS 6221: Research Issues in Women's Studies

WGSS 6240: Women and Public Policy

Public policy core

ECON 6217: Survey of Economics I (PPPA 6002 or PPPA 6017 may be substituted with permission)

PPPA 6002: Research Methods and Applied Statistics

PPPA 6006: Policy Analysis

PPPA 6010: Politics & The Policy Process (advisor will approve alternatives when PPPA 6010 is not offered)

One of the following options:

Option A

WGSS 6998: Thesis

& WGSS 6999: Thesis

Option B

WGSS 6283: Practicum in Women's Studies (taken for 6 credits)

Option C

WGSS 6295: Independent Research in Women's Studies

& WGSS 6283: Practicum in Women's Studies (taken for 3 credits)

Electives

9 credits in elective courses.

Master's comprehensive examination

All degree candidates are required to pass a master's comprehensive examination.

MASTER OF ARTS IN THE FIELD OF WOMEN'S, GENDER, AND SEXUALITY STUDIES

A master's degree program in women's, gender, and sexuality studies offers a grounding in both feminist theory and empirical knowledge about the condition of women in the United States and around the world. Students may tailor an interdisciplinary program to meet a wide array of interests in either applied women's, gender, and sexuality studies or in advanced interdisciplinary or discipline-based scholarship.

Graduates of the program apply their knowledge and skills to careers in government and as teachers, researchers, lobbyists, public affairs specialists, and advocacy organizations staff members; approximately one-third of program graduates go on to earn doctoral or other professional degrees.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (https://womensstudies.columbian.gwu.edu/masters-program) for additional information.

Program Requirements

The following requirements must be fulfilled: 36 credits, with or without a thesis.

Required

WGSS 6220: Fundamentals of Feminist Theory (or an alternative course approved by the advisor)

WGSS 6221: Research Issues in Women's Studies

WGSS 6225: Contemporary Feminist Theory (or an alternative course approved by the advisor)

One of the following options:

Option A

WGSS 6998: Thesis Research

& WGSS 6999: Thesis Research

Option B

WGSS 6283: Practicum in Women's Studies (taken for 6 credits)

Option C

WGSS 6295: Independent Research in Women's Studies

& WGSS 6283: Practicum in Women's Studies (taken for 3 credits)

Electives

12 credits in a discipline or topical concentration approved by advisor.

9 credits in additional elective courses.

Master's Comprehensive Examination

All candidates are required to pass a master's comprehensive examination.

GRADUATE CERTIFICATE IN WOMEN'S, GENDER, AND SEXUALITY STUDIES

OVERVIEW

The graduate certificate in women's, gender, and sexuality studies is offered to students currently enrolled in M.A. and Ph.D. degree programs at GW other than women's studies and to qualified non-degree students who have at least a bachelor's degree. The program provides students with an opportunity to think and learn about gender in a systematic and integrated manner from a variety of methodological approaches. The certificate is designed to provide an interdisciplinary course of study on women and gender to enrich a student's disciplinary or professional training.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (https://womensstudies.columbian.gwu.edu/graduate-certificate-womens-gender-and-sexuality-studies) for additional information.

REQUIREMENTS

Effective Fall 2017, all WSTU courses will be referred to as WGSS courses in the Bulletin and Schedule of Classes.

The following requirements must be fulfilled: 12 credits, including 6 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
WSTU 6220	Fundamentals of Feminist Theory	
WSTU 6221	Research Issues in Women's Studies	
Electives		

6 credits in elective courses selected from graduate-level Women's Studies (WSTU) courses and/or courses from other departments in consultation with the advisor.

SCHOOL OF BUSINESS

Dean L.A. Livingstone
Vice Dean J. Spencer
Associate Deans V. Choudhury, A. Gore, G. Jabbour, L. Moersen

The School of Business was founded in 1928 on the premise that business and government might become partners in promoting national prosperity and international development. Initially known as the School of Government, with degree programs that integrated business and politics at national and international levels, the School of Business has a history of professional development of individuals assuming leadership roles in society. The School has eight departments–Accountancy, Decision Sciences, Finance, Information Systems and Technology Management, International Business, Management, Marketing, and Strategic Management and Public Policy. The use of a multidisciplinary approach in educational programming helps prepare both the generalist and specialist for professional careers in today's complex organizational society.

The School of Business's undergraduate and graduate programs in business administration and accounting are accredited by AACSB International.

Mission Statement

The mission of the School of Business is to have a lasting intellectual impact by offering quality education through innovative programs that provide theoretical frameworks and real-world learning experiences; engaging in rigorous scholarship that advances knowledge in the management of organizations in the global environment; and contributing as a local, national, and global citizen. The School accomplishes this within a community built upon respect, integrity, and active engagement.

Vision

The School of Business sets itself apart as a thought leader at the nexus of the private, public, and nonprofit sectors. Recognized for advancing knowledge on the role of organizations in the global arena, its graduates possess the multidisciplinary knowledge, critical-thinking skills, and ethical standards to make a positive impact on economies and societies.

Strategic Goals

The School of Business's strategic goals address three themes; enhancing global focus, leveraging location, and creating multidisciplinary opportunities:

- The School seeks to enhance its global focus, encouraging prosperity globally by leveraging existing strengths and building on the School's significant global reputation and reach.
- The School leverages its location by developing competitive advantage and differentiation, building on the distinctive capabilities associated with the School's unique position in the heart of the nation's capital.
- The School creates multidisciplinary opportunities, advancing innovation and the School's impact on economies and societies by being a catalyst for cross-functional programs and research that create new prospects for students and cutting-edge research.

Educational Goals

The School of Business offers a distinctive educational experience to prepare global business leaders through a portfolio of niche programs that emphasize academic rigor, learning outcomes, and teaching excellence in both delivery and content.

Intellectual Contribution Goal
The School of Business engages in scholarly research that contributes to the body of knowledge related to improving the management and performance of organizations.

Service and Outreach Goal
The School of Business engages as citizen-leaders in the communities of which it is a part.

REGULATIONS

- **Undergraduate Programs (p. 447)**
  - Advising (p. 448)
  - Graduation Requirements (p. 448)
  - Academic Standing (p. 448)
  - Undergraduate Policies (p. 448)
- **Graduate Programs (p. 449)**
  - Entrance Requirements (p. 449)
  - English Language Requirements for International Students (p. 449)
  - Transfer Within the School (p. 449)
  - Readmission (p. 449)
  - General Requirements (p. 449)
  - Independent Study Plan (p. 450)
  - Students from Other Schools Within the University (p. 450)
  - Academic Standing (p. 448)
  - Academic Probation (p. 450)
  - Grades of F (p. 451)
  - Incompletes (p. 451)
  - Withdrawing From a Course (p. 451)
  - Thesis (p. 451)

Undergraduate Programs

At the undergraduate level, the GW School of Business (GWSB) offers programs leading to the degrees of Bachelor

of Accountancy (B.Accy.), Bachelor of Business Administration (B.B.A.), and Bachelor of Science (B.S.). The programs include foundational knowledge for business in accounting, economics, mathematics, and statistics. Program curricula are designed to provide perspectives on ethical and global issues, the influence of political, social, legal and regulatory, environmental, and technological issues, and the impact of demographic diversity on organizations. B.B.A. student selects a field of concentration from among accountancy; business analytics; business economics and public policy; finance; information systems and technology management; innovation and entrepreneurship; international business; marketing; sport, event, and hospitality management; or, with faculty approval, may structure an individualized field of concentration reflecting a specific interest in management. Additionally, a minor in a non-business field is required. The B.S. program integrates the University's emphasis on interdisciplinary study at the undergraduate level by requiring one major (Finance) in the School of Business and a second major in a non-business field. Students must apply and be admitted to this competitive program.

Advising

Students entering the School of Business are assigned a professional academic advisor who advises them throughout the duration of their program. GWSB Advising Center (http://business.gwu.edu/ugrad/advising-center) staff empower students to take ownership of and responsibility for their educational experience. Students partner with advisors to successfully navigate their academic careers through conversations that range from understanding University and School requirements, exploring degree and major possibilities, overcoming academic challenges, setting goals, and finding appropriate campus resources.

Students should meet with their GWSB advisor each semester so that they remain on track for fulfilling all degree requirements. To help ensure academic success, students also are encouraged to build a support system that includes professors, faculty mentors, professional advisors, tutors, and/or counselors. In addition, assistance is available through the Division of Student Affairs (http://students.gwu.edu), Mental Health Services (http://counselingcenter.gwu.edu), Multicultural Student Services Center (http://gwired.gwu.edu/mssc/?url=mssc), International Services Office (http://internationalservices.gwu.edu), and Writing Center (http://writingprogram.gwu.edu/writing-center).

Graduation Requirements

A student must achieve the following in order to graduate:

1. A minimum of 120 credits;
2. A minimum overall grade-point average of 2.0
3. A grade-point average of at least 2.0 in all required upper-division B.B.A., B.Accy., or B.S. courses and concentration-related courses (i.e., major field grade-point average).

All courses taken at GW are included in the overall grade-point average calculation.

Academic Standing

Rules governing academic probation and suspension, described under University Regulations (p. 21), are applicable to undergraduate students in the School of Business. In addition, students are required to maintain a 2.0 grade-point average in their business core and major/concentration courses. Students who do not meet these requirements will be placed on academic probation and may be suspended from the University.

Undergraduate Policies

Pass/No Pass Option—A junior or senior student who has a cumulative grade-point average of 2.5 or above may, with approval of the instructor, the advisor, and the director of the GWSB Advising Center (http://business.gwu.edu/ugrad/advising-center), may take one upper-level elective per semester and receive a grade of *P* (Pass) or *NP* (No Pass) which is recorded on the student's transcript but is not reflected in the grade-point average. Students may not take more than one course per semester and four courses total graded on a *P/NP* basis. Under no circumstances may a student change from *P/NP* status to graded status in a course, or vice versa, after the last date to withdraw from a course. Required courses (including WID courses) may not be taken on a *P/NP* basis. A transfer student may not choose this option until their second semester of enrollment in the University.

Incomplete Grades—Conditions under which the symbol *I* (Incomplete) may be assigned are described under University Regulations (p. 21). Incomplete coursework must be completed no later than one calendar year from the last day of the examination period of the semester or summer session in which the indication of *I* was assigned. When work for the course is complete, the *I* will be replaced by the grade earned. An indication of *I* that is not changed within this period automatically becomes an *F*. The *I* cannot be changed by re-registering for the course at GW or by taking its equivalent elsewhere. In the School of Business, the conditions for granting a notation of *I* should be documented by a written contract between the faculty member and the student. The Incomplete Contract form can be found at the GWSB Advising Center (http://business.gwu.edu/ugrad/advising-center), where completed contracts are kept in a student's file.

Independent Study—A junior or senior of demonstrated capacity, with a special interest in the subject matter of a course, may be permitted to undertake study under the personal direction of a regular, full-time faculty member, in accordance with the rules of the relevant department. A petition outlining the student's specific study plan must be submitted to the GWSB Advising Center (http://business.gwu.edu/ugrad/advising-center) prior to beginning any independent study. Generally, a maximum of two independent studies in two separate semesters is permitted.

Concentration Regulations—A student may pursue up to two concentrations in the B.B.A. degree. When double counting courses between concentrations, and other degree requirements such as the minor, each concentration must have at least four unique courses. Additionally, a maximum of six credits may transfer into each concentration, including study abroad credits.

Signature Courses—Signature courses for the School of Business undergraduate degrees must be taken in residence at GW. These courses include BADM 1001 and 1002; BADM 1003; BADM 1004; BADM 2001W; BADM 3001; and BADM 4101.

Graduate Programs

At the graduate level, GWSB offers programs leading to the degrees of Master of Accountancy (M.Accy.), Master of Business Administration (M.B.A.), Master of Science in Business Analytics (M.S.B.A.), Master of Science in Finance (M.S.F.), Master of Science in Government Contracts (M.S.G.C.), Master of Science in Information Systems Technology (M.S.I.S.T.), Master of Science in Project Management (M.S.P.M.), Master of Tourism Administration (M.T.A.), and Doctor of Philosophy (Ph.D.)

Entrance Requirements

To be considered for admission, applicants must hold a bachelor's degree from a regionally accredited college or university. Admission to master's programs is highly competitive. Previous academic history, performance on the applicable entrance examination, letters of recommendation, demonstrated motivation and aptitude to undertake graduate-level work, and professional experience are all taken into consideration.

Applicants for admission to programs leading to the M.Accy., M.B.A., M.S.B.A., M.S.F., and M.T.A. degrees must submit scores on the Graduate Management Admission Test or the Graduate Record Examination. Test scores that are more than five years old are not accepted for admissions review.

English Language Requirements for International Students

Applicants who are not citizens of countries where English is the official language or who do not hold a degree from a regionally accredited U.S. institution of higher learning are required to submit scores from the Test of English as a Foreign Language (TOEFL), the academic International English Language Testing System (IELTS), or the Pearson Test of English–Academic (PTE). Exemptions from this policy (https://graduate.admissions.gwu.edu/english-language-requirements) may be possible.

The M.S.F. program requires a minimum score of 550 paper-based or 80 Internet-based on the TOEFL, or an overall band score of 6.5 on the IELTS with no individual band score below 5.5. All other GWSB graduate degree programs require a minimum TOEFL score of 600 paper-based or 100 Internet-based, or an overall band score of 7.0 on the IELTS with no individual band score below 6.0, or a score of 68 on the PTE. In some instances, an interview will be required of applicants.

Applicants for graduate teaching assistantships must have a minimum score of 600 paper-based or 100 Internet-based on the TOEFL, an overall band score of 7.0 on the IELTS with no individual band score below 6.0, or a score of 68 on the PTE.

Students with the following English language test scores are exempt from taking English for Academic Purposes (EAP) courses: TOEFL, 600 paper-based or 100 Internet-based; IELTS, overall band score of 7.0 with no individual band score below 6.0; or a score of 68 on the PTE. Students with test scores below these minimums must register for an EAP course during their first semester. Students assigned EAP courses should anticipate additional tuition expenses as well as a possible extended period of time required to complete their degree program. EAP courses do not count toward degree requirements.

Transfer Within the School

Currently enrolled students wishing to transfer from one graduate degree program to another within the School must complete a new application for admission through the appropriate degree program office. Applicants for transfer are subject to requirements in effect at the time of transfer. In addition, students must submit all required credentials by posted application deadlines for the program of application. Students must be in good academic standing (3.0 grade-point average) for transfer consideration.

Readmission

A student who withdraws, is suspended, or otherwise is absent without authorization from the University for one semester or more must make formal application for readmission to the director of the student's degree program and resubmit all supporting credentials including transcripts from previous schools attended, including George Washington University, and entrance examination scores. If readmitted, the student is subject to the rules and regulations in force at the time of return. If the student has attended one or more regionally accredited colleges or universities during absence from the University, complete official transcripts must accompany the application for readmission.

The application fee is waived (https://graduate.admissions.gwu.edu/step-step-application-process.html) for a student applying for readmission who was registered as a degree candidate at the time of last registration at the University and has not since registered at another college or university.

General Requirements

All students must complete the prescribed minimum number of credits of graduate coursework. A maximum of 6 credits of graduate coursework may be approved for transfer to the

School of Business from enrollment at GW in non-degree status or from another degree-granting school of this University or another regionally accredited college or university under the following conditions: the coursework must be approved as part of the student's program of studies; it must not have been applied to the completion of requirements for another degree; it must be at the graduate level; it must have been taken within the two years prior to acceptance into the program; and the student must have received a grade of *B* or above.

A transcript and description of the coursework must be on file before the petition can be considered. Should advanced standing be granted, the credit for a course will count but not the grade.

Although work counted toward a bachelor's degree may not be counted toward a master's degree, a student who has completed the equivalent of a Master of Accountancy or Master of Business Administration core prerequisite course with a grade of *B* or above as part of the bachelor's degree may request a waiver of that course. A grade of *B* or above is required to waive remaining core prerequisite courses on the basis of equivalent graduate-level courses completed at GW or another AACSB-accredited college or university prior to admission to the program. All courses presented for waiver consideration must have been taken within five years prior to the first semester of enrollment in the graduate program. Students should contact their degree program director for specific waiver criteria and deadlines for requesting waivers.

A full-time student may register for a minimum of 9 to a maximum of 15 credits each semester (18 for M.B.A. candidates) and 6 credits each summer session. All work for a master's degree must be completed within five years.

Students who expect to continue studies for a doctoral degree after receiving the master's degree should consult with the advisor to plan their program of study.

No credit is granted for work done in absentia or without formal instruction, except for supervised field experience, independent study, and the thesis, which may be completed in absentia with the permission of the department, designated faculty advisor, or committee concerned.

Independent Study Plan

A graduate student of demonstrated capacity, with a special interest in the subject matter of a course, may be permitted to undertake study under the personal direction of an instructor, in accordance with the rules of the appropriate department or degree program. A petition outlining the student's specific study plan must be submitted to the student's degree program director prior to beginning any independent study. The student may petition to complete a maximum of two independent studies in two separate semesters.

Students from Other Schools Within the University

Degree candidates from other schools of the University cannot register for more than a total 12 credits in GWSB courses.

Academic Standing

A graduate student who is not on academic probation or suspension for poor scholarship is considered to be in good standing. The University's general scholarship requirements, including information on grades and computing the grade-point average, appear under University Regulations (p. 21) in this Bulletin. A minimum grade-point average of 3.0 must be maintained and is required for award of a graduate degree. All graduate courses and undergraduate courses taken for graduate credit after matriculation as a degree candidate (except those audited or taken for the grade of *CR*) will be used in the calculation of the grade-point average.

Academic Probation

Students whose GPA falls below 3.0 at any point after completing 9 credits are placed on academic probation.

While on academic probation, a student:

1. Must achieve at least a 3.0 (term) GPA in each subsequent semester.
2. Must be continuously enrolled or on an approved Leave of Absence or Continuous Enrollment.
3. Must not receive a grade of *F* (Failure) in any course.
4. Must not receive the designation Incomplete (*I*) in any course.

A student who fails to meet the above four conditions will be suspended from their program.

A students may request reinstatement from a suspension by completing and submitting the Request for Reinstatement form to the Associate Dean for Graduate Programs. The request should offer a clear explanation of changed circumstances and how the student plans to raise his or her cumulative GPA to 3.0. The request must be submitted within one semester of of the suspension. Thus, a student suspended in the fall semester must request reinstatement no later than the last day of the spring semester immediately following their suspension and a student suspended in the spring or summer semester must request reinstatement no later than the last day of the fall semester immediately following their suspension.

In order to achieve the 3.0 minimum cumulative GPA, the student will be allowed to take up to 6 credits of graduate-level coursework beyond the program requirement.

A student who is below a 3.0 cumulative GPA and does not have enough credits remaining in their program to achieve the minimum GPA—including the additional 6 credits referenced above—will be dismissed. There is no appeal possible following a dismissal.

Grades of F

A master's degree candidate who receives a grade of *F* in a core, required, or elective course must repeat the course and earn a passing grade on the next attempt. Students should refer to the requirements of their degree program for additional minimum grade requirements. Once a grade of *F* is earned in a core, required, or elective course, it remains a part of the student's permanent record and is calculated into the grade-point average.

Incompletes

Conditions under which the symbol *I* (Incomplete) may be assigned and changed are described under University Regulations (p. 21). The symbol *I* must be changed by a date agreed on by the instructor and the student but usually no later than the last day of the examination period within one calendar year for the fall, spring or summer semester in which the symbol *I* is assigned. An Incomplete that is not changed within this period automatically becomes an *F*. In cases of well-documented extenuating circumstances, an instructor and a student may jointly petition the director of the student's degree program for additional time in which to complete the work of the course. Such petitions should be submitted within the same period. The symbol of *I* cannot be changed by re-registering for the course here or by taking its equivalent elsewhere. Upon submission of the assigned grade, the *I* is removed from the transcript.

Withdrawing From a Course

The School of Business requires that students requesting to withdraw from a course after the eighth week of classes (or after the fourth week for modules) must present a petition to the Dean and receive written permission. The student must be passing the class and obtain the written approval of the instructor in order for the request for withdrawal to be approved. If approved, the symbol *W* (Authorized Withdrawal) will appear on the transcript. Tuition will not be refunded.

Thesis

Students contemplating doctoral study are strongly encouraged to include the thesis as an elective in their master's program. The thesis subject should be selected as early as possible to permit effective integration with the coursework. The subject must be approved by the professor in charge of the student's field. The thesis in its final form must have the approval of the professor in charge. All theses must be submitted electronically and meet the formatting and other requirements set forth on line at GW's Electronic Theses and Dissertations Submission website (http://library.gwu.edu/etds)

Payment of tuition for the thesis entitles the candidate, during the semesters in which registered for thesis seminar and/or thesis research, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, additional time is granted. The student must, however, be enrolled continuously in the program. If the preparation of the thesis extends more than three semesters beyond the date of registration for thesis research, the student must register for the total required thesis credits again and pay additional tuition.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Accountancy (http://bulletin.gwu.edu/business/undergraduate-programs/accountancy)
- Bachelor of Business Administration (p. 452)
  - concentration in accountancy (p. 456)
  - concentration in business analytics (p. 456)
  - concentration in business economics and public policy (p. 457)
  - concentration in finance (p. 458)
  - concentration in information systems and technology management (p. 459)
  - concentration in innovation and entrepreneurship (p. 460)
  - concentration in international business (p. 460)
  - concentration in marketing (p. 461)
  - concentration in sport, event, and hospitality management (p. 462)
  - concentration in individualized field (p. 459)
- Bachelor of Science with a major in finance (p. 463)

Combined programs

- Dual degree programs (p. 467)

Minor

- Minor in business administration (p. 468)

GRADUATE

Master's programs

- Master of Accountancy (p. 469)
- Master of Science in Business Analytics (p. 470)
- Master of Science in Finance (p. 470)
- Master of Science in Information Systems Technology (p. 471)
- Master of Science in Government Contracts (p. 472)
- Master of Science in Project Management (p. 472)
- Master of Tourism Administration (p. 473)

Master of Business Administration programs

- Global Master of Business Administration (p. 474)
- Healthcare Master of Business Administration (p. 480)
- Professional Master of Business Administration (p. 481)
- World Executive Master of Business Administration (p. 487)

Combined degree programs

- Joint Master of Business Administration/Juris Doctor with the Law School (p. 488)
- Joint Master of Business Administration/Master of Arts with a focus on international business with the Elliott School of International Affairs (p. 488)
- Joint Master of Business Administration/Master of Science in Finance (p. 488)
- Joint Master of Business Administration/Master of Science in Government Contracts
- Dual Master of Business Administration/Master of Science in Information Systems Technology (p. 504)
- Joint Master of Business Administration/Master of Science in Project Management (p. 488)

Doctoral program

- Doctor of Philosophy in the field of business administration (p. 488)

CERTIFICATES

Post-Master's Certificate Program for School of Business Alumni

The School of Business offers a post-master's graduate certificate designed to assist master's degree alumni of the school in keeping apace of an ever-changing business climate. Participants may undertake a 12-credit program of study in an existing School of Business field or from a series of specially designed program offerings. Further information is available from the Office of the Dean.

Graduate Certificate Programs

In addition, the School of Business offers graduate certificate programs of study in the following fields:

- Graduate certificate in business analytics (p. 489)
- Graduate certificate in walkable urban development (p. 491)
- Graduate certificate in nonprofit management (p. 489)
- Graduate certificate in responsible management (p. 490)
- SAS certificate in business analytics (p. 491)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

- Accountancy (ACCY) (p. 1019)
- Business Administration (BADM) (p. 1058)
- Decision Sciences (DNSC) (p. 1169)
- Government Contracts (GCON) (p. 1244)
- Finance (FINA) (p. 1219)
- Information Systems and Technology Management (ISTM) (p. 1273)
- International Business (IBUS) (p. 1283)
- Management (MGT) (p. 1330)
- Marketing (MKTG) (p. 1332)
- Master of Business Administration (MBAD) (p. 1334)
- Strategic Management and Public Policy (SMPP) (p. 1474)
- Tourism Studies (TSTD) (p. 1481)

UNDERGRADUATE PROGRAMS

Bachelor's programs

- Bachelor of Accountancy (http://bulletin.gwu.edu/business/undergraduate-programs/accountancy)
- Bachelor of Business Administration (p. 452)
  - concentration in accountancy (p. 456)
  - concentration in business analytics (p. 456)
  - concentration in business economics and public policy (p. 457)
  - concentration in finance (p. 458)
  - concentration in information systems and technology management (p. 459)
  - concentration in innovation and entrepreneurship (p. 460)
  - concentration in international business (p. 460)
  - concentration in marketing (p. 461)
  - concentration in sport, event, and hospitality management (p. 462)
  - concentration in individualized field (p. 459)
- Bachelor of Science with a major in finance (p. 463)

Combined programs

- Dual degree programs (p. 467)

Minor

- Minor in business administration (p. 468)

BACHELOR OF BUSINESS ADMINISTRATION

The bachelor of business administration (B.B.A.) degree program offers general management preparation with an opportunity for specialization in a specific field of business. It represents a careful balance of structure and choice, with

flexibility that allows students to tailor their programs to reflect their individual career goals. While each student takes the same basic business core classes, many of the general education courses and courses in the field of concentration may be selected to suit the individual student.

REQUIREMENTS

The following requirements must be fulfilled: 120 credits.

Code	Title	Credits
General education and pre-business		
BADM 1001 & BADM 1002	First Year Development Course I and First Year Development Course II (*)	
or BADM 1003	Transfer Student Development	
BADM 1004	The Age of Globalization	
ECON 1011 & ECON 1012	Principles of Economics I and Principles of Economics II	
STAT 1051	Introduction to Business and Economic Statistics	
or STAT 1053	Introduction to Statistics in Social Science	
or STAT 1111	Business and Economic Statistics I	
or APSC 3115	Engineering Analysis III	
STAT 2112	Business and Economic Statistics II	
or STAT 2118	Regression Analysis	
or ECON 2123	Introduction to Econometrics	
or STAT 2123	Introduction to Econometrics	
UW 1020	University Writing	
One humanities course**		
Two science courses**		
A sequence of two math courses from the following:		
MATH 1051 & MATH 1252	Finite Mathematics for the Social and Management Sciences and Calculus for the Social and Management Sciences	
Or		
MATH 1231 & MATH 1232	Single-Variable Calculus I and Single-Variable Calculus II	

Code	Title	Credits
Business core		
ACCY 2001	Intro Financial Accounting	
ACCY 2002	Introductory Managerial Accounting	
BADM 2001W	Markets and Politics	
BADM 2301	Management Information Systems Technology	
or BADM 2301W	Mgt Information Systems Tech	
BADM 3001	Career Management Strategy	
BADM 3103	Human Capital in Organizations	
BADM 3401	Basic Marketing Management	
or BADM 3401W	Basic Marketing Management	
BADM 3501	Financial Management and Markets	
BADM 3601	Operations Management	
BADM 4101	Business Law and Ethics	
or BADM 4101W	Business Law and Ethics	
BADM 4801	Strategy Formulation and Implementation	

*Freshmen are required to take BADM 1001 and 1002; transfer students are required to take BADM 1003.

**A list of approved courses can be found on the University General Education Requirement (http://bulletin.gwu.edu/university-regulations/general-education) page.

Business concentration courses

A business concentration is required for all bachelor of business administration students. Students select a field of concentration from among accountancy; business analytics; business economics and public policy; finance; information systems and technology management; innovation and entrepreneurship; international business; marketing; sport, event, and hospitality management; or, with faculty approval, may structure an individualized field of concentration reflecting a specific interest in management. The concentration consists of five field courses plus an international field course designated by the department. The concentration must be selected no later than the second semester of the sophomore year; students should contact the advising center to declare a concentration. Students may declare two concentrations, but they should note that this may increase the number of credits required to complete the B.B.A. When double counting courses between concentrations (and other degree requirements such as the minor), each concentration must

have at least four unique courses. Additionally, the maximum number of credits may transfer into each concentration, including study abroad credits, is two courses (six credits). In all cases, students must consult the academic advisor for an appropriate international focus field course. Concentration requirements are available at the School of Business website (http://business.gwu.edu/ugrad) or at the Undergraduate Advising Center (http://business.gwu.edu/ugrad/advising-center).

Required B.B.A. concentration options:

- accountancy (p. 456)
- business analytics (p. 456)
- business economics and public policy (p. 457)
- innovation and entrepreneurship (p. 460)
- finance (p. 458)
- information systems and technology management (p. 459)
- international business (p. 460)
- marketing (p. 461)
- sport, event, and hospitality management (p. 462)
- individualized field of concentration (p. 459)

Individualized field of concentration—A B.B.A. student with a minimum GPA of 3.2 and a specific interest in an area of management not reflected by the standard B.B.A. concentrations may design and seek approval for an individualized concentration drawing upon courses across the University. Such a concentration consists of five field courses and one international focus field course selected with the guidance of faculty with expertise in the area of interest. All individualized concentration proposals must be submitted by the end of the junior year and must be approved in advance by the individualized concentration faculty review committee. Interested students should discuss their proposed concentration with their academic advisor in the GWSB Advising Center (http://business.gwu.edu/ugrad/advising-center).

Minor courses

A minor outside of the School of Business is required for this degree. Courses will vary according to minor and typically require a minimum of 18 credits. Students should reference this Bulletin and consult their academic advisor for assistance and additional information.

Elective courses

Elective courses may be numbered 1000-4999; at least 6 credits must be upper-level (numbered 2000-4999). Electives may not include LSPA (Lifestyle, Sport, and Physical Activity) courses and may include a maximum of one HLWL (Health and Wellness) course. In general, students will complete 18 credits of electives, or the minimum necessary to reach 120 credits for the degree.

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BADM 1001. First Year Development Course I. 1 Credit.
Required of all first-year students in School of Business. This course is designed to enhance students' education and begin preparation for business careers. The course meets periodically during the semester. Course fee. Restricted to students in the first year of enrollment in School of Business.

BADM 1002. First Year Development Course II. 1 Credit.
Continuation of BADM 1001. Required of all first-year students in School of Business. This course is designed to enhance students' education and begin preparation for business careers. The course meets periodically during the semester. Course fee. Restricted to students in the first year of enrollment in School of Business.

BADM 1003. Transfer Student Development. 1 Credit.
Required for all transfer students entering the School of Business. Provides information on University and School resources to assist with the student's transition. Helps students develop career-based knowledge; begin preparation for business careers; and learn the importance of civility and integrity in business discourse. Students perform service within the District of Columbia in order to apply business concepts and entrepreneurship skills. Restricted to GW School of Business students.

BADM 1004. The Age of Globalization. 3 Credits.
A multidisciplinary foundation in the globalization of people, markets, and firms. Required for all School of Business freshmen.

BADM 1900. Special Topics. 1-3 Credits.

BADM 2001. Markets and Politics. 3 Credits.
Economic and political resource allocation; social and political influences on business organizations; contemporary problems and issues.

BADM 2001W. Markets and Politics. 3 Credits.
Economic and political resource allocation; social and political influences on business organizations; contemporary problems and issues.

BADM 2301. Management Information Systems Technology. 3 Credits.
An introduction to data and information processing concepts and systems viewed from a contemporary management perspective. Emphasis on uses and applications as well as emerging managerial issues with the potential to reshape the form and function of information systems. Lab required. Prerequisite: basic knowledge of Microsoft Word, Excel, and PowerPoint.

BADM 2301W. Mgt Information Systems Tech. 3 Credits.
An introduction to data and information processing concepts and systems viewed from a contemporary management perspective. Emphasis on uses and applications as well as emerging managerial issues with the potential to reshape the form and function of information systems. Lab required. Prerequisite: basic knowledge of Microsoft Word, Excel, and PowerPoint.

BADM 3001. Career Management Strategy. 1 Credit.
Restricted to School of Business students in their junior year. The career development process, including job search strategies and formulation of a career management plan, with practice in producing a resume and interviewing for a position.

BADM 3101. Human Resource Management. 3 Credits.
Global and strategic implications of human capital policies and practices, including human resource planning, recruitment, selection, training, development, compensation, and collective bargaining. Prerequisite: BADM 1101 or PSYC 1001.

BADM 3102. Business and Government Relations. 3 Credits.
Economic and legal environment of business enterprise; social and political influences; contemporary problems and issues.

BADM 3102W. Business/Government Relations. 3 Credits.

BADM 3103. Human Capital in Organizations. 3 Credits.
An introduction and integration of concepts drawn from human resource management and organizational behavior. Application of these concepts to individual, group/team, and organizational scenarios through experiential exercises, cases, and projects. Development of skills in analyzing and evaluating human capital problems and determining appropriate solutions.

BADM 3401. Basic Marketing Management. 3 Credits.
Consumer and organizational buying behavior. Strategic marketing processes (market research, segmentation, targeting, positioning, and relationship-building). Product development and brand management, valuation and pricing, channel and logistics management, integrated marketing communications, e-commerce. Prerequisite: ECON 1012 or HONR 2044.

BADM 3401W. Basic Marketing Management. 3 Credits.
Consumer and organizational buying behavior. Strategic marketing processes (market research, segmentation, targeting, positioning, and relationship-building). Product development and brand management, valuation and pricing, channel and logistics management, integrated marketing communications, e-commerce. Prerequisites: ECON 1012 or HONR 2044.

BADM 3501. Financial Management and Markets. 3 Credits.
Introduction to financial markets, investment analysis, and financial management. Financial analysis, risk management, working capital management, capital budgeting, financial structure, cost of capital, and dividend policy. Prerequisites: ACCY 2001; ECON 1012 or HONR 2044; MATH 1221 or MATH 1231 or MATH 1252; and STAT 1051 or STAT 1053 or STAT 1111 or APSC 3115.

BADM 3601. Operations Management. 3 Credits.
Production planning concepts and analytical tools. Designing and managing production processes: facilities, equipment, process control systems. Design issues, demand forecasting, material planning, acquisition techniques. Managing the factory floor: scheduling, total quality management, continuous improvement concepts and methods. Prerequisite: STAT 1051, STAT 1053, STAT 1111 or APSC 3115.

BADM 4101. Business Law and Ethics. 3 Credits.
An introduction to practical reasoning at the intersection of business and society. Emphasis on application of ethics frameworks and core principles of business law to problems of individual, organizational, and social responsibility in business.

BADM 4101W. Business Law and Ethics. 3 Credits.
An introduction to practical reasoning at the intersection of business and society. Emphasis on application of ethics frameworks and core principles of business law to problems of individual, organizational, and social responsibility in business. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

BADM 4801. Strategy Formulation and Implementation. 3 Credits.
An integrative capstone course to develop skills in diagnosing organizational problems, formulating and selecting strategic alternatives, and recognizing problems inherent in strategy implementation. Restricted to seniors in the B.B.A., B.Accy., and SEAS business concentration programs.

BADM 4900. Special Topics. 0-3 Credits.
Experimental offering; new course topics and teaching methods.

BADM 4900W. Special Topics. 0-3 Credits.
Experimental offering; new course topics and teaching methods.

BADM 4950. Internship. 0 Credits.
School of Business undergraduates may register for this course when they wish to have an internship recorded on the transcript. The supervisor must verify that the internship has been completed for a minimum of six hours per week. An administrative fee is charged. May be repeated each semester if desired.

BADM 4995. Independent Study. 1-6 Credits.
Assigned topics with interdisciplinary focus. Admission by prior permission of advisor. May be repeated once for credit but in a separate semester.

BACHELOR OF BUSINESS ADMINISTRATION WITH A CONCENTRATION IN ACCOUNTANCY

The bachelor of business administration (B.B.A.) with a concentration in accountancy degree program provides undergraduate students with the analytical tools and conceptual framework needed to understand and record financial transactions.

The School of Business offers two degree options for students to study accountancy: the B.B.A. with a concentration in accountancy and the bachelor of accountancy (http://business.gwu.edu/undergraduate/baccy) (B.Accy.). The B.B.A. degree with an accountancy concentration is intended to be paired with a second, complementary field of concentration. For students who plan to work as an accountant, often with a CPA designation, the B.Accy. degree program is more appropriate as it offers substantially more preparation in accounting.

Accountancy is an ideal second concentration for B.B.A. students who plan to pursue careers in finance as it provides a strong background in information that underlies many financial decisions. Likewise, a second concentration in accountancy is an excellent choice for B.B.A. students with a concentration in information systems as such students often pursue jobs related to accounting information systems.

REQUIREMENTS

In addition to the requirements for the bachelor of business administration (p. 453) the concentration in accountancy requires five field courses and one international field course:

Code	Title	Credits
Field		
ACCY 3101	Intermediate Accounting I	
ACCY 3102	Intermediate Accounting 2	
ACCY 3106	Financial Statement Analysis *	
or ACCY 4501	Accounting Systems	
Two of the following:		
ACCY 3106	Financial Statement Analysis *	
ACCY 3401	Federal Income Tax:Individuals	
ACCY 3403	Advanced Tax	
ACCY 4107	Advanced Accounting	
ACCY 4301	Auditing	
ACCY 4501	Accounting Systems *	
International field		
One of the following:		
ECON 2180	Survey of International Economics	
ECON 2181	International Trade Theory and Policy	
IBUS 3001	Introduction to International Business	
IBUS 3101	Global Financial Environment	
IBUS 3301	International Business Finance	
IBUS 4401	Managing the Multinational Enterprise	
ISTM 4900	Special Topics	

*ACCY 3106 Financial Statement Analysis and ACCY 4501 Accounting Systems are options for both the required and additional field course categories. If only one is taken, it will apply to the required field course category; if both are taken, one will apply to the required field courses, and one will apply to the additional field course category.

Students should consult with the advisor for specific Bachelor of Business Administration general education courses (p. 453) that apply to this concentration

BACHELOR OF BUSINESS ADMINISTRATION WITH A CONCENTRATION IN BUSINESS ANALYTICS

The bachelor of business administration with a concentration in business analytics degree program provides students with the analytical tools and conceptual framework needed to understand and apply data and decision modeling in real life settings. Analytics is defined as the extensive use of data, statistical and quantitative models, and fact-based management to drive decisions and actions. More than just modeling and data manipulation, it is a process of transforming data into actions through analysis and insights

in the context of organizational decision making and problem solving. Combining the business analytics concentration with any other area in business, such as finance or marketing, or in other fields, such as engineering, public policy, and international affairs, may give graduates expanded career opportunities.

REQUIREMENTS

In addition to the requirements for the bachelor of business administration (p. 453) the concentration in business analytics requires five field courses and one international field course:

Code	Title	Credits
Field		
DNSC 3401	Introduction to Business Analytics	
DNSC 3402	Data Mining	
ISTM 4121	Database Principles and Applications	
Two of the following:		
DNSC 4403	Decision Models	
DNSC 4404	Essentials of Project Management	
DNSC 4900	Special Topics (Forecasting; Marketing Analytics; or Supply Chain Analytics)	
ISTM 3119	Introduction to Programming	
International field		
One of the following:		
IBUS 3001	Introduction to International Business	
IBUS 3101	Global Financial Environment	
IBUS 4401	Managing the Multinational Enterprise	
IBUS 4203	Foreign Market Analysis	
IBUS 4402	Managing in Developing Countries	
ORSC 2046	Global Organizations	
PSC 2992	Special Topics in American Politics and Government (Politics of the Internet)	
SMPP 4900	WID - Strategy and International Political Economy	

Students should consult with the advisor for specific bachelor of business administration general education courses (p. 453) that apply to this concentration.

BACHELOR OF BUSINESS ADMINISTRATION WITH A CONCENTRATION IN BUSINESS ECONOMICS AND PUBLIC POLICY

The bachelor of business administration with a concentration in business economics and public policy degree program is concerned with the continuing business–government dialogue that leads to effective decision making and equitable relations between the public and private sectors. The program is designed to help students develop the knowledge and skills useful for a wide variety of positions in public, private, for-profit, and nonprofit organizations. Students deepen their understanding of the social and legal environments that influence business and its relationships with government at all levels. Students also receive in-depth training in micro- and macroeconomic analysis; this key element of the field prepares students to perform rigorous and sophisticated analyses of the economic impacts of policy decisions on various types of institutions and organizations.

Study in this concentration also serves to ensure that students understand the workings of political systems and institutions, particularly those of the United States federal government. This understanding includes recognizing not only what government can do and achieve, but also the limits of its power and the role of private interests in driving political decision making in Congress and government agencies.

REQUIREMENTS

In addition to the requirements for the bachelor of business administration (p. 453) (p. 453)the concentration in business economics and public policy requires five field courses and one international field course:

Code	Title	Credits
Field		
ECON 2101	Intermediate Microeconomic Theory	
One of the following:		
ECON 2102	Intermediate Macroeconomic Theory	
ECON 2158	Industrial Organization	
One of the following:		
PSC 2217	Executive Branch Politics	
or PPPA 2117	Executive Branch Politics	
PSC 2101	Scope and Methods of Political Science	
One of the following:		

PSC 2216	The American Presidency
PSC 2218	Legislative Politics
One of the following:	
ANTH 3513	Anthropology of Human Rights
ECON 2136	Environmental and Natural Resource Economics
ECON 2148	Survey of Health Economics
ECON 3190	Law and Economics
GEOG 3120	World Regional Geography
MGT 3305	Human Capital Sustainability
PSC 2222	Science, Technology, and Politics
International field	
One of the following:	
ECON 2181	International Trade Theory and Policy
IBUS 3001	Introduction to International Business
IBUS 3101	Global Financial Environment
IBUS 3301	International Business Finance
SMPP 4900	WID - Strategy and International Political Economy

Students should consult with the advisor for specific Bachelor of Business Administration general education courses (p. 453) that apply to this concentration

BACHELOR OF BUSINESS ADMINISTRATION WITH A CONCENTRATION IN FINANCE

The bachelor of business administration (B.B.A.) with a concentration in finance degree program provides students with the analytical tools and conceptual framework needed to evaluate financial transactions and make financial decisions within firms. The academic program allows students to understand finance from three interrelated perspectives:

- Financial management related to capital budgeting, financial structure, financial analysis, working capital management, and dividend policy.
- Investment and portfolio management related to the valuation of stocks, bonds, and derivative contracts and the construction of efficient portfolios.
- The money and capital market related to the issuance and investment in financial instruments by banking organizations with emphasis on the consequence of interest rates and interest rate structure on valuation and risk.

Upon successful completion of the program, students might apply for professional positions such as credit analyst, equity analyst, or financial analyst with governmental agencies, for-profit corporations, and investment banks. Finance also provides an excellent foundation for graduate study in business, economics, public policy, and law.

REQUIREMENTS

In addition to the requirements for the bachelor of business administration (p. 453) the concentration in finance requires five field courses and one international field course:

Code	Title	Credits
Field		
FINA 3001	Intermediate Finance	
FINA 3101	Investment and Portfolio Management	
FINA 4001	Advanced Financial Management	
or FINA 4001W	Advanced Financial Management	
Two of the following:		
FINA 3201W	Exploring Finance w/Simulation	
FINA 3301	Money and Capital Markets	
FINA 4101	Applied Financial Securities Analysis	
FINA 4201	Real Estate Investment	
FINA 4301	Financial Derivatives	
International field		
One of the following:		
ECON 2180	Survey of International Economics	
ECON 2181	International Trade Theory and Policy	
ECON 2182	International Macroeconomic Theory and Policy	
FINA 3401	A Brief History of Finance	
or FINA 3401W	A Brief History of Finance	
IBUS 3001	Introduction to International Business	
IBUS 3101	Global Financial Environment	
IBUS 3301	International Business Finance	
IBUS 4302	International Banking	

IBUS 4303	International Monetary and Financial Issues
SMPP 4900	WID - Strategy and International Political Economy

Students should consult with the advisor for specific Bachelor of Business Administration general education courses (p. 453) that apply to this concentration

BACHELOR OF BUSINESS ADMINISTRATION, INDIVIDUALIZED CONCENTRATION

The purpose of the individualized concentration is to assist bachelor of business administration (B.B.A.) students who have a clear career objective that falls outside of the nine standard B.B.A. concentrations (http://business.gwu.edu/undergraduate/bba). The career objectives of most B.B.A. students can easily be met by one of the standard concentrations, in which case pursuing an individualized program of study is not recommended.

REQUIREMENTS

Program of study

The program of study for the B.B.A. individualized concentration varies greatly depending on the individual student's objectives. Past individualized concentrations pursued include entrepreneurship and/or small business management, health administration, human resource management, real estate development, strategic management, and supply chain management.

Proposal and application process

As part of the application process, students must create a proposal that includes the following core requirements:

- five field courses
- one international field course

Students develops their full proposal based on extensive research and with the assistance of faculty members who focus in related fields. Complete criteria and application directions can be found in the Individualized Field Application Packet (http://business.gwu.edu/wp-content/uploads/2016/08/Individualized_Field_Concentration_Packet_AUG-2016.pdf).

Two key factors to be aware of:

- GWSB students must have a 3.2 or higher cumulative GPA in order to submit an Individualized concentration proposal.
- Proposals must be submitted before the start of senior year.

Important Note

The individualized concentration application process typically takes 10 to 12 weeks from initial research to receiving the faculty committee's final decision; therefore, students should start this process no later than spring of their junior year. Students are advised not to take proposed courses prior to approval of the individualized field.

BACHELOR OF BUSINESS ADMINISTRATION WITH A CONCENTRATION IN INFORMATION SYSTEMS AND TECHNOLOGY MANAGEMENT

The bachelor of business administration (B.B.A.) with a concentration in information systems and technology management (ISTM) enables undergraduate students to acquire an in-depth understanding of information technology (IT) and the skills and analytical methods needed to design and develop the information systems (IS) that businesses find indispensable. The IT overview covers areas ranging from data communications, including the Internet and the World Wide Web, to data management. Students also learn about and have opportunities for practical experience in the structured development of information systems, programming, database design, and other techniques needed for successful IS design and develop. These IS/IT-specific skills and knowledge, coupled with an understanding of the other aspects of business acquired in the program, give students a competitive start in their chosen careers.

REQUIREMENTS

In addition to the requirements for the Bachelor of Business Administration (p. 453) the concentration in Information Systems and Technology Management requires five courses in the field and one course in the international field:

Code	Title	Credits
Field		
ISTM 3119	Introduction to Programming	
ISTM 4120	Business Systems Development	
ISTM 4121	Database Principles and Applications	
Two of the following:		
ISTM 4123	Business Data Communications	
ISTM 4130W	Writing On The Ethics of Technology	
ISTM 4215	Human-Computer Interaction	
ISTM 4900	Special Topics *	

International field	
One of the following:	
IAFF 6141	International Science and Technology Policy Cornerstone
IAFF 6158	Special Topics in International Science and Technology Policy
IBUS 3101	Global Financial Environment
IBUS 4401	Managing the Multinational Enterprise
IBUS 4402	Managing in Developing Countries
ISTM 4900	Special Topics (Management of Technology and Innovation/Innovation Ventures**)
ORSC 2046	Global Organizations
PSC 2992	Special Topics in American Politics and Government (Politics of the Internet)

*Enrollment in ISTM 4900 on topics announced in the Schedule of Classes requires ISTM program director approval.
**ISTM 4900 offered as *Management of Technology and Innovation/Innovation Ventures* may be used toward either the Field course requirement or the International Field course requirement, but not both.

Students should consult with the program director for specific Bachelor of Business Administration general education courses (p. 453) that apply to this concentration

BACHELOR OF BUSINESS ADMINISTRATION WITH A MAJOR IN INNOVATION AND ENTREPRENEURSHIP

The bachelor of business administration (B.B.A.) with a major in innovation and entrepreneurship (INEN) provides students with a broad spectrum of skills that enable them to start, manage, and grow new and/or existing businesses. Graduates are equipped to work in major organizations that develop new products, procedures, and services. The program provides students with opportunities to explore new organizational types, both for-profit and nonprofit, and to develop the skills needed to become effective consultants. The INEN concentration emphasizes practical learning and encourages students to excel in the classroom while participating in field-related activities. Exposure to scenarios designed to sharpen their ability to use fast-paced decision making, INEN students are challenged to operate with success in turbulent environments.

REQUIREMENTS

In addition to the requirements for the bachelor of business administration (p. 453) the concentration in innovation and entrepreneurship requires five field courses and one international field course:

Code	Title	Credits
Field		
MGT 3300W	Entrepreneurship	
MGT 4003	Management of the Growing Entrepreneurial Venture	
Three of the following:		
MGT 3301	Small Business Management	
MGT 3302	e-Entrepreneurship	
MGT 3303	Women's Entrepreneurial Leadership	
MGT 3305	Human Capital Sustainability	
International field		
One of the following:		
IBUS 3001	Introduction to International Business	
IBUS 3101	Global Financial Environment	
IBUS 3201	International Marketing Management	
IBUS 3301	International Business Finance	
PSC 1003	Introduction to International Politics	
SMPP 4900	WID - Strategy and International Political Economy	

Students should consult with the advisor for specific Bachelor of Business Administration general education courses (p. 453) that apply to this concentration.

BACHELOR OF BUSINESS ADMINISTRATION WITH A CONCENTRATION IN INTERNATIONAL BUSINESS

The bachelor of business administration (B.B.A.) with a concentration in international business provides students with the analytical tools and conceptual framework needed to understand the international financial, political, and economic environment; how that environment influences a firm's strategy and performance; how culture plays a role in guiding a firm's strategic activities; and how a firm can leverage home and host country resources to overcome challenges inherent in

managing a multinational enterprise. The academic program allows students to understand international business from three interrelated perspectives: international economics and finance, international marketing, and international corporate strategy.

This field provides the basic academic foundations for entry-level positions in international business, particularly in multinational corporations, international banks, and governmental agencies. Such organizations include the Export-Import Bank, Overseas Private Investment Corporation, and the Departments of Commerce, State, and Treasury, in addition to international institutions such as the World Bank and the International Finance Corporation.

REQUIREMENTS

In addition to the requirements for the bachelor of business administration (p. 453) the concentration in **i**nternational business requires five field courses, one international field course, one foreign language course, and one upper-level course.

Code	Title	Credits
Field		
IBUS 3001	Introduction to International Business	
IBUS 3101	Global Financial Environment	
Three of the following:		
IBUS 3201	International Marketing Management	
IBUS 3301	International Business Finance	
IBUS 4202	Regional Strategy for Multinationals	
IBUS 4203	Foreign Market Analysis	
IBUS 4302	International Banking	
IBUS 4303	International Monetary and Financial Issues	
IBUS 4401	Managing the Multinational Enterprise	
IBUS 4402	Managing in Developing Countries	
IBUS 4900	Special Topics	
IBUS 4995	Independent Study	
International field		
One of the following:		
ECON 2169	Introduction to the Economy of China	
ECON 2181	International Trade Theory and Policy	
ECON 2182	International Macroeconomic Theory and Policy	
ECON 2185	Economic History and Problems of Latin America	
GEOG 2145	Cultural Geography	
or GEOG 2145W	Cultural Geography	
GEOG 2146	Political Geography	
GEOG 3154	Geography of the Middle East and North Africa	
PSC 2330	Comparative Politics of Western Europe	
PSC 2442	International Organizations	
PSYC 3125	Cross-Cultural Psychology	
SMPP 4900	WID - Strategy and International Political Economy	
SOC 2168	Economic Sociology	
Additional options Include:		
One foreign language course at the intermediate I or higher level		
One upper-level course numbered 2000-4999 from any department with the exception of Art History (AH), Fine Arts (FA), Exercise and Nutrition Sciences (EXNS), International Business (IBUS), Music (MUS), or Theatre and Dance (TRDA)		

Students should consult with the advisor for specific bachelor of business administration general education courses (p. 453) that apply to this concentration.

BACHELOR OF BUSINESS ADMINISTRATION WITH A CONCENTRATION IN MARKETING

The bachelor of business administration (B.B.A.) with a concentration in marketing degree program provides students with the analytical and conceptual foundations for strategic marketing processes. These processes include market research, segmentation, targeting, positioning, integrated marketing communications, and relationship building. Students develop competencies and skills in identifying customer needs and wants; making decisions about which markets organizations should serve; designing product, service, and program offerings for these markets; planning and implementing strategies to communicate with and sell to these markets; and creating value through profitable relationships with customers as well as channel partners, suppliers, and other stakeholders.

REQUIREMENTS

In addition to the requirements for the bachelor of business administration (p. 453) the concentration in marketing requires five field courses and one international field course:

Code	Title	Credits
Field		
MKTG 3142	Consumer Behavior	
MKTG 3143	Marketing Research	
Three of the following:		
MKTG 4148	Advertising and Marketing Communications	
MKTG 4149	Advanced Advertising Campaigns *	
or MKTG 4149W	Advanced Advertising Campaigns	
MKTG 4150	Salesmanship and Sales Management	
MKTG 4152	Retailing Management	
MKTG 4154	Digital Marketing	
MKTG 4156	Integrated Marketing Communications	
MKTG 4159	Marketing Strategy	
MKTG 4900	Special Topics **	
International field		
One of the following:		
IBUS 3001	Introduction to International Business †	
IBUS 3101	Global Financial Environment	
IBUS 3201	International Marketing Management	
SMPP 4900	WID - Strategy and International Political Economy	

* Students with a specific interest in advertising may apply to take MKTG 4149. If accepted, they must also register for MKTG 4151W – Marketing Communications Planning. MKTG 4151W cannot be used to fulfill a field course, but can be used to fulfill an elective requirement, if needed. Students who wish to take MKTG 4149 must complete MKTG 4148 as one of their field courses before spring of their senior year. Note that if two writing in the disciplines (WID) courses are taken in the same semester, only one WID course will count towards the University WID requirement.

**MKTG 4900 may be taken multiple times as a field course provided that the topics differ.

†BADM 3001 ideally should be completed by the end of sophomore year and when marketing-specific sections are available. Register for a section that aligns with your career goals.

Students should consult with the advisor for specific Bachelor of Business Administration general education courses (p. 453) that apply to this concentration.

BACHELOR OF BUSINESS ADMINISTRATION WITH A CONCENTRATION IN SPORT, EVENT, AND HOSPITALITY MANAGEMENT

The bachelor of business administration (B.B.A.) with a concentration in sport, event, and hospitality management degree program provides students with a theoretical and practical understanding of these industries through three different tracks:

- Sport management track focuses on the management and marketing of sport events, organizations, products, and athletes, as well as in special events, conferences, meetings, expositions, festivals, and other entertainment properties including sport and event facilities.
- Event management track focuses on the marketing and management of businesses related to conventions, meetings, special events, conferences, expositions, and festivals.
- Hospitality management track focuses on the marketing, management, and financing of both hotels and those businesses related to tourism, including cities, attractions, restaurants, and airlines.

Typical entry-level positions include those in collegiate and professional sport organizations, sport marketing agencies, sport manufacturers, sport and event facilities, hotels and resorts, restaurants and food service operations, visitor and convention bureaus, theme parks and recreation centers, museums, tour operators, travel management firms, destination management companies, event producers, associations, corporate sponsors, and consulting firms.

REQUIREMENTS

In addition to the requirements for the Bachelor of Business Administration (p. 453), the concentration in Sport, Event, and Hospitality Management requires completion of two courses in the field, all courses in one track, and one course in the international field.

Code	Title	Credits
Field		

TSTD 3001	Intro-Tourism/Hospitality Mgt
TSTD 4102	Practicum
or MGT 3305	Human Capital Sustainability
Tracks	
All courses in one of the following tracks:	
Sport Management Track	
TSTD 3101	Sport & Event Business Mgt
TSTD 3102W	Sport and Event Marketing
TSTD 4101	Issues in Sport & Event Mgmt
Event Management Track	
TSTD 3301	Hospitality Industry Managemnt
or TSTD 3101	Sport & Event Business Mgt
TSTD 4301	Travel Marketing Communication
or TSTD 3102W	Sport and Event Marketing
TSTD 4900	Special Topics (Convention and Meeting Management)
Hospitality Management Track	
TSTD 3301	Hospitality Industry Managemnt
TSTD 3302	Financial Mgt-Tourism/Hospitly
TSTD 4301	Travel Marketing Communication
International field	
One of the following:	
GEOG 2145	Cultural Geography
or GEOG 2145W	Cultural Geography
IBUS 3001	Introduction to International Business
IBUS 3101	Global Financial Environment
IBUS 3201	International Marketing Management

Students should consult with the advisor for specific Bachelor of Business Administration general education courses (p. 453) that apply to this concentration

BACHELOR OF SCIENCE WITH A MAJOR IN FINANCE

Emphasizing a finance-focused education, the bachelor of science with a major in finance degree program directly targets the financial industry including commercial banks, investment banks, investment companies, and insurance companies.

The degree is offered by the School of Business both to its own students and to those enrolled in other GW schools. School of Business students enrolled in the program are required to take a second major in another GW school, while those from other GW schools take the program as a second major. Having two majors that span the School of Business and another school ensures the breadth and depth of a student's program while integrating the University's emphasis on interdisciplinary study.

Visit the (http://business.gwu.edu/undergraduate/bs-finance)program website (http://business.gwu.edu/ugrad) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 120 credits.

Code	Title	Credits
General education and pre-business courses		
UW 1020	University Writing	
One humanities course from approved list **		
Two science courses from approved list **		
Prerequisite Courses		
MATH 1231 & MATH 1232	Single-Variable Calculus I and Single-Variable Calculus II	
ECON 1011 & ECON 1012	Principles of Economics I and Principles of Economics II	
STAT 1051	Introduction to Business and Economic Statistics	
or STAT 1053	Introduction to Statistics in Social Science	
or STAT 1111	Business and Economic Statistics I	
or APSC 3115	Engineering Analysis III	
STAT 2118	Regression Analysis	
or ECON 2123	Introduction to Econometrics	
or STAT 2123	Introduction to Econometrics	

Code	Title	Credits
Signature Courses		
BADM 1001 & BADM 1002	First Year Development Course I and First Year Development Course II *	
or BADM 1003	Transfer Student Development	

BADM 1004	The Age of Globalization
BADM 2001W	Markets and Politics
BADM 3001	Career Management Strategy
BADM 4101	Business Law and Ethics
or BADM 4101W	Business Law and Ethics
Major Courses	
ACCY 2001	Intro Financial Accounting
ACCY 3106	Financial Statement Analysis
BADM 3501	Financial Management and Markets
FINA 3001	Intermediate Finance
FINA 3101	Investment and Portfolio Management
FINA 4001	Advanced Financial Management
or FINA 4001W	Advanced Financial Management
Four of the following:	
FINA 3201W	Exploring Finance w/Simulation
FINA 3301	Money and Capital Markets
FINA 3401	A Brief History of Finance
or FINA 3401W	A Brief History of Finance
FINA 4101	Applied Financial Securities Analysis
FINA 4201	Real Estate Investment
FINA 4301	Financial Derivatives
One of the following:	
ECON 2180	Survey of International Economics
ECON 2181	International Trade Theory and Policy
ECON 2182	International Macroeconomic Theory and Policy
IBUS 3001	Introduction to International Business
IBUS 3101	Global Financial Environment
IBUS 3301	International Business Finance
IBUS 4302	International Banking
IBUS 4303	International Monetary and Financial Issues
SMPP 4900	WID - Strategy and International Political Economy

*Freshmen are required to take BADM 1001 and BADM 1002; transfer students are required to take BADM 1003.
**A list of approved courses can be found on the General Education Requirement page (p. 38).

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FINA 3001. Intermediate Finance. 3 Credits.
Theory and practice of acquiring and using funds. Simulations of business decisions by cases and/or models to assess the risk/return interaction of investment, financing, and dividend decisions. Prerequisite: BADM 3501.

FINA 3101. Investment and Portfolio Management. 3 Credits.
Theory and principles of security analysis and portfolio management, including analysis of the national economy, industry, company, and security markets. Risk–reward and computer-aided analysis. Prerequisite: BADM 3501.

FINA 3201W. Exploring Finance w/Simulation. 3 Credits.
Corporate financial analysis as explored through the FINGAME financial simulation software. Focus on intertemporal decision making for capital budgeting and financing of a simulated firm. Prerequisite: BADM 3501.

FINA 3301. Money and Capital Markets. 3 Credits.
The process of capital formation in a free enterprise economy, with special emphasis on factors affecting the level and structure of interest rates. Money market, capital market, and derivative contracts (futures and swaps) are evaluated from both investment and financing perspectives. Prerequisite: BADM 3501.

FINA 3401. A Brief History of Finance. 3 Credits.
History of financial events and practices and how finance has changed over time; how these events have shaped current practices and the impact of ethical issues.

FINA 3401W. A Brief History of Finance. 3 Credits.
History of financial events and practices and how finance has changed over time; how these events have shaped current practices and the impact of ethical issues. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

FINA 4001. Advanced Financial Management. 3 Credits.
Analysis and readings covering applications of theory to financial management. Case studies for decision making involving working capital, capital budgeting, financing, dividend policy, and valuation. Prerequisite or concurrent registration: BADM 3501 and FINA 3301 or FINA 3001.

FINA 4001W. Advanced Financial Management. 3 Credits.
Analysis and readings covering applications of theory to financial management. Case studies for decision making involving working capital, capital budgeting, financing, dividend policy, and valuation. Prerequisite or concurrent registration: BADM 3501 and FINA 3301 or FINA 3001.

FINA 4101. Applied Financial Securities Analysis. 3 Credits.
Practical security analysis techniques and investing approaches employed by professional investment managers. Prerequisite: BADM 3501.

FINA 4121W. Exploring Finance w/Simulation. 3 Credits.

FINA 4201. Real Estate Investment. 3 Credits.
Principles of real estate investment, including valuation, appraisal, financing, and development, in addition to a discussion of the mortgage market and its institutions. Prerequisite: BADM 3501.

FINA 4301. Financial Derivatives. 3 Credits.
The defining properties of and uses for financial derivatives. Institutional features; forward and futures contracts, option contracts, and swap agreements; and valuation methodologies. The proper use of financial derivatives and the potential for unintended consequences. Prerequisites: BADM 3501. Recommended background: undergraduate students in finance with exposure to another discipline such as mathematics, physics, computer science, economics, or statistics.

FINA 4900. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods. Prerequisite: BADM 3501.

FINA 4900W. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods.

FINA 4995. Independent Study. 1-15 Credits.
Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. Prerequisite: BADM 3501.

FINA 6220. Business Financial Management. 3 Credits.

FINA 6221. Financial Decision Making. 3 Credits.
Theory and practice of business finance, emphasizing the impacts of long- and short-term uses and sources of funds on the firm's market value. Prerequisite: MBAD 6234 or MBAD 6235.

FINA 6222. Capital Formation. 3 Credits.
Determinants of saving and investment and resultant funds flow are evaluated. Special emphasis on the level and risk structure and term structure of interest rates. The role and management of financial institutions is stressed. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6223. Investment Analysis and Portfolio Management. 3 Credits.
Risk–reward analysis of security investments, including analysis of national economy, industry, company, and market; introduction to portfolio management; emphasis on theory and computer methods. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6224. Financial Management. 3 Credits.
Advanced case studies in domestic and international financial management; working capital policy, capital budgeting, financing with debt and equity, dividend policy, valuation, project finance, venture capital, and mergers and acquisitions. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6230. Urban Development Economics. 3 Credits.

FINA 6231. Sem:Investment & Portfolio Mgt. 3 Credits.

FINA 6234. New Venture Financing: Due Diligence and Valuation Issues. 3 Credits.
Fundamentals and practice of due diligence and screening of early-stage investment opportunities. Prerequisites: MBAD 6234 or MBAD 6235. (Same as MGT 6293).

FINA 6235. Futures Markets: Trading and Hedging. 3 Credits.
Organization and regulation of futures markets. Alternative strategies for trading of futures contracts for possible hedging uses. High risk–high return investment alternatives. The use of futures markets to manage risks. Recommended: FINA 6221. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6236. Options. 3 Credits.
Pricing of options on financial instruments. Role of options in risk management, trading strategies, hedging implications for national and international investors, financial engineering, and structure and regulation of option markets. Recommended: FINA 6221. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6237. Private Wealth Management and Personal Financial Advising. 3 Credits.
Income and estate taxation, retirement plans and pensions, life and disability insurance, investment portfolio management, and personal finances. Prerequisites: MBAD 6234 or MBAD 6235. Recommended background: ACCY 6401 and knowledge of Excel.

FINA 6238. Financial Engineering. 3 Credits.
Valuation and risk management theory for bonds, forward contracts, swaps, options, exotic options, and interest rate options. Development of financial software, including Monte Carlo simulation modeling. Case studies of innovative solutions to investment, corporate finance, and financial institution management problems. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6239. Applied Portfolio Management. 3 Credits.
Synthesis of the theoretical concepts of securities analysis and portfolio management with the application of analyzing securities and building an actual portfolio. Prerequisites: (MBAD 6234 or MBAD 6235) and permission of instructor.

FINA 6240. Real Estate Development. 3 Credits.
Examination of the forces that shape real estate development; market analysis methods and techniques to evaluate project feasibility; the institutional and legal framework within which real estate development occurs and that influences controls, land value, and development potential. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6241. Financing Real Estate. 3 Credits.
Principles of real estate finance; evaluating different methods of financing real estate; sources of real estate funding with emphasis on securitization. Incentives provided by governments. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6242. Real Estate Valuation and Investment. 3 Credits.
Understanding the valuation of different types of real estate from different viewpoints. Analysis of the risks and opportunities of investing. Solid theoretical framework is augmented with practical examples and applications. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6245. Land Development Law. 3 Credits.

FINA 6247. Urban Development Economics. 3 Credits.

FINA 6248. Real Estate Development Cases. 3 Credits.
Case study analysis of large-scale commercial real estate developments to gain comprehension of financial, political, legal, and technical complexities and constraints inherent in the real estate development process. Prerequisite: FINA 6221 or permission of instructor.

FINA 6250. Securities Regulation and Financial Scandals. 3 Credits.
Philosophy and framework of laws governing the sale of securities, including stocks, bonds, and investment contracts; financial scandals and the role that changes in securities law and housing policy has played in such events.

FINA 6271. Financial Modeling and Econometrics. 4 Credits.
Applied statistical and econometric analysis and modeling in finance. Methodologies include descriptive and inferential statistics, multivariate regression, and time series analysis. Empirical studies are reviewed, and a series of research projects are undertaken. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6272. Global Financial Markets. 4 Credits.
Theories explaining domestic and international interest rate and exchange rate structures. Roles of financial institutions and markets are investigated and forecasting methodologies are applied. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6273. Cases in Financial Management and Investment Banking. 4 Credits.
Computer modeling for analysis and forecasting of a firm's financial statements to reflect possible future performance. Application and integration of financial accounting and financial analysis, using a different case study each week. Financial issues faced by companies and their commercial and investment bankers as tactical and strategic decisions are made about organic growth, growth through merger and acquisition, and corporate reorganization. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6274. Corporate Financial Management and Modeling. 4 Credits.
Causal connections between decisions made by business firms, their expected performance, and the resulting current valuation of the firm's common stock. Factors affecting the level and structure of interest rates, which are incorporated by many financial models, theories, and decisions. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6275. Investment Analysis and Global Portfolio Management. 4 Credits.
Financial markets and instruments viewed from the investor's perspective. Analysis of the value of equity and fixed-income securities and the construction of efficient portfolios in a global financial market. Issues of market efficiency, tax structures, and investment funds; computer-based models. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6276. Financial Engineering and Derivative Securities. 4 Credits.
Mathematical and theoretical foundations to value-derivative securities, including options, futures, and swaps; hedging and trading applications of these contracts. Arbitrage trading across cash and derivative markets and its role in maintaining equilibrium prices. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6277. Comparative Financial Market Regulation and Development. 4 Credits.
Theory and current status of comparative regulation of domestic and international financial institutions and markets. Effects on country economic development and international trade. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6278. Financial Theory and Research. 4 Credits.
Theoretical constructs of business investment and financing decisions and of financial asset pricing structures in domestic and international environments. Analytical and numerical models are developed, and empirical studies are evaluated. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6279. Real Estate Finance and Fixed-Income Security Valuation. 4 Credits.
Application of financial theory to real estate investment: the housing market, mortgage valuation and securitization, commercial properties, CMBS, and REITs. Fixed-income security valuation with focus on theory and data applications on interest rate movements, fixed-income security and derivative pricing, and credit risk. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6280. Financial Institution Management and Modeling. 4 Credits.
Analysis of the financial performance and condition of a bank, toward understanding of the financial environment in which banks operate and regulation of the banking system. Application of asset/liability management principles and statistical and mathematical models employed in bank risk management. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6281. Cases in Financial Modeling and Engineering. 4 Credits.
Through the use of real-world examples from various aspects of finance, students are exposed to the modeling of complex financial instruments and techniques used in market and credit risk management. Underlying mathematics and theoretical constructs are explored and solidified through modeling exercises that make use of analytical solutions and numerical methods. As a practical course, students are asked to implement models. Examples may be motivated by corporate finance, corporate and investment banking, asset management, or other activities. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6282. Advanced Financial Econometrics and Modeling. 0-4 Credits.
Testing of several types of applied financial econometric models typically used in practice. Advanced quantitative techniques applied to aspects of financial markets, the behavior of agents, and market and credit risk management. Various software packages used to implement and program models. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6290. Special Topics. 0-3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated once for credit.

FINA 6297. International Management Experience. 3 Credits.
Same as IBUS 6297/ MGT 6297/ MKTG 6297/ SMPP 6297. May be repeated for credit.

FINA 6298. Directed Readings and Research. 2-4 Credits.

FINA 6299. Thesis Seminar. 3 Credits.

FINA 6999. Thesis Research. 3 Credits.

FINA 8311. Seminar: PublicPrivate Sector Institutions and Relationships. 3 Credits.
An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Same as SMPP 8311.

FINA 8321. Seminar: Financial Markets Research. 3 Credits.
Market efficiency, utility testing, the capital asset pricing model, the arbitrage pricing theory, the option pricing model, and aggregate market volatility.

FINA 8322. Seminar: Corporate Finance Research. 3 Credits.
Capital budgeting, capital structure issues, dividend policy, microeconomic foundations, mergers, and agency theory.

FINA 8323. Seminar: Continuous-Time Finance. 3 Credits.
Review of the stochastic calculus methods needed for continuous-time pricing models. The most important continuous-time models, including pricing of derivative securities, consumption-portfolio selection models, continuous-time capital asset pricing models, consumption-based capital asset pricing models, continuous-time arbitrage pricing theory, and different yield curve models.

FINA 8324. Seminar: Financial Markets and Institutions. 3 Credits.
Multi-period asset pricing, term structure of interest rates, market imperfections and institutional factors, auctions, manipulation, derivative markets, market microstructure, and financial institutions.

FINA 8397. Doctoral Seminar. 1-3 Credits.

FINA 8998. Advanced Reading and Research. 1-12 Credits.
Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

FINA 8999. Dissertation Research. 1-12 Credits.
Limited to doctoral candidates. May be repeated for credit.

DUAL DEGREE PROGRAMS

- Dual Bachelor of Accountancy and Master of Accountancy (B.Accy./M.Accy.)
- Dual Bachelor of Business Administration and Master of Accountancy (and B.B.A./M.Accy.)
- Dual Bachelor of Business Administration and Master of Science in Information Systems Technology (B.B.A./M.S.I.S.T.)
- Dual Bachelor of Business Administration and Master of Tourism Administration (B.B.A./M.T.A.)

B.Accy./M.Accy. and B.B.A./M.Accy.

Students in the dual program leading to the master of accountancy degree first pursue either the bachelor of accountancy or bachelor of business administration. They may apply for admission to the M.Accy. after completion of 75 credits toward the undergraduate degree and successful completion of the Graduate Management Admission Test (GMAT). Please note that the GMAT can be waived with an undergrad GPA of at least 3.25. Students typically earn the B.Accy. or B.B.A. after four years and the M.Accy. at the end of the fifth year. The dual degree program requires 150 credits including 30 credits of graduate work.

B.B.A./M.S.I.S.T.

Students in the dual program leading to the master of science in information systems technology first pursue the B.B.A. with a concentration in information systems. Students pursue the regular B.B.A. curriculum in their first three years of study and are enrolled in courses at both the undergraduate and graduate levels during the final two years. Students can apply for admission to the program when they apply for admission to the University (they must meet specified GPA and other requirements to remain in the program), or they may apply after earning 75 credits. Students typically earn the B.B.A. after four years and the M.S.I.S.T. at the end of the fifth year. Students who choose to discontinue the program at the end of four years may be required to take additional courses to complete requirements for the B.B.A.

B.B.A./M.T.A.

Students in the dual program leading to the master of tourism administration first pursue the bachelor of business administration with a concentration in sport, event, or hospitality management. Students pursue the regular B.B.A. curriculum in their first three years of study and are enrolled in courses at both the undergraduate and graduate levels during the final two years. Students can apply for admission to the program when they apply for admission to the University (they must meet specified GPA and other requirements to remain in the program), or they may apply after earning 75 credits. Students applying to the B.B.A./M.T.A. dual degree program who have a 3.2 GPA after earning 75 credit hours are exempt from taking the GRE or GMAT exam. Students typically earn the B.B.A. after four years and the M.T.A. at the end of the fifth year. Students who choose to discontinue the program at the end of four years may be required to take additional courses to complete requirements for the B.B.A.

MINOR IN BUSINESS ADMINISTRATION

REQUIREMENTS

The School of Business offers a minor in business administration for students from other schools of the University. The following requirements must be fulfilled: 27 credits, including 15 credits in required courses and 12 credits in pre-approved elective courses.

Required	
ECON 1011	Principles of Economics I
ECON 1012	Principles of Economics II
STAT 1051	Introduction to Business and Economic Statistics
or STAT 1053	Introduction to Statistics in Social Science
or STAT 1111	Business and Economic Statistics I
or APSC 3115	Engineering Analysis III
MATH 1221	Calculus with Precalculus II
or MATH 1231	Single-Variable Calculus I
or MATH 1252	Calculus for the Social and Management Sciences
ACCY 2001	Intro Financial Accounting
At least four of the following:	
BADM 2301	Management Information Systems Technology
BADM 3103	Human Capital in Organizations
BADM 3401	Basic Marketing Management
or BADM 3401W	Basic Marketing Management
BADM 3501	Financial Management and Markets
BADM 3601	Operations Management
IBUS 3001	Introduction to International Business

School of Business students may pursue a minor in another GW school after receiving approval from the appropriate minor program or department.

GRADUATE PROGRAMS

Master's programs

- Master of Accountancy (p. 469)
- Master of Science in Business Analytics (p. 470)
- Master of Science in Finance (p. 470)
- Master of Science in Information Systems Technology (p. 471)
- Master of Science in Government Contracts (p. 472)
- Master of Science in Project Management (p. 472)

- Master of Tourism Administration (p. 473)

Master of Business Administration programs

- Global Master of Business Administration (p. 474)
- Healthcare Master of Business Administration (p. 480)
- Professional Master of Business Administration (p. 481)
- World Executive Master of Business Administration (p. 487)

Combined degree programs

- Joint Master of Business Administration/Juris Doctor with the Law School (p. 488)
- Joint Master of Business Administration/Master of Arts with a focus on international business with the Elliott School of International Affairs (p. 488)
- Joint Master of Business Administration/Master of Science in Finance (p. 488)
- Joint Master of Business Administration/Master of Science in Government Contracts
- Dual Master of Business Administration/Master of Science in Information Systems Technology (p. 504)
- Joint Master of Business Administration/Master of Science in Project Management (p. 488)

Doctoral program

- Doctor of Philosophy in the field of business administration (p. 488)

MASTER OF ACCOUNTANCY

GW's 30-credit master of accountancy (M.Accy.) degree program is tailored to the student's individual interests and career objectives in accounting, financial management, and tax practice. In addition to required courses in accounting, finance, and economics, students can choose from a wide range of specialized accounting subjects and other topics to help them prepare for their professional certification. If not completed prior to matriculation, students might be required to take prerequisite courses while in the program. No business background is necessary prior to joining the program.

The M.Accy. may be pursued on a full-time or part-time basis. Day and evening classes are available to accommodate working professionals, although prior work experience is not required.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://business.gwu.edu/programs/specialized-masters/master-of-accountancy)for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 15 credits in required courses and 15 credits in elective courses.

In addition, students must fulfill preparatory courses in financial accounting, managerial accounting, micro- or macroeconomics, and statistics.

Code	Title	Credits
Preparatory courses		
ACCY 6101	Financial Accounting	
or ACCY 2001	Intro Financial Accounting	
ACCY 2002	Introductory Managerial Accounting	
MBAD 6242	Microeconomics for the World Economy	
or MBAD 6243	Macroeconomics for the World Economy	
STAT 1051	Introduction to Business and Economic Statistics	
Students that have not completed these courses prior to matriculation may be able to take them concurrently with the program requirements.		
Required		
ACCY 6104	Intermediate Accounting I	
ACCY 6105	Intermediate Accounting II	
ACCY 6201	Managerial Accounting I	
ACCY 6202	Managerial Accounting II	
ACCY 6301	Contemporary Auditing Theory	
MBAD 6235	Finance	
Electives		
15 credits in elective courses, including 9 credits in accountancy (ACCY) courses.		

Students who intend to take the C.P.A. examination should be aware that the coursework required for admission to the examination varies from state to state. Students are advised to consult the Board of Accountancy for the state in which they plan to take the examination and choose electives that meet that state's requirements.

Preparatory courses may be waived *without* substitution for other coursework and required classes may be waived *with* substitution for other coursework for students who:

- Have already completed these courses with a grade of *B* or better
- Have taken these courses at an AACSB - accredited institution
- Have taken these courses within five years prior to the first semester of enrollment into the program

Students should consult with the advisor concerning course substitution.

MASTER OF SCIENCE IN BUSINESS ANALYTICS

The master of science in business analytics (M.S.B.A.) degree program is designed for students with quantitative backgrounds looking to gain a competitive edge before entering the job market as well as those working in the field and looking to further develop their skills.

The curriculum is a blend of foundational courses in descriptive, predictive, and prescriptive analytics; elective courses in analytics applied to a specific functional area or industry; workshops in communication, team, and project management; and hands-on exposure to industry-standard analytics tools/software. The program culminates in a project whereby students work in teams on an actual industry-related problem and present their findings to the client firm.

The program is offered in an intensive 16-month format for full-time students and a two-year, part-time format for working professionals.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://business.gwu.edu/programs/specialized-masters/m-s-in-business-analytics)for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 33 credits, including 25.5 credits in required courses and 7.5 credits in elective courses.

Code	Title	Credits
Required		
DNSC 6201	Introduction to Business Analytics	
DNSC 6203	Statistics for Analytics I	
DNSC 6206	Stochastic Fndn: Prob Models	
DNSC 6210	Decision and Risk Analytics	
DNSC 6211	Programming for Analytics	
DNSC 6212	Optimization Methods and Applications	
DNSC 6213	Statistics for Analytics II	
DNSC 6216	Business Analytics Skills Workshops	
DNSC 6217	Business Analytics Practicum	
DNSC 6219	Time Series Forecasting for Analytics	
DNSC 6279	Data Mining	
ISTM 6212	Data Management for Analytics	
Electives		

7.5 credits in elective courses selected in consultation with the advisor.

MASTER OF SCIENCE IN FINANCE

The master of science in finance degree program is designed to prepare students with specific career interests in the areas of financial management and research. The program of study emphasizes the theoretical foundations of finance and quantitative methods in financial management. Students engage in applied research and modeling using a variety of data sets and computer software packages. The curriculum provides in-depth study of the international and federal government regulatory dimensions of finance.

The degree program is designed to be completed in either 12 months of intensive study including a summer session or in 24 months of regular study including two summer sessions.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://business.gwu.edu/programs/specialized-masters/m-s-in-finance) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits in required courses

Code	Title	Credits
Required:		
FINA 6271	Financial Modeling and Econometrics	
FINA 6272	Global Financial Markets	
FINA 6273	Cases in Financial Management and Investment Banking	
FINA 6274	Corporate Financial Management and Modeling	
FINA 6275	Investment Analysis and Global Portfolio Management	

FINA 6276	Financial Engineering and Derivative Securities
FINA 6277	Comparative Financial Market Regulation and Development
FINA 6278	Financial Theory and Research
FINA 6279	Real Estate Finance and Fixed-Income Security Valuation
FINA 6280	Financial Institution Management and Modeling
FINA 6281	Cases in Financial Modeling and Engineering
FINA 6282	Advanced Financial Econometrics and Modeling

MASTER OF SCIENCE IN INFORMATION SYSTEMS TECHNOLOGY

The master of science in information systems technology is designed to provide an in-depth understanding of management information systems and information technology. The curriculum offers an innovative mix of information and technology management courses and specialized electives. Students are challenged to think critically, analyze problems, and effectively acquire and integrate knowledge, strategies, and key technologies to solve the business problems faced by IT management.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://business.gwu.edu/programs/specialized-masters/m-s-information-systems-technology) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 33 credits, including 21 credits in core courses and 12 credits in elective courses.

In addition, students must fulfill up to 6 credits in prescribed foundation requirements in the areas of computer programming language and database design and applications. If any foundation course was not taken at an accredited institution within five years of matriculation with a *B* or better, it must be completed before beginning or within the first year of the program of study.

Code	Title	Credits
Required		
ISTM 6201	Information Systems Development and Applications	
ISTM 6202	Relational Databases	
ISTM 6204	Information Technology Project Management	
ISTM 6205	Internet Computing	
ISTM 6206	Information Systems Security	
ISTM 6209	Web and Social Analytics	
ISTM 6210	Integrated Information Systems Capstone	
Electives		
12 credits in any combination of courses in the following two areas:		
Management:		
ISTM 6207	Information Resources Management	
ISTM 6222	IS/IT Strategy and Implementation	
ISTM 6223	Technology Entrepreneurship	
ISTM 6224	Management of Technology and Innovation	
ISTM 6225	Enterprise Architecture	
ISTM 6233	Emerging Technologies	
ISTM 6239	Sem:Competitiveness/Technology	
Technical:		
ISTM 6203	Telecommunications and Enterprise Networks	
ISTM 6211	Data Warehousing and Online Analytical Processing	
ISTM 6213	Enterprise Web and Database Applications	
ISTM 6214	Advanced Programming and Business Applications	
ISTM 6215	Human-Computer Interaction	

Students should consult with the advisor regarding their program of study.

MASTER OF SCIENCE IN GOVERNMENT CONTRACTS

The master of science in government contracts (M.S.G.C.) degree program is designed to give working professionals the knowledge and skills necessary to excel in the world of federal acquisition and is intended for professionals from a variety of acquisition-related jobs in both government and private industry. The 36-credit program blends the study of government procurement law and policy, taught by the Law School, with a core business curriculum taught by the School of Business. The innovative curriculum balances practice and theory, developing the skills that acquisition professionals need to become effective professionals, managers, and leaders. The M.S.G.C. program can be completed in 24 months in evening or online classes.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://business.gwu.edu/programs/specialized-masters/m-s-in-government-contracts) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 25 credits in required courses and 11 credits in elective courses.

Required	
DNSC 6202	Mathematics and Statistics for Management
DNSC 6261	Introduction to Project and Program Management
GCON 6502	Formation of Government Contracts
GCON 6503	Performance of Government Contracts
GCON 6505	Marketing for the Government Marketplace
GCON 6506	Pricing Issues in Government Contracts
MBAD 6211	Financial Accounting
Capstone courses	
GCON 6501	Capstone Research and Writing Project (Must be taken in final semester)
GCON 6504	MSGC Capstone Scholarly Writing (Must be taken prior to or concurrent with GCON 6501)
Electives	
11 credits in law or business selected in consultation with advisor	

MASTER OF SCIENCE IN PROJECT MANAGEMENT

The master of science in project management (M.S.P.M.) degree program is designed for professionals who wish to enhance their ability to motivate people, integrate complex projects, and achieve cost-effective results. The curriculum focuses on traditional and modern project management techniques in an industry-independent manner. The curriculum goes beyond the project management body of knowledge and exposes students to international methodologies, decision sciences, advanced project management applications, and management**.** The M.S.P.M. program is offered both on campus and through distance learning.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://business.gwu.edu/programs/specialized-masters/mspm) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 30 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
DNSC 6202	Mathematics and Statistics for Management	
DNSC 6247	Organization, Management, and Leadership	
DNSC 6250	Project Management Finance	
DNSC 6251	Optimization Models for Decision Making	
DNSC 6252	Risk Analysis for Decision Making	
DNSC 6254	Risk Management	
DNSC 6257	Cost Estimation and Control	
DNSC 6258	Executive Decision Making	
DNSC 6259	Project Portfolio Management	
DNSC 6261	Introduction to Project and Program Management	
DNSC 6262	Directed Computational Project Management	

DNSC 6267	Planning and Scheduling
DNSC 6269	Project Management Application

Elective

A 3-credit, graduate-level elective course from the Department of Decision Sciences (DNSC) and a 3-credit, graduate-level elective course approved by the advisor.

MASTER OF TOURISM ADMINISTRATION

The master of tourism administration degree program is designed to prepare students for competitive professional management positions in public, commercial, or nonprofit organizations, providing visitor services at the local, national, or international level. In addition to course work, students have opportunities to learn from culturally diverse colleagues and from a wide range of visitor-service organizations. Students may choose one of the four formal concentration areas: sustainable tourism, event and meeting management, sport management, or hospitality management. They also may develop an individualized studies program.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://business.gwu.edu/programs/specialized-masters/master-of-tourism-administration) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 15 credits in required courses, 12 credits in courses taken in one area of specialization, and 9 credits in elective courses. Alternatively, the student may propose a 36-credit individualized plan of study for consideration.

Code	Title	Credits
Required		
TSTD 6249	Sustainable Destination Development	
TSTD 6251	Quantitative Applications in Tourism/ Hospitality Management	
TSTD 6270	Tourism and Hospitality Management Research	
One of the following capstone course series:		
TSTD 6283 & TSTD 6297	Practicum and Advanced Topical Studies	
TSTD 6998 & TSTD 6999	Thesis Research and Thesis Research	

Areas of specialization

Sustainable tourism management	
TSTD 6250	Destination Management
TSTD 6260	Destination Economics
TSTD 6261	Tourism Planning
TSTD 6262	Tourism Policy Analysis
TSTD 6263	Destination Marketing
Event and meeting management	
TSTD 6276	Risk Management for Events and Meetings
TSTD 6277	Event Management
TSTD 6278	Conference and Exposition Management
TSTD 6279	Event Entertainment Management
Sport management	
TSTD 6264	Sport Marketing
TSTD 6265	Sport Law: Contracts and Negotiations
TSTD 6266	Sport and Event Facility Management
TSTD 6267	Sport Media and Communications
Hospitality management	
TSTD 6220	International Hotel Management
TSTD 6221	Hotel/Resort Market Analysis
TSTD 6278	Conference and Exposition Management
TSTD 6296	Travel Information Management Systems

Electives

9 credits in elective courses selected in consultation with the advisor.

Individualized plan of study

The student designs a 36-credit plan of study and provides a brief proposal specifying the courses to be taken. The student submits the proposal through the faculty advisor.

GLOBAL MASTER OF BUSINESS ADMINISTRATION

The global master of business administration (Global M.B.A.) is a 55.5-credit degree program emphasizing the quantitative and qualitative aspects of business practice with a curriculum that incorporates the application of concepts and analytical tools to current management problems. Teamwork and communication skills are taught through team projects with an emphasis on private and public sector issues.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://business.gwu.edu/current-students-2/mba-programs-and-concentrations/global-mba-degree-requirements)for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 55.5 credits, including 28.5 credits in required courses, 3 credits in the consulting abroad project, and 24 credits in elective courses. Students may choose to complete a 12-credit concentration using elective credits.

Code	Title	Credits
Required		
MBAD 6211	Financial Accounting	
MBAD 6213	Managerial Accounting	
MBAD 6224	Decision Making and Data Analysis	
MBAD 6223	Operations Management	
MBAD 6235	Finance	
MBAD 6242	Microeconomics for the World Economy	
MBAD 6245	Global Perspectives	
MBAD 6263	Organizations and Human Capital	
MBAD 6289	Business Ethics & Public Policy	
MBAD 6274	Marketing	
MBAD 6287	Strategy Fundamentals	
MBAD 6286	Strategy Formulation and Implementation	
Consulting abroad project		
MBAD 6294	Consulting Abroad Project	
Students must complete both the on-campus and study abroad components of the Consulting Abroad Project.		
Electives		
24 credits in elective courses. Electives may be taken in courses at the 6000 level and above in any GWSB department; up to 12 of these credits may be taken in courses outside of GWSB with the advisor's approval.		

MBAD 6298 may not be applied towards the MBA degree requirements.

Concentration Options

Students may choose to complete a 12-credit concentration. Each concentration comprises 3 to 6 credits in required courses and 6 to 9 credits selected from a list of suggested courses. For more information on concentration options (http://business.gwu.edu/current-students-2/mba-programs-and-concentrations/concentrations), transfer credit, and Consortium registration, please visit the MBA Current Student (http://business.gwu.edu/current-students-2) website. (Students must complete 12 unique credits to complete the concentration.)

The concentration options include:

- Accounting and Advisory Services (p. 474)
- Consulting* (p. 475)
- Entrepreneurship (p. 476)
- Finance* (p. 476)
- Global Management* (p. 477)
- Government Contracts (p. 478)
- Information Systems and Technology Management* (p. 478)
- Marketing Communications and Digital Marketing (p. 478)
- Project Management* (p. 479)
- Sports Management (p. 479)
- Tourism (p. 480)

*Concentration can be completed either on-campus on online.

Accounting and Advisory Services

Code	Title	Credits
Required		
ACCY 6106	Financial Statement Analysis	
Electives		
9 credits from the following:		
ACCY 6104	Intermediate Accounting I	
ACCY 6105	Intermediate Accounting II	
ACCY 6110	International Reporting and Control	

ACCY 6111	International Accounting
ACCY 6112	International Financial Reporting Standards
ACCY 6202	Managerial Accounting II
ACCY 6203	Controls, Alignment & the Org.
ACCY 6301	Contemporary Auditing Theory
ACCY 6302	Fraud Examination and Forensic Accounting
ACCY 6401	Federal Income Taxation
ACCY 6402	Federal Income Taxation of Partnerships
ACCY 6403	Federal Income Taxation of Corporations
ACCY 6501	Accounting Information Systems and EDP
ACCY 6601	Business Law: Contracts, Torts, and Property
ACCY 6602	Business Law: Enterprise Organization
ACCY 6701	Government and Nonprofit Accounting and Auditing
ACCY 6801	Corporate Governance and Ethics
IBUS 6308	Intl Reporting and Contrl
IBUS 6309	International Accounting
IBUS 6310	Intl Fin. Reporting Standards
MBAD 6285	Business Law
SMPP 6215	Corporate Governance and Ethics

Consulting

back to concentration options (p. 474)

Code	Title	Credits
Required		
MGT 6214	Consultative Processes	
SMPP 6290	Special Topics (Consulting Practicum)	
Electives		
6 credits from the following:		
ACCY 6106	Financial Statement Analysis	
DNSC 6258	Executive Decision Making	
DNSC 6261	Introduction to Project and Program Management	
DNSC 6290	Special Topics	
FINA 6223	Investment Analysis and Portfolio Management	
FINA 6224	Financial Management	
FINA 6237	Private Wealth Management and Personal Financial Advising	
FINA 6248	Real Estate Development Cases	
FINA 6290	Special Topics	
IBUS 6201	International Marketing	
IBUS 6401	International Business Strategy	
IBUS 6402	Managing in Developing Countries	
IBUS 6290	Special Topics	
ISTM 6201	Information Systems Development and Applications	
ISTM 6206	Information Systems Security	
ISTM 6224	Management of Technology and Innovation	
MBAD 6243	Macroeconomics for the World Economy	
MGT 6210	Leading Teams	
MGT 6215	Conflict Management and Negotiations	
MGT 6253	Leadership and Executive Development	
MGT 6280	Entrepreneurship	
MGT 6290	Special Topics (Global Consulting: Theory and Practice)	
MKTG 6242	Buyer Behavior	
MKTG 6243	Marketing Research	
MKTG 6246	Marketing of Services	
MKTG 6248	Advertising and Marketing Communications Strategy	
MKTG 6250	Selling/Sales Management	
MKTG 6251	Product Management	
MKTG 6252	Digital Marketing	

MKTG 6255	Strategic Brand Management
MKTG 6259	Marketing Strategy
MKTG 6290	Special Topics (Global Brand Strategy)
MKTG 6290	Special Topics (Integrated Marketing Communications)
SMPP 6202	Business-Government Relations
SMPP 6210	Strategic Environmental Management
SMPP 6211	Corp. Env. Mg. in Dev. Nations
SMPP 6213	Management of Strategic Issues
SMPP 6215	Corporate Governance and Ethics
SMPP 6216	Public Policy, Governance, and the Global Market
SMPP 6241	GlobalCorporateResponsibility
SMPP 6271	Corporate Envir Mgmt & Policy
SMPP 6290	Special Topics (Clean Tech & Competitive Energy)
SMPP 6290	Special Topics (Co-Creating Value)
SMPP 6290	Special Topics (Corporate Social Responsibility)
SMPP 6290	Special Topics (Energy Practicum)
SMPP 6290	Special Topics (Ethics in Health Services Management)
SMPP 6290	Special Topics (Governance through Dealmaking)
SMPP 6290	Special Topics (Healthcare Policy Analysis I)
SMPP 6290	Special Topics (Healthcare Policy Analysis II)
SMPP 6290	Special Topics (Human Rights and Multinationals)
SMPP 6290	Special Topics (Public Private Partnerships)
SMPP 6290	Special Topics (Strategic Management in Developing Country Environments)
SMPP 6290	Special Topics (Strategy & International Political Economics)
SMPP 6290	Special Topics (Sustainable and Responsible Investment in Today's Market)
SMPP 6290	Special Topics (Worldwide Energy Challenges)
TSTD 6214	Consultative Processes
TSTD 6282	International Experiences (China: Major League Baseball and Globalization)
TSTD 6282	International Experiences (Myanmar: Enhancing Economic Development through Scientific, Academic, Volunteer, and Experiential Tourism)
TSTD 6290	Special Topics (Walt Disney World: Innovation in Services)

Entrepreneurship

back to concentration options (p. 474)

Code	Title	Credits
Required		
MGT 6280	Entrepreneurship	
Electives		
9 credits from the following:		
FINA 6234	New Venture Financing: Due Diligence and Valuation Issues	
or ISTM 6234	New Venture Financing	
ISTM 6223	Technology Entrepreneurship	
MGT 6281	Small Business Management	
MGT 6282	New Venture Initiation	
MGT 6283	Strategic Entrepreneurship	
MGT 6284	Family Business Management	
MGT 6285	Social Entrepreneurship	
MGT 6286	Creativity and Innovation	
MGT 6290	Special Topics (Entrepreneurship, Peace and Economic Development)	

Finance

back to concentration options (p. 474)

Code	Title	Credits
Required		
FINA 6221	Financial Decision Making	
FINA 6224	Financial Management	

or FINA 6223	Investment Analysis and Portfolio Management
Electives	
6 credits from the following:	
ACCY 6106	Financial Statement Analysis
ACCY 6112	International Financial Reporting Standards
ACCY 6801	Corporate Governance and Ethics
ECON 6237	Economics of the Environment and Natural Resources
ECON 6293	Topics in International Finance
FINA 6222	Capital Formation
FINA 6234	New Venture Financing: Due Diligence and Valuation Issues
FINA 6235	Futures Markets: Trading and Hedging
FINA 6236	Options
FINA 6237	Private Wealth Management and Personal Financial Advising
FINA 6238	Financial Engineering
FINA 6239	Applied Portfolio Management
FINA 6240	Real Estate Development
FINA 6241	Financing Real Estate
FINA 6242	Real Estate Valuation and Investment
FINA 6290	Special Topics (Exploring Finance with Simulation)
FINA 6290	Special Topics (Securities Regulation and the Financial Crisis)
FINA 6290	Special Topics (Walkable Urban Real Estate Development)
IBUS 6301	International Business Finance
IBUS 6308	Intl Reporting and Contrl
IBUS 6310	Intl Fin. Reporting Standards
SMPP 6215	Corporate Governance and Ethics

Global Management

back to concentration options (p. 474)

Code	Title	Credits
Required		
MBAD 6243	Macroeconomics for the World Economy	
A variable-credit study abroad experience*		
Electives**		
Remaining credits selected from the following:		
ACCY 6110	International Reporting and Control	
ACCY 6111	International Accounting	
ACCY 6112	International Financial Reporting Standards	
ECON 6250	Survey of Economic Development	
ECON 6269	Economy of China I	
ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy	
ECON 6285	Economic Development of Latin America	
ECON 6292	Topics in International Trade	
ECON 6293	Topics in International Finance	
ECON 6294	Topics in Economic Development	
IAFF 6118	Special Topics in International Affairs	
IAFF 6138	Special Topics in International Development Studies	
IAFF 6158	Special Topics in International Science and Technology Policy	
IAFF 6198	Special Topics in International Trade and Investment Policy	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies	
IBUS 6201	International Marketing	
IBUS 6202	Regional Strategy for Multinationals	
IBUS 6301	International Business Finance	
MKTG 6248	Advertising and Marketing Communications Strategy	
MGT 6297	International Mgt Experience	
PMGT 6265	Special Topics in PMGT (Engaging in Latin America)	

PPPA 6057	International Development Administration
PPPA 6058	International Development NGO Management
PSC 6439	International Political Economy
PUBH 6443	Global Health Agreements and Conventions
SMPP 6241	GlobalCorporateResponsibility
SMPP 6290	Special Topics (Human Rights & Multi-Nations)
SMPP 6290	Special Topics (Strategy & International Political Economy)

*Information about the short- and long-term study abroad experiences is available online (http://business.gwu.edu/international-programs/study-abroad).
**Elective credits should be selected in consultation with the program advisor.

Government Contracts

back to concentration options (p. 474)

Code	Title	Credits
Required		
GCON 6502	Formation of Government Contracts	
GCON 6503	Performance of Government Contracts	
Electives		
6 credits from the following:		
GCON 6505	Marketing for the Government Marketplace	
GCON 6506	Pricing Issues in Government Contracts	
GCON 6510	Foreign Government Contracting	
GCON 6514	Anti-Corruption Policy and Compliance in Procurement	
IBUS 6202	Regional Strategy for Multinationals	
IBUS 6297	International Management Experience	
MGT 6254	Negotiations and Labor Relations	

Information Systems and Technology Management

back to concentration options (p. 474)

Required	
ISTM 6201	Information Systems Development and Applications
ISTM 6202	Relational Databases
Electives	
6 credits from the following:	
ISTM 6204	Information Technology Project Management
ISTM 6203	Telecommunications and Enterprise Networks
ISTM 6206	Information Systems Security
ISTM 6211	Data Warehousing and Online Analytical Processing
ISTM 6215	Human-Computer Interaction
ISTM 6290	Special Topics (Web & Social Analytics)

Marketing Communications and Digital Marketing

back to concentration options (p. 474)

Code	Title	Credits
Required		
MKTG 6252	Digital Marketing	
MKTG 6248	Advertising and Marketing Communications Strategy	
or MKTG 6256	Integrated Marketing Communication	
Electives		
6 credits from the following:		
DNSC 6279	Data Mining	
DNSC 6290	Special Topics	
ISTM 6202	Relational Databases	
MKTG 6241	Advanced Marketing Management	
MKTG 6242	Buyer Behavior	
MKTG 6243	Marketing Research	
MKTG 6246	Marketing of Services	
MKTG 6250	Selling/Sales Management	
MKTG 6251	Product Management	

MKTG 6255	Strategic Brand Management
MKTG 6290	Special Topics (Marketing & the Government Marketplace)
MKTG 6290	Special Topics (Marketing Metrics)
MKTG 6290	Special Topics (Pricing)
SMPA 6205	Media, Development, and Globalization
TSTD 6296	Travel Information Management Systems

Project Management

back to concentration options (p. 474)

Code	Title	Credits
Required		
DNSC 6261	Introduction to Project and Program Management	
DNSC 6267	Planning and Scheduling	
Electives		
6 credits from the following:		
DNSC 6234	Procurement & Contracting	
DNSC 6251	Optimization Models for Decision Making	
DNSC 6252	Risk Analysis for Decision Making	
DNSC 6254	Risk Management	
DNSC 6257	Cost Estimation and Control	
DNSC 6258	Executive Decision Making	
DNSC 6259	Project Portfolio Management	
DNSC 6262	Directed Computational Project Management	
DNSC 6290	Special Topics (Communication Strategies in Project Management)	
DNSC 6290	Special Topics (International Project Management)	
DNSC 6290	Special Topics (Project Management)	
DNSC 6290	Special Topics (Project Management and Organizational Context)	
DNSC 6290	Special Topics (Project Management Governance)	
DNSC 6290	Special Topics (Project Quality Management)	

Sports Management

back to concentration options (p. 474)

Code	Title	Credits
Required		
TSTD 6264	Sport Marketing	
TSTD 6265	Sport Law: Contracts and Negotiations	
Electives		
6 credits from the following:		
DNSC 6261	Introduction to Project and Program Management	
DNSC 6279	Data Mining	
DNSC 6290	Special Topics (Sports Analytics)	
DNSC 6290	Special Topics (Web and Database Analytics)	
MGT 6254	Negotiations and Labor Relations	
MKTG 6248	Advertising and Marketing Communications Strategy	
MKTG 6252	Digital Marketing	
MKTG 6290	Special Topics (Social Media Marketing)	
PPPA 6031	Governing and Managing Nonprofit Organizations	
PPPA 6032	Managing Fund Raising and Philanthropy	
PPPA 6033	Non-Profit Enterprise	
TSTD 6266	Sport and Event Facility Management	
TSTD 6267	Sport Media and Communications	
TSTD 6277	Event Management	
TSTD 6279	Event Entertainment Management	
TSTD 6280	Advanced Workshop	
TSTD 6282	International Experiences (China: Major League Baseball and Globalization) *	
TSTD 6282	International Experiences (International Experience: Olympic Games/World Cup) *	

*Indicates a short-term study abroad experience

Tourism

back to concentration options (p. 474)

Code	Title	Credits
Required		
TSTD 6250	Destination Management	
TSTD 6262	Tourism Policy Analysis	
TSTD 6263	Destination Marketing	
Electives		
6 credits from the following:		
TSTD 6214	Consultative Processes *	
TSTD 6220	International Hotel Management	
TSTD 6221	Hotel/Resort Market Analysis	
TSTD 6249	Sustainable Destination Development	
TSTD 6264	Sport Marketing	
TSTD 6266	Sport and Event Facility Management	
TSTD 6277	Event Management	
TSTD 6278	Conference and Exposition Management	
TSTD 6282	International Experiences *	
TSTD 6290	Special Topics (Managing the Customer Experience)	
TSTD 6290	Special Topics (Walt Disney World: Innovation in Services)	

*Indicates a short-term study abroad experience

HEALTHCARE MASTER OF BUSINESS ADMINISTRATION

Offered in a distance learning format, the master of business administration degree program in healthcare (Healthcare M.B.A.) is designed for working healthcare professionals who wish to develop the practical business skills and leadership expertise needed to take an active role in transforming the future of the healthcare industry. The 55.5 credit program can be completed in as little as two years and as many as five.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://business.gwu.edu/current-students-2/mba-programs-and-concentrations/healthcare-mba-degree-requirements) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 55.5 credits, including 31.5 credits in required courses,12 credits health care-focused elective courses, and 12 credits in general elective courses. Additional information regarding curriculum requirements is provided below.

Code	Title	Credits
Required		
MBAD 6202	Foundational Management Topics in Health Care	
MBAD 6211	Financial Accounting	
MBAD 6213	Managerial Accounting	
MBAD 6223	Operations Management	
MBAD 6224	Decision Making and Data Analysis	
MBAD 6235	Finance	
MBAD 6242	Microeconomics for the World Economy	
MBAD 6245	Global Perspectives	
MBAD 6263	Organizations and Human Capital	
MBAD 6274	Marketing	
MBAD 6288	Strategic Management	
MBAD 6289	Business Ethics & Public Policy	
Healthcare-focused electives		
12 credits in healthcare-focused courses taken in the School of Business (GWSB) and School of Medicine and Health Sciences (SMHS). A list of approved courses is available on the current MBA student website and in DegreeMAP.		
General electives		
12 credits of general electives in courses offered by any GWSB department; courses must be numbered 6000 and above.		

Students may apply to waive up to 6 credits in designated required courses. If approved, the student does not need to complete the waived course at GWSB. However, the total number of credits required to complete the program will not be reduced and the student must replace the waived course with general elective credits to fulfill graduation requirements.

See the course waiver policy (http://business.gwu.edu/current-students-2/academic-policies/core-course-waivers) for details.

Healthcare-focused and general elective courses must be taken for a letter grade, with the exception of courses taken in the Law School; Law School courses are given a letter grade, which is converted to a grade of *CR* on the transcript.

Up to 12 credits in general electives may be completed in courses taken outside of GWSB/SMHS; up to 6 of those credits may be taken outside of the University. This 12-credit maximum may include approved transfer credit, credit earned through the Consortium, and credit earned in graduate-level courses completed at GW outside of GWSB/SOMHS.

PROFESSIONAL MASTER OF BUSINESS ADMINISTRATION

The professional master of business administration degree program helps students achieve proficiency in the fundamentals of business and to see the growing value in ethical leadership, globalization, sustainability, and social responsibility.

This flexible part-time program is offered in on-campus (self-paced or cohort options), online, and hybrid formats. The self-paced on-campus, online, and hybrid options allow students to design their own course schedule to meet their professional and personal needs. Students may take up to five years to complete the program. The cohort option is structured to be completed in three years; however, students may take up to five years to complete the program. In all program options all students, the 27 credits in elective courses built into the curriculum allows students to craft a program of study to meet their own objectives.

Specific admission requirements are shown on the Graduate Program Finder.

Visit the program website for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 55.5 credits, including 28.5 credits in required courses and 27 credits in elective courses. Students may choose to complete a 12-credit concentration using elective credits.

Code	Title	Credits
Required		
MBAD 6211	Financial Accounting	
MBAD 6213	Managerial Accounting	
MBAD 6223	Operations Management	
MBAD 6224	Decision Making and Data Analysis	
MBAD 6235	Finance	
MBAD 6242	Microeconomics for the World Economy	
MBAD 6245	Global Perspectives	
MBAD 6263	Organizations and Human Capital	
MBAD 6274	Marketing	
MBAD 6288	Strategic Management	
MBAD 6289	Business Ethics & Public Policy	
Electives		
Electives may be in courses numbered 6000 and above in any GWSB department. Up to 12 credits in elective courses may be from outside GWSB.		

MBAD 6298 may not be applied toward PMBA degree requirements.

Concentration Options

Students may complete an elective concentration by completing coursework as outlined by the academic department. All concentrations require the successful completion of 12 unique credits. Each concentration includes both required coursework (3-6 credits) that must be completed and a list of optional courses to fulfill the remaining credits (6-9 credits). For more information on concentration options (http://business.gwu.edu/current-students-2/mba-programs-and-concentrations/concentrations), please visit the MBA Current Student (http://business.gwu.edu/current-students-2) website.

The concentration options include:

- Accounting and Advisory Services (p. 481)
- Consulting* (p. 482)
- Entrepreneurship (p. 483)
- Finance* (p. 484)
- Global Management* (p. 484)
- Government Contracts (p. 485)
- Information Systems and Technology Management* (p. 485)
- Marketing Communications and Digital Marketing (p. 485)
- Project Management* (p. 486)
- Sports Management (p. 486)
- Tourism (p. 487)

*Concentration can be completed either on-campus on online.

Accounting and Advisory Services

Code	Title	Credits
Required		

ACCY 6106	Financial Statement Analysis
Electives	
9 credits from the following:	
ACCY 6104	Intermediate Accounting I
ACCY 6105	Intermediate Accounting II
ACCY 6110	International Reporting and Control
ACCY 6111	International Accounting
ACCY 6112	International Financial Reporting Standards
ACCY 6202	Managerial Accounting II
ACCY 6203	Controls, Alignment & the Org.
ACCY 6301	Contemporary Auditing Theory
ACCY 6302	Fraud Examination and Forensic Accounting
ACCY 6401	Federal Income Taxation
ACCY 6402	Federal Income Taxation of Partnerships
ACCY 6403	Federal Income Taxation of Corporations
ACCY 6501	Accounting Information Systems and EDP
ACCY 6601	Business Law: Contracts, Torts, and Property
ACCY 6602	Business Law: Enterprise Organization
ACCY 6701	Government and Nonprofit Accounting and Auditing
ACCY 6801	Corporate Governance and Ethics
IBUS 6308	Intl Reporting and Contrl
IBUS 6309	International Accounting
IBUS 6310	Intl Fin. Reporting Standards
MBAD 6285	Business Law
SMPP 6215	Corporate Governance and Ethics

back to concentration options (p. 481)

Consulting

Code	Title	Credits
Required		
MGT 6214	Consultative Processes	
SMPP 6290	Special Topics (Consulting Practicum)	
Electives		
6 credits from the following:		
ACCY 6106	Financial Statement Analysis	
DNSC 6258	Executive Decision Making	
DNSC 6261	Introduction to Project and Program Management	
DNSC 6290	Special Topics	
FINA 6223	Investment Analysis and Portfolio Management	
FINA 6224	Financial Management	
FINA 6237	Private Wealth Management and Personal Financial Advising	
FINA 6248	Real Estate Development Cases	
FINA 6290	Special Topics	
IBUS 6201	International Marketing	
IBUS 6401	International Business Strategy	
IBUS 6402	Managing in Developing Countries	
IBUS 6290	Special Topics	
ISTM 6201	Information Systems Development and Applications	
ISTM 6206	Information Systems Security	
ISTM 6224	Management of Technology and Innovation	
MBAD 6243	Macroeconomics for the World Economy	
MGT 6210	Leading Teams	
MGT 6215	Conflict Management and Negotiations	
MGT 6253	Leadership and Executive Development	
MGT 6280	Entrepreneurship	
MGT 6290	Special Topics (Global Consulting: Theory and Practice)	

MKTG 6242	Buyer Behavior
MKTG 6243	Marketing Research
MKTG 6246	Marketing of Services
MKTG 6248	Advertising and Marketing Communications Strategy
MKTG 6250	Selling/Sales Management
MKTG 6251	Product Management
MKTG 6252	Digital Marketing
MKTG 6255	Strategic Brand Management
MKTG 6259	Marketing Strategy
MKTG 6290	Special Topics (Global Brand Strategy)
MKTG 6290	Special Topics (Integrated Marketing Communications)
SMPP 6202	Business-Government Relations
SMPP 6210	Strategic Environmental Management
SMPP 6211	Corp. Env. Mg. in Dev. Nations
SMPP 6213	Management of Strategic Issues
SMPP 6215	Corporate Governance and Ethics
SMPP 6216	Public Policy, Governance, and the Global Market
SMPP 6241	GlobalCorporateResponsibility
SMPP 6271	Corporate Envir Mgmt & Policy
SMPP 6290	Special Topics (Clean Tech & Competitive Energy)
SMPP 6290	Special Topics (Co-Creating Value)
SMPP 6290	Special Topics (Corporate Social Responsibility)
SMPP 6290	Special Topics (Energy Practicum)
SMPP 6290	Special Topics (Ethics in Health Services Management)
SMPP 6290	Special Topics (Governance through Dealmaking)
SMPP 6290	Special Topics (Healthcare Policy Analysis I)
SMPP 6290	Special Topics (Healthcare Policy Analysis II)
SMPP 6290	Special Topics (Human Rights and Multinationals)
SMPP 6290	Special Topics (Public Private Partnerships)
SMPP 6290	Special Topics (Strategic Management in Developing Country Environments)
SMPP 6290	Special Topics (Strategy & International Political Economics)
SMPP 6290	Special Topics (Sustainable and Responsible Investment in Today's Market)
SMPP 6290	Special Topics (Worldwide Energy Challenges)
TSTD 6214	Consultative Processes
TSTD 6282	International Experiences (China: Major League Baseball and Globalization)
TSTD 6282	International Experiences (Myanmar: Enhancing Economic Development through Scientific, Academic, Volunteer, and Experiential Tourism)
TSTD 6290	Special Topics (Walt Disney World: Innovation in Services)

back to concentration options (p. 481)

Entrepreneurship

Code	Title	Credits
Required		
MGT 6280	Entrepreneurship	
Electives		
9 credits from the following:		
FINA 6234	New Venture Financing: Due Diligence and Valuation Issues	
or ISTM 6234	New Venture Financing	
ISTM 6223	Technology Entrepreneurship	
MGT 6281	Small Business Management	
MGT 6282	New Venture Initiation	
MGT 6283	Strategic Entrepreneurship	
MGT 6284	Family Business Management	
MGT 6285	Social Entrepreneurship	

MGT 6286	Creativity and Innovation
MGT 6290	Special Topics (Entrepreneurship, Peace and Economic Development)

back to concentration options (p. 481)

Finance

Code	Title	Credits
Required		
FINA 6221	Financial Decision Making	
FINA 6224	Financial Management	
or FINA 6223	Investment Analysis and Portfolio Management	
Electives		
6 credits from the following:		
ACCY 6106	Financial Statement Analysis	
ACCY 6112	International Financial Reporting Standards	
ACCY 6801	Corporate Governance and Ethics	
ECON 6237	Economics of the Environment and Natural Resources	
ECON 6293	Topics in International Finance	
FINA 6222	Capital Formation	
FINA 6234	New Venture Financing: Due Diligence and Valuation Issues	
FINA 6235	Futures Markets: Trading and Hedging	
FINA 6236	Options	
FINA 6237	Private Wealth Management and Personal Financial Advising	
FINA 6238	Financial Engineering	
FINA 6239	Applied Portfolio Management	
FINA 6240	Real Estate Development	
FINA 6241	Financing Real Estate	
FINA 6242	Real Estate Valuation and Investment	
FINA 6290	Special Topics (Exploring Finance with Simulation)	
FINA 6290	Special Topics (Securities Regulation and the Financial Crisis)	
FINA 6290	Special Topics (Walkable Urban Real Estate Development)	
IBUS 6301	International Business Finance	
IBUS 6308	Intl Reporting and Contrl	
IBUS 6310	Intl Fin. Reporting Standards	
SMPP 6215	Corporate Governance and Ethics	

back to concentration options (p. 481)

Global Management

Code	Title	Credits
Required		
MBAD 6243	Macroeconomics for the World Economy	
A variable-credit study abroad experience*		
Electives**		
Remaining credits selected from the following:		
ACCY 6110	International Reporting and Control	
ACCY 6111	International Accounting	
ACCY 6112	International Financial Reporting Standards	
ECON 6250	Survey of Economic Development	
ECON 6269	Economy of China I	
ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy	
ECON 6285	Economic Development of Latin America	
ECON 6292	Topics in International Trade	
ECON 6293	Topics in International Finance	
ECON 6294	Topics in Economic Development	
IAFF 6118	Special Topics in International Affairs	
IAFF 6138	Special Topics in International Development Studies	
IAFF 6158	Special Topics in International Science and Technology Policy	
IAFF 6198	Special Topics in International Trade and Investment Policy	

IAFF 6358	Special Topics in Latin American and Hemispheric Studies
IBUS 6201	International Marketing
IBUS 6202	Regional Strategy for Multinationals
IBUS 6301	International Business Finance
MKTG 6248	Advertising and Marketing Communications Strategy
MGT 6297	International Mgt Experience
PMGT 6265	Special Topics in PMGT (Engaging in Latin America)
PPPA 6057	International Development Administration
PPPA 6058	International Development NGO Management
PSC 6439	International Political Economy
PUBH 6443	Global Health Agreements and Conventions
SMPP 6241	GlobalCorporateResponsibility
SMPP 6290	Special Topics (Human Rights & Multi-Nations)
SMPP 6290	Special Topics (Strategy & International Political Economy)

*Information about the short- and long-term study abroad experiences is available online (http://business.gwu.edu/international-programs/study-abroad).
**Elective credits should be selected in consultation with the program advisor.

back to concentration options (p. 481)

Government Contracts

Code	Title	Credits
Required		
GCON 6502	Formation of Government Contracts	
GCON 6503	Performance of Government Contracts	
Electives		
6 credits from the following:		
GCON 6505	Marketing for the Government Marketplace	
GCON 6506	Pricing Issues in Government Contracts	
GCON 6510	Foreign Government Contracting	
GCON 6514	Anti-Corruption Policy and Compliance in Procurement	
IBUS 6202	Regional Strategy for Multinationals	
IBUS 6297	International Management Experience	
MGT 6254	Negotiations and Labor Relations	

back to concentration options (p. 481)

Information Systems and Technology Management

Required	
ISTM 6201	Information Systems Development and Applications
ISTM 6202	Relational Databases
Electives	
6 credits from the following:	
ISTM 6204	Information Technology Project Management
ISTM 6203	Telecommunications and Enterprise Networks
ISTM 6206	Information Systems Security
ISTM 6211	Data Warehousing and Online Analytical Processing
ISTM 6215	Human-Computer Interaction
ISTM 6290	Special Topics (Web & Social Analytics)

back to concentration options (p. 481)

Marketing Communications and Digital Marketing

Code	Title	Credits
Required		
MKTG 6252	Digital Marketing	
MKTG 6248	Advertising and Marketing Communications Strategy	
or MKTG 6256	Integrated Marketing Communication	
Electives		
6 credits from the following:		

DNSC 6279	Data Mining
DNSC 6290	Special Topics
ISTM 6202	Relational Databases
MKTG 6241	Advanced Marketing Management
MKTG 6242	Buyer Behavior
MKTG 6243	Marketing Research
MKTG 6246	Marketing of Services
MKTG 6250	Selling/Sales Management
MKTG 6251	Product Management
MKTG 6255	Strategic Brand Management
MKTG 6290	Special Topics (Marketing & the Government Marketplace)
MKTG 6290	Special Topics (Marketing Metrics)
MKTG 6290	Special Topics (Pricing)
SMPA 6205	Media, Development, and Globalization
TSTD 6296	Travel Information Management Systems

back to concentration options (p. 481)

Project Management

Code	Title	Credits
Required		
DNSC 6261	Introduction to Project and Program Management	
DNSC 6267	Planning and Scheduling	
Electives		
6 credits from the following:		
DNSC 6234	Procurement & Contracting	
DNSC 6251	Optimization Models for Decision Making	
DNSC 6252	Risk Analysis for Decision Making	
DNSC 6254	Risk Management	
DNSC 6257	Cost Estimation and Control	
DNSC 6258	Executive Decision Making	
DNSC 6259	Project Portfolio Management	
DNSC 6262	Directed Computational Project Management	
DNSC 6290	Special Topics (Communication Strategies in Project Management)	
DNSC 6290	Special Topics (International Project Management)	
DNSC 6290	Special Topics (Project Management)	
DNSC 6290	Special Topics (Project Management and Organizational Context)	
DNSC 6290	Special Topics (Project Management Governance)	
DNSC 6290	Special Topics (Project Quality Management)	

back to concentration options (p. 481)

Sports Management

Code	Title	Credits
Required		
TSTD 6264	Sport Marketing	
TSTD 6265	Sport Law: Contracts and Negotiations	
Electives		
6 credits from the following:		
DNSC 6261	Introduction to Project and Program Management	
DNSC 6279	Data Mining	
DNSC 6290	Special Topics (Sports Analytics)	
DNSC 6290	Special Topics (Web and Database Analytics)	
MGT 6254	Negotiations and Labor Relations	
MKTG 6248	Advertising and Marketing Communications Strategy	
MKTG 6252	Digital Marketing	
MKTG 6290	Special Topics (Social Media Marketing)	
PPPA 6031	Governing and Managing Nonprofit Organizations	
PPPA 6032	Managing Fund Raising and Philanthropy	
PPPA 6033	Non-Profit Enterprise	

TSTD 6266	Sport and Event Facility Management
TSTD 6267	Sport Media and Communications
TSTD 6277	Event Management
TSTD 6279	Event Entertainment Management
TSTD 6280	Advanced Workshop
TSTD 6282	International Experiences (China: Major League Baseball and Globalization) *
TSTD 6282	International Experiences (International Experience: Olympic Games/World Cup) *

*Indicates a short-term study abroad experience

back to concentration options (p. 481)

Tourism

Code	Title	Credits
Required		
TSTD 6250	Destination Management	
TSTD 6262	Tourism Policy Analysis	
TSTD 6263	Destination Marketing	
Electives		
6 credits from the following:		
TSTD 6214	Consultative Processes *	
TSTD 6220	International Hotel Management	
TSTD 6221	Hotel/Resort Market Analysis	
TSTD 6249	Sustainable Destination Development	
TSTD 6264	Sport Marketing	
TSTD 6266	Sport and Event Facility Management	
TSTD 6277	Event Management	
TSTD 6278	Conference and Exposition Management	
TSTD 6282	International Experiences *	
TSTD 6290	Special Topics (Managing the Customer Experience)	
TSTD 6290	Special Topics (Walt Disney World: Innovation in Services)	

*Indicates a short-term study abroad experience

WORLD EXECUTIVE MASTER OF BUSINESS ADMINISTRATION

The world executive master of business administration degree program is designed for accomplished managers and professionals to enhance their organizational effectiveness. The program has a general management focus, with a strong emphasis on leadership, global and local environments, and mastery of key business functions. The 16-month, 52.5-credit program includes core courses, integrative topical courses, electives, residencies, consulting practicums, and a leadership coaching component.

Visit the program website (http://business.gwu.edu/programs/executive-education/world-executive-mba) for additional information.

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

The following requirements must be fulfilled: 52.5 credits in required courses.

Required	
IBUS 6901	
IBUS 6990	
MBAD 6211	Financial Accounting
MBAD 6213	Managerial Accounting
MBAD 6221	Judgment, Uncertainty, and Decisions
MBAD 6222	Data Analysis and Decisions
MBAD 6223	Operations Management
MBAD 6233	Financial Markets
MBAD 6234	Financial Management
MBAD 6241	Global Perspectives
MBAD 6242	Microeconomics for the World Economy
MBAD 6243	Macroeconomics for the World Economy
MBAD 6244	International Management
MBAD 6246	Global Economy
MBAD 6247	Consulting Practicum and International Residency
MBAD 6261	Organizations and Leadership

MBAD 6262	Managing Human Capital
MBAD 6265	Entrepreneurship
MBAD 6272	Nature of Markets
MBAD 6273	Marketing Decisions
MBAD 6281	Business Ethics
MBAD 6284	Business and Public Policy
MBAD 6285	Business Law
MBAD 6286	Strategy Formulation and Implementation
MBAD 6290	Special Topics (taken five times on different topics for 1.5 credits each offering)
MBAD 6291	Business Communications
MBAD 6296	Business Challenge
MBAD 6297	Business and Innovation
MGT 6301	

COMBINED PROGRAMS, SCHOOL OF BUSINESS

Joint Degree Programs

For all joint degree programs, students must meet the requirements for both degrees in order to receive either diploma. Degrees are conferred simultaneously.

Master of Business Administration/Juris Doctor (with the Law School)
Students may work concurrently toward both the Master of Business Administration (M.B.A.) and Juris Doctor degrees. In consultation with their faculty advisors, students in these programs may transfer up to 14 credits of Law School course work to their M.B.A. program and 12 credits of School of Business course work to fulfill requirements for the J.D. Students must be admitted separately to the School of Business and to the Law School. It is possible for a student to complete the requirements for both degrees within four years.

Master of Business Administration/Master of Arts with a focus on international business (with the Elliott School of International Affairs)
Students may work concurrently toward both the M.B.A. and Master of Arts (M.A.) degrees. In consultation with their faculty advisors, students in these programs may transfer up to 12 credits of Elliott School course work to their M.B.A. program and 12 credits of School of Business course work to fulfill requirements for the M.A. Students must be admitted separately to the School of Business and to the Elliott School of International Affairs.

Master of Business Administration/Master of Science in Finance
Master of Business Administration/Master of Science in Government Contracts
Master of Business Administration/Master of Science in Project Management
Students may pursue one of three joint degrees where both degree programs are within the School of Business: M.B.A./Master of Science (M.S.) in finance; M.B.A./M.S. in government contracts; or M.B.A./M.S. in project management. Students must be admitted simultaneously to both degree programs to be eligible for the joint degree.

Dual Degree Program

For dual degree programs, each degree is awarded as it is completed.

Master of Business Administration/Master of Science in Information Systems Technology
Students interested in the dual M.B.A./M.S. degree programs in information systems technology may be admitted either simultaneously or consecutively to the two degree programs.

DOCTOR OF PHILOSOPHY IN BUSINESS ADMINISTRATION

The Doctor of Philosophy in business administration is a highly specialized research degree designed to prepare students who wish to pursue academic and research careers in a particular field of business.

The minimum admission requirement is a bachelor's degree from a regionally accredited college or university, although most applicants have completed a master's degree in an appropriate field. Applicants whose degrees are in fields other than their proposed area of focus are expected to obtain the necessary background either before or soon after admission to the program. Scores on the Graduate Record Examination or the Graduate Management Admission Test are required; scores may not be more than five years old. Students from countries where English is not the official language and non-native English speakers are required to take either the Test of English as a Foreign Language (TOEFL) or the academic International English Language Testing System (IELTS). Exceptions may be made for applicants who hold a degree from a university located in a country in which English is the official language and also the language of instruction at the university. Minimum acceptable scores for TOEFL are 600 or above (paper exam) or 100 or above (Internet exam); for IELTS, an overall band score of 7.0 with no individual band score below 6.0. The Doctoral Committee does not use specific cutoff points for grade averages and test scores. In making admission decisions it carefully reviews each applicant's entire record and makes

its selection on a competitive basis in keeping with enrollment limitations.

The doctoral program consists of two major parts: the pre-dissertation stage and the dissertation stage. The pre-dissertation stage normally involves two years of studies described in an individual study plan developed by the student under the guidance of a committee of at least three faculty advisors. The objective of the dissertation stage is to have the student apply the obtained theoretical and practical knowledge and analytical methods to the resolution of a research problem. The research should be original and result in a contribution, either applied or theoretical, to the existing body of knowledge.

All course work, other educational activities, and required comprehensive evaluations must be completed within five years of matriculation. The total program must be finished in seven years.

The doctoral program is administered and supervised by the Associate Dean and the Committee on Doctoral Studies. For more detailed information on the program, see the Handbook on the Doctoral Program, available in the Doctoral Program Office.

CERTIFICATE PROGRAMS

Post-Master's Certificate Program for School of Business Alumni

The School of Business offers a post-master's graduate certificate designed to assist master's degree alumni of the school in keeping apace of an ever-changing business climate. Participants may undertake a 12-credit program of study in an existing School of Business field or from a series of specially designed program offerings. Further information is available from the Office of the Dean.

Graduate Certificate Programs

In addition, the School of Business offers graduate certificate programs of study in the following fields:

- Graduate certificate in business analytics (p. 489)
- Graduate certificate in walkable urban development (p. 491)
- Graduate certificate in nonprofit management (p. 489)
- Graduate certificate in responsible management (p. 490)
- SAS certificate in business analytics (p. 491)

GRADUATE CERTIFICATE IN BUSINESS ANALYTICS

The master of science in business analytics (MSBA) program enhances its business analytics program by offering an external, stand-alone graduate certificate in business analytics. The certificate is available to current GWSB students as well as those not enrolled in a graduate degree program.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits total, including 10.5 credits in required courses and 1.5 credits in an elective course.

Code	Title	Credits
Required		
DNSC 6201	Introduction to Business Analytics	
DNSC 6203	Statistics for Analytics I	
DNSC 6213	Statistics for Analytics II	
DNSC 6219	Time Series Forecasting for Analytics	
DNSC 6279	Data Mining	
Electives		
One of the following:		
DNSC 6214	Pricing and Revenue Management	
DNSC 6215	Social Network Analytics	
DNSC 6225	Business Process Simulation	
DNSC 6290	Special Topics	

GRADUATE CERTIFICATE IN NONPROFIT MANAGEMENT

The graduate certificate in nonprofit management provides an overview of central concepts in managing nonprofit organizations and is intended to meet the needs of students seeking a focused experience in order to prepare for or advance their careers in the nonprofit sector. Certificate students enroll in regular courses of the Trachtenberg School of Public Policy and Public Administration and earn graduate credit.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits.

Code	Title	Credits
Required		
PPPA 6031	Governing and Managing Nonprofit Organizations	
PPPA 6032	Managing Fund Raising and Philanthropy	

Elective	
Two of the following	
PPPA 6016	Public and Nonprofit Program Evaluation
PPPA 6033	Non-Profit Enterprise
PPPA 6034	Managing Nonprofit Boards
PPPA 6053	Financial Management for Public and Nonprofit Organizations
PPPA 6058	International Development NGO Management

Other Trachtenberg School of Public Policy and Public Administration nonprofit courses may be offered periodically. With prior approval of the field advisor, certain non-Trachtenberg School courses at GW may be counted toward the elective group.

GRADUATE CERTIFICATE IN RESPONSIBLE MANAGEMENT

The graduate certificate in responsible management (CRM) program is designed to enhance the preparation of students as responsible leaders. Students participate in seminars, projects, courses, and service in a variety of topic areas, including global strategy, ethics, corporate social responsibility, international development, peace, energy, and the environment. These academic opportunities provide students with the knowledge, proficiencies, and skills needed to succeed as leaders in governmental, industry, and consumer oversight.

The CRM program is open only to GW graduate students. Students often begin the CRM program as early as their first semester and at least one year prior to graduation.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the School of Business (http://business.gwu.edu) website or additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including one required 3-credit course, one required 0-credit course, and 9 credits in elective courses.

Code	Title	Credits
Required		
MBAD 6281	Business Ethics	
MBAD 6284	Business and Public Policy	
SMPP 6290	Special Topics	
Electives		
9 credits from the following:		
MBAD 6290	Special Topics (World Wide Energy Challenges)	
SMPP 6290	Special Topics (Cultural Norms)	
SMPP 6297	International Management Experience (Egypt: CR and Social Engrepreneuship)	
mgmt 6297		
SMPP 6290	Special Topics (Global Market Governance and PPOL)	
SMPP 6297	International Management Experience (Paris: Global Strategy)	
SMPP 6297	International Management Experience (Argentina: CSR and Partnering)	
SMPP 6202	Business-Government Relations	
SMPP 6215	Corporate Governance and Ethics	
SMPP 6241	GlobalCorporateResponsibility	
SMPP 6290	Special Topics (Competitive Energy Markets)	
SMPP 6290	Special Topics (Strategy for a Sustainable Business)	
SMPP 6290	Special Topics (Worldwide Energy Challenge)	
SMPP 6290	Special Topics (Sustainable and Responsible Investments)	
SMPP 6290	Special Topics (The Corporation/Am Business History)	
SMPP 6290	Special Topics	
SMPP 6290	Special Topics (Corporate Envir Mgmt and Poligy)	
SMPP 6290	Special Topics (Adv Issues in Ethical Decision Making)	
SMPP 6290	Special Topics (Global Strategy and International Diplomacy)	
SMPP 6297	International Management Experience (Egypt: CSR and Social Entrepreneurship)	
mgmt 6297		

GRADUATE CERTIFICATE IN WALKABLE URBAN DEVELOPMENT

The graduate certificate in walkable urban development program provides course work in the practical foundations of walkable urban real estate development and place management. Real estate development in the United States has been transitioning from building and financing single-use properties in the suburbs to building, financing, and managing complex mixed-use projects in walkable urban cores. This program provides students with the tools necessary to finance, develop, and manage these emerging communities.

REQUIREMENTS

The following requirements must be fulfilled: 16.5 credits in required courses.

Code	Title	Credits
Required		
FINA 6240	Real Estate Development	
FINA 6241	Financing Real Estate	
or FINA 6242	Real Estate Valuation and Investment	
FINA 6290	Special Topics (Foundations of Real Estate Law)	
FINA 6290	Special Topics (Walkable Urban Place Development and Management)	
FINA 6290	Special Topics (Walkable Urban Place Development and Management ULI Hines Competition Capstone)	
PSUS 6202	Urban and Environmental Economics	
or PSUS 6235	Adv Topics in Urban Sust	

SAS CERTIFICATE IN BUSINESS ANALYTICS

The master of science in business analytics (MSBA) program enhances its business analytics program by offering a SAS certificate in business analytics. The certificate is available only to students enrolled in the MSBA effective fall 2016 semester. The certificate program is a result of a confluence of factors—the urgent need for more trained STEM workers in the U.S., the D.C. metro region's reputation as a focus for business analytics, the growing importance of being able to harness the power of "big data," and the attractive and lucrative career paths for students with STEM training.

REQUIREMENTS

The following requirements must be fulfilled: 15 credits in required courses.

Code	Title	Credits
Required		
DNSC 6201	Introduction to Business Analytics	
DNSC 6203	Statistics for Analytics I	
DNSC 6206	Stochastic Fndn: Prob Models	
DNSC 6213	Statistics for Analytics II	
DNSC 6216	Business Analytics Skills Workshops	
DNSC 6217	Business Analytics Practicum	
DNSC 6219	Time Series Forecasting for Analytics	
DNSC 6279	Data Mining	

ACCOUNTANCY

GW Business School's Bachelor of Accountancy and Master of Accountancy degree programs prepare students to make significant contributions to both private and public organizations in the global economy. In addition to a rigorous program of study, students gain practical experience through internships and the opportunity to study the stock market in a classroom outfitted like a Wall Street trading venue. The faculty coordinates access to executives in high-profile firms and agencies and government officials so that students further their exposure to, and training in, the discipline.

Visit the program website (http://business.gwu.edu/programs/specialized-masters/master-of-accountancy) for more information.

UNDERGRADUATE

Bachelor's program

- Bachelor of Accountancy (http://bulletin.gwu.edu/business/undergraduate-programs/accountancy)
- Bachelor of Business Administration (p. 456)

Combined programs

- Dual Bachelor of Accountancy and Master of Accountancy (B.Accy./M.Accy.) (p. 467)
- Dual Bachelor of Business Administration and Master of Accountancy (and B.B.A./M.Accy.) (p. 467)

GRADUATE

Master's program

- Master of Accountancy (p. 469)

FACULTY

Professors S.H. Kang, C. Linsley *(Teaching),* A. Lusardi

Associate Professors A. Gore, C.L. Jones (*Teaching*), S. Kulp, F. Lindahl, L.C. Moersen, K.E. Smith, R.L. Tarpley (*Chair*), Y. Xue, Y. Zhang,

Assistant Professors J. Potepa, O. Rozenbaum, L. Tan, K. Welch, Y. Zou

Teaching Instructors S. Lancaster

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ACCY 2001. Intro Financial Accounting. 3 Credits.
The fundamental concepts underlying financial statements and the informed use of accounting information. Analysis and recording of business transactions; preparation and understanding of financial statements. Measurement of the profitability and financial position of a business. Restricted to sophomore standing.

ACCY 2002. Introductory Managerial Accounting. 3 Credits.
The use of accounting information to plan and control the activities of a business. Several widely used methods of determining the cost of business activities for use in making business decisions. Prerequisite: ACCY 2001.

ACCY 3101. Intermediate Accounting I. 3 Credits.
Financial accounting concepts underlying the preparation and interpretation of financial statements. Topics include revenue and expense recognition; accounting for receivables, inventories, fixed assets, intangible assets, and liabilities. Prerequisite: ACCY 2001.

ACCY 3102. Intermediate Accounting II. 3 Credits.
Financial accounting concepts underlying the preparation and interpretation of financial statements; accounting for stockholders' equity, earnings per share, debt and equity investments, income taxes, pensions and other postretirement benefits, accounting changes, statements of cash flows, financial statement analysis, and disclosure. Prerequisite: ACCY 3101.

ACCY 3106. Financial Statement Analysis. 3 Credits.
Introduction to the analysis and interpretation of corporate financial statements within the context of a company's industry and economic environment. Cash flow analysis, profitability and risk analysis, accounting policy analysis, forecasting and performance analysis, elements of equity valuation, and decision perspectives of creditors. Students cannot earn credit for both this course and ACCY 4801. Prerequisite: ACCY 2002.

ACCY 3401. Federal Income Tax:Individuals. 3 Credits.
A study of federal income tax concepts, including what shall be taxed, and when, and at what rate. Taxable entities, income measurement, the use of different tax rates for different types of income, and the use of the tax laws to motivate taxpayer behavior to achieve economic goals.

ACCY 3403. Advanced Tax. 3 Credits.
Taxation of partnerships, corporations, and their owners. Formation, operation, and liquidation of each type of entity. Financial and tax accounting for each type of transaction, with the goal of gaining a better understanding of each system by comparing and contrasting it with the other one. Prerequisites: ACCY 2001 & ACCY 3401.

ACCY 3601. Business Law: Contracts, Torts, and Property. 3 Credits.
Essential legal principles of contracts, torts, and property, including trusts and estates, leases, professional liability, and the Uniform Commercial Code.

ACCY 4107. Advanced Accounting. 3 Credits.
Accounting for corporate combinations, foreign currency financial statements, and derivative financial instruments. Governmental and not-for-profit accounting. Prerequisites: ACCY 3101 and ACCY 3102.

ACCY 4301. Auditing. 3 Credits.
A study of generally accepted auditing standards and accepted professional auditing practices and procedures, including reviewing and evaluating financial controls, auditing financial statements, and testing financial data of manual and automated accounting systems. Prerequisite: ACCY 3102.

ACCY 4501. Accounting Systems. 3 Credits.
Introduction to the design and operation of accounting systems and data management controls. Principles and applications of internal control applicable to manual and automated accounting systems. Prerequisite: ACCY 3102.

ACCY 4601. Business Law: Enterprise Organization. 3 Credits.
The legal aspects of organizing, financing, and operating an enterprise: agency, partnerships, corporations, securities regulation, insurance, secured credit financing, and commercial paper. Prerequisite: ACCY 2001.

ACCY 4801. Financial Accounting Capstone. 3 Credits.
Synthesis and application of knowledge of financial accounting to specific contexts, using the perspectives of the preparer and user of financial statements. Students cannot earn credit for both this course and ACCY 3106. Restricted to seniors only.

ACCY 4900. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods. Restricted to department approval.

ACCY 4995. Independent Study. 3 Credits.
Assigned topics. Admission by permission of the department chair.

ACCY 6101. Financial Accounting. 3 Credits.
The basic concepts and methods used in financial reports for understanding their content and context. The income statement, balance sheet, and statement of cash flows. Detailed accounting procedures and choices. How the most important accounting procedures are calculated and how different choices impact financial statements. Same as MBAD 6211.

ACCY 6104. Intermediate Accounting I. 3 Credits.
Accounting principles and concepts for financial accounting and reporting; emphasis on the preparation of general-purpose financial statements. Restricted to School of Business graduate degree students. Prerequisite: ACCY 6101 and MBAD 6211.

ACCY 6105. Intermediate Accounting II. 3 Credits.
Revenue recognition, employee compensation and pension plans, income tax expense, and earnings per share. Prerequisites: ACCY 6104.

ACCY 6106. Financial Statement Analysis. 3 Credits.
Analysis and interpretation of financial statements for managers, stockholders, creditors, and financial analysts; ratio-driven financial analysis; earnings-based and cash-flow-based equity valuation; sales and EPS forecasting; preparation of projected financial statements. Prerequisites: ACCY 6101/MBAD 6211.

ACCY 6110. International Reporting and Control. 1.5 Credit.
International comparisons of forces that shape financial management, such as corporate governance mechanisms, tax policies, economic development, and privatization. Same as IBUS 6308.

ACCY 6112. International Financial Reporting Standards. 1.5 Credit.
Financial reporting standards that are used throughout most of the world other than the United States. Comparisons of these standards with those of the United States. Prerequisite: ACCY 6101/MBAD 6211. Same as IBUS 6310.

ACCY 6201. Managerial Accounting I. 1.5 Credit.
Effective use of accounting information in decision making and control of organizations. Same as MBAD 6213. Prerequisite: ACCY 6101/MBAD 6211.

ACCY 6202. Managerial Accounting II. 1.5 Credit.
Further topics in applying concepts of control and decision analysis to optimize the financial management of organizations. Prerequisite: ACCY 6201/MBAD 6213.

ACCY 6203. Controls, Alignment & the Org.. 1.5 Credit.

ACCY 6301. Contemporary Auditing Theory. 3 Credits.
A comprehensive survey of contemporary auditing as practiced by external auditors (primarily certified public accountants) and internal auditors (those employed within government and corporate entities). Generally accepted auditing standards; government auditing standards. Planning, directing, and reporting on various audits. Prerequisite: ACCY 6101/MBAD 6211; corequisite: ACCY 6104.

ACCY 6302. Fraud Examination and Forensic Accounting. 3 Credits.
Financial statement fraud, misappropriation of assets, and methods of deterrence, prevention, detection, and investigation. Prerequisite: ACCY 6101/MBAD 6211; a course in auditing preferred but not required.

ACCY 6401. Federal Income Taxation. 3 Credits.
A study of federal income taxation, covering gross income, deductions and credits, sales and other disposition of property, capital gains and losses, and timing of income and deductions.

ACCY 6402. Federal Income Taxation of Partnerships. 3 Credits.
Financial and tax accounting for partnerships; formation and operation, distribution to partners, liquidation, and transfer of partnership interests. S corporations are also considered. Prerequisite: ACCY 6401.

ACCY 6403. Federal Income Taxation of Corporations. 3 Credits.
Federal income taxation of C corporations, covering formation, capital structure, nonliquidating distributions, complete liquidations, corporate accumulations, and the alternative minimum tax.

ACCY 6501. Accounting Information Systems and EDP. 3 Credits.
Development and application of accounting system theory, including analysis, design, control concepts, and implementation. Integration of electronic data processing, accounting systems, and management information systems. Prerequisite: ACCY 6101/MBAD 6211.

ACCY 6601. Business Law: Contracts, Torts, and Property. 3 Credits.
Essential legal principles of contracts, torts, and property, including trusts and estates, leases, professional liability, and the Uniform Commercial Code.

ACCY 6602. Business Law: Enterprise Organization. 3 Credits.
The legal aspects of organizing, financing, and operating an enterprise: agency, partnerships, corporations, securities regulation, insurance, suretyship, secured credit financing, and commercial paper.

ACCY 6701. Government and Nonprofit Accounting and Auditing. 3 Credits.
The budgeting, accounting, financial reporting, and auditing required of federal, state, and local governments, nonprofit organizations, and colleges and universities. The financial practices and requirements applicable to organizations receiving governmental financial assistance and those subject to governmental audits. Prerequisite: ACCY 6101/MBAD 6211.

ACCY 6801. Corporate Governance and Ethics. 3 Credits.
The theory, practice, and public policy environment of corporate governance. Purpose, functioning, and responsibilities of boards of directors. Power, control, and compensation of corporate management. Shareholders and stakeholders. Corporate governance in comparative national settings. Same as SMPP 6215.

ACCY 6900. Special Topics. 1-3 Credits.
Experimental offering; new course topics and teaching methods.

ACCY 6998. Directed Readings and Research. 1-3 Credits.

ACCY 8001. Doctoral Seminar. 1-12 Credits.
Reasoning and research in technical areas of accounting; theoretical issues and their application to practice; conceptual themes in professional literature; comparative accounting research analyses.

ACCY 8009. Dissertation Research. 1-12 Credits.
Limited to doctoral candidates. May be repeated for credit.

ACCY 8999. Advanced Reading and Research. 1-12 Credits.
Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

DECISION SCIENCES

UNDERGRADUATE

Bachelor's program

- Bachelor of Business Administration (p. 456)

GRADUATE

Master's programs

- Master of Science in Business Analytics (p. 470)
- Master of Science in Project Management (p. 472)

FACULTY

Professors P.K. Bagchi, E.H. Forman, T.A. Mazzuchi, R. Soyer, M.M. Tarimcilar, J.R. van Dorp, P.W. Wirtz

Associate Professors D.F. Cioffi *(Teaching),* P. Delquie *(Teaching),* S. Jain *(Teaching)*, H. Khamooshi *(Teaching),* A. Jarrah, S. Kanungo (*Chair*), Y.H. Kwak, M.A. Lejeune,, S.Y. Prasad,

Assistant Professors M. Altug, J.S. Kettunen, M.E. Matta *(Teaching)*

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

DNSC 3401. Introduction to Business Analytics. 3 Credits.
Fundamentals of business analytics: what information it provides, how and when that information is used, and how it affects decision making. Working with uncertainty; understanding the dynamic nature of decision making; using data, regardless of its size; and making decisions with incomplete data. The simulation of real-life scenarios to support optimal decision making. Prerequisites: APSC 3115 or STAT 1051 or STAT 1053 or STAT 1111.

DNSC 3402. Data Mining. 3 Credits.
The practice of exploring and discovering actionable business intelligence from large amounts of data; concepts, methods, and tools; supervised and unsupervised data mining techniques for discovering relationships in large data sets and building predictive models; regression models, decision trees, neural networks, clustering, and association analysis. Prerequisites: APSC 3115 or STAT 1051 or STAT 1053 or STAT 1111; Math 1231 or Math 1252.

DNSC 4403. Decision Models. 3 Credits.
Students learn to design and develop decision models using spreadsheet software with specialized decision support add-ins, and to effectively interpret the models' outputs. Commonly used classes of models including, optimization, Monte Carlo simulation and decision analysis. Models discussed span business disciplines including finance, accounting, marketing, human resources, economics, and operations. Prerequisites: DNSC 3401.

DNSC 4404. Essentials of Project Management. 3 Credits.
Theoretical foundations of and practical insights into project management; the role of project management in contemporary business and government organizations; the link between projects and strategy. Project design and development.

DNSC 4900. Special Topics. 0-3 Credits.

DNSC 6201. Introduction to Business Analytics. 1.5 Credit.
An introduction to business analytic concepts, methods, and tools with concrete examples from industry applications; Big Data and the opportunities it has created for businesses to store, organize, and analyze vast amounts of information. Completion of a basic course in statistics prior to enrollment is recommended.

DNSC 6202. Mathematics and Statistics for Management. 3 Credits.
Mathematical and statistical concepts employed in the solution of managerial problems. Applications of functions, elements of calculus, and linear algebra. Introduction to probability, frequency distributions, statistical inference, and regression and correlation.

DNSC 6203. Statistics for Analytics I. 1.5 Credit.
The foundations of statistical methodologies used in business analytics; statistical inference and probability models; methods of estimation, hypothesis testing, contingency table analysis, analysis of regression models and logit and probit analysis. Restricted to students in the MS in business analytics and graduate certificate in business analytics programs or with departmental permission.

DNSC 6206. Stochastic Fndn: Prob Models. 1.5 Credit.

DNSC 6207. Applied Probability Models. 1.5 Credit.

DNSC 6208. Computational Optimization. 3 Credits.

DNSC 6209. Forecasting for Analytics. 1.5 Credit.

DNSC 6210. Decision and Risk Analytics. 1.5 Credit.
Concepts, methods, and practical tools to analyze managerial decisions involving risk and uncertainty. Decision tree modeling, the strategic value of information, real options valuation, measurement and incorporation of risk preferences, and Monte Carlo simulation. The roles and limitations of judgment and sensitivity and robustness analysis as means to deal with the ambiguities inevitably present in real situations.

DNSC 6211. Programming for Analytics. 3 Credits.
Accessing, preparation, handling, and processing data that differ in variety, volume, and velocity. The ability to handle and process data is a core capability in the context of any analytics position in the industry. Development of a theoretical grounding in emerging paradigms like schema-less data. The programming environments that will be typically employed include Python and R.

DNSC 6212. Optimization Methods and Applications. 3 Credits.
Linear, network, integer, and nonlinear models and their fundamental underlying analytic concepts and solution methods. Emphasis on development of an intuitive understanding of solution methods and their underpinning theoretical paradigms for effective use of optimization models. Model formulation, solutions, and interpretation of results.

DNSC 6213. Statistics for Analytics II. 1.5 Credit.
Statistical methodologies for business analytics in real world scenarios; introduction of high-level analytical techniques such as hierarchical linear modeling and mixed-effects modeling. Restricted to students in the MS in business analytics and graduate certificate in business analytics programs or with departmental permission. Prerequisites: DNSC 6203.

DNSC 6214. Pricing and Revenue Management. 1.5 Credit.
Methodologies for addressing pricing issues; tactical optimization of pricing and capacity allocation decisions; quantitative models of consumer behavior and constrained optimization.

DNSC 6215. Social Network Analytics. 1.5 Credit.
Concepts, methods, and applications of network science; Analyzing real networks and related phenomena such as disease propagation, organizational analysis, social power, and fraud detection. Exposure to Python and R scripts prior to enrollment is recommended.

DNSC 6216. Business Analytics Skills Workshops. 0-1.5 Credits.
A series of workshops covering project management techniques for analytics projects, team dynamics skills, communicating quantitative information, and ethics, security, and privacy policies in analytics.

DNSC 6217. Business Analytics Practicum. 1.5 Credit.
Working in small teams, students apply their analytics skills to projects sponsored by public or private institutions. Each team is advised by a faculty member, and the practicum sponsor designates a mentor to provide guidance to the team for the duration of the project. Prerequisite: MSBA degree candidacy.

DNSC 6219. Time Series Forecasting for Analytics. 3 Credits.
Predictive analysis and blackbox models for time series and econometric forecasting; identifying hidden patterns and structures in the univariate and multivariate time series data and exploiting these for forecasting; use of SAS to apply different forecasting models and methodologies to real life time-series data. Restricted to students in the master of science in business analytics degree program; program approval may be substituted.

DNSC 6225. Business Process Simulation. 1.5 Credit.
Introduction to the compromises and limitations involved in business process design; basic tools used to analyze and improve processes; simulation models using a powerful discrete-event simulation tool. Restricted to students in the master of science in business analytics degree program; program approval may be substituted. Prerequisites: DNSC 6202.

DNSC 6230. Mgt of Technology Innovation. 3 Credits.

DNSC 6234. Procurement & Contracting. 3 Credits.
Principles and concepts essential to effecting large procurement programs. Planning, sourcing, and contractual design for diverse acquisitions. Emphasis on federal government policy with comparison of buying at other governmental levels and the private sector.

DNSC 6235. Communication Strategies in Project Management. 3 Credits.
Communication leadership and management practices that facilitate successful project management; strategies and practices related to communication, change management, and performance reporting.

DNSC 6236. Project Quality Management. 3 Credits.

DNSC 6237. International Project Management. 1.5 Credit.
Augments the basics of project management with theory, practice, and methodology related to global project environment; practical investigation of the cultural environment in the context of managing global projects.

DNSC 6239. Project Governance. 1.5 Credit.
An overview of project governance; models, practices and case studies.

DNSC 6247. Organization, Management, and Leadership. 3 Credits.
Fundamentals of human resource management for project managers. Tools and techniques for success in managing and leading people in a project environment.

DNSC 6250. Project Management Finance. 3 Credits.

DNSC 6251. Optimization Models for Decision Making. 1.5 Credit.
Optimization techniques, including linear programming, sensitivity analysis, networks, integer programming and multiple objective optimization, and nonlinear and evolutionary programming. Prerequisites: DNSC 6202 (equivalent to MBAD 6221 and MBAD 6222 or MBAD 6224).

DNSC 6252. Risk Analysis for Decision Making. 1.5 Credit.
Probabilistic modeling techniques with spreadsheet implementation. Special focus is placed on the concept of risk and methods for analyzing it. Topics include: risk attitudes, risk measures, decision trees, simulation models, game theory, real options approach, and risk communication.

DNSC 6254. Risk Management. 1.5 Credit.
Basic principles of risk management practices. Developing a risk management plan, including identifying, analyzing, mitigating, and monitoring projects risks. Prerequisites: DNSC 6202 or MBAD 6224 or MBAD 6221, MBAD 6222.

DNSC 6257. Cost Estimation and Control. 1.5 Credit.
Methods of developing project estimates during the planning stages and updating the estimates throughout the life of the project; monitoring, reporting, controlling, and managing project cost; relationships between project cost and other parameters, including scope, time, quality, reliability and procurement risk. Prerequisites: DNSC 6202 or MBAD 6221, MBAD 6222 or MBAD 6224.

DNSC 6258. Executive Decision Making. 1.5 Credit.

DNSC 6259. Project Portfolio Management. 1.5 Credit.
Management of an organization's portfolio of projects for the overall success of the enterprise; alignment of projects with an organizations strategy and goals and consistency with values and culture. Prerequisites: DNSC 6202 or MBAD 6221, MBAD 6222 or MBAD 6224.

DNSC 6261. Introduction to Project and Program Management. 3 Credits.
Practical examination of how projects can be managed from start to finish, including specific emphasis on planning and controlling to avoid common pitfalls. Identifying needs, defining requirements, project costing, scheduling, resource allocation, and project politics.

DNSC 6262. Directed Computational Project Management. 3 Credits.
Practical examination of project management concepts by quantitative application using various software tools. Research in real cost data to support project calculations. Prerequisite: DNSC 6254, DNSC 6257, DNSC 6261, DNSC 6267.

DNSC 6263. Managing External Projects. 3 Credits.
Fundamentals of contract management from a project manager's perspective. The outsourcing process, associated project strategies, and legal elements. Acquisition planning, vendor selection, contract formulation, and performance control.

DNSC 6267. Planning and Scheduling. 3 Credits.
Integrated planning, scheduling, and control systems for planning the scope of a project; optimizing time, cost, and resources; and monitoring and controlling schedules, including those for delayed projects. Prerequisites: DNSC 6202 or MBAD 6221, MBAD 6222 or MBAD 6224.

DNSC 6269. Project Management Application. 3 Credits.
Students will be expected to demonstrate integration of the knowledge accumulated in their study plan and apply integrated knowledge and experience to best practices, a project case history, and a handbook. Prerequisites: M.S.P.M. candidacy or permission of instructor/advisor.

DNSC 6274. Statistical Modeling and Analysis. 3 Credits.
The process of specifying, analyzing, and testing models of human and systemic behavior. Formalization of models; statistical test comparison and selection; computer implementation of univariate, bivariate, and multivariate tests. General linear model: linear regression, analysis of variance, and analysis of covariance. Prerequisite: MBAD 6221 and MBAD 6222 .

DNSC 6275. Advanced Statistical Modeling and Analysis. 3 Credits.
Advanced topics associated with the general linear model. Testing for and remediation of assumption violations. Detection of outliers, influential observations, and multicollinearity. Alternative design strategies in the analysis of variance; latent growth analysis; hierarchical linear modeling; testing for interactions and parallelism. Prerequisite: DNSC 6274 or permission of instructor.

DNSC 6276. Exploratory and Multivariate Data Analysis. 3 Credits.
Methods for exploratory and multivariate data analysis. Application and comparison of advanced multivariate analytical procedures. Multivariate and discriminant analysis, LISREL analysis, and canonical correlation. Prerequisite: DNSC 6274 or permission of instructor.

DNSC 6277. Applied Forecasting and Time-Series Analysis for Managers. 3 Credits.
Introduction to various forecasting techniques, including time-series regression models, cyclical trends, exponential smoothing methods, seasonal and nonseasonal ARIMA processes, and the Box–Jenkins approach. Application of forecasting methods in economics, finance, and marketing. Prerequisite: MBAD 6222 or permission of instructor.

DNSC 6279. Data Mining. 3 Credits.
How organizations make better use of the increasing amounts of data they collect and how they convert data into information that is useful for managerial decision making. Examination of several data mining and data analysis methods and tools for exploring and analyzing data sets. State-of-the-art software tools for developing novel applications.

DNSC 6290. Special Topics. 0-3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated once for credit.

DNSC 6298. Directed Readings and Research. 0-3 Credits.

DNSC 6300. Thesis Seminar. 3 Credits.

DNSC 6401. Sustainable Supply Chains. 1.5 Credit.
Introduction to integrating environmental management and sustainability concepts into the operations and supply chain management fields.

DNSC 8328. Special Topics in Decision Making. 3 Credits.
Special topics and advanced applications, such as catastrophe theory, Markovian decision processes, and Bayesian statistics. May be repeated once for credit.

DNSC 8385. Special Topics in Research Methods. 3 Credits.
Research problems and issues related to student dissertations form topics for readings, group discussions, and assigned papers.

DNSC 8397. Advanced Special Topics. 1-3 Credits.
Current research and scholarly issues in management science.

DNSC 8998. Advanced Rdgs & Research. 1-12 Credits.
Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

DNSC 8999. Dissertation Research. 1-12 Credits.
Limited to doctoral candidates. May be repeated for credit.

FINANCE

UNDERGRADUATE

Bachelor's programs

- Bachelor of Business Administration (p. 452)
- Bachelor of Science with a major in finance (p. 463)

GRADUATE

Master's program

- Master of Science in the field of finance (p. 470)

FACULTY

Professors I.G. Bajeux-Besnainou, T.M. Barnhill, W. Handorf, G.M. Jabbour, M.S. Klock, R. Van Order

Associate Professors S. Agca, A. Baptista, N.G. Cohen, T. Geurts (*Teaching*), B.J. Henderson, M. Hwang, G. Jostova, R. Savickas (*Chair*), A.J. Wilson

Assistant Professors O. Altinkilic, J. Lee

COURSES

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: MBAD 6234 Financial Management is prerequisite to FINA 6221 Financial Decision Making through FINA 6248 Real Estate Development Cases.

FINA 3001. Intermediate Finance. 3 Credits.
Theory and practice of acquiring and using funds. Simulations of business decisions by cases and/or models to assess the risk/return interaction of investment, financing, and dividend decisions. Prerequisite: BADM 3501.

FINA 3101. Investment and Portfolio Management. 3 Credits.
Theory and principles of security analysis and portfolio management, including analysis of the national economy, industry, company, and security markets. Risk–reward and computer-aided analysis. Prerequisite: BADM 3501.

FINA 3201W. Exploring Finance w/Simulation. 3 Credits.
Corporate financial analysis as explored through the FINGAME financial simulation software. Focus on intertemporal decision making for capital budgeting and financing of a simulated firm. Prerequisite: BADM 3501.

FINA 3301. Money and Capital Markets. 3 Credits.
The process of capital formation in a free enterprise economy, with special emphasis on factors affecting the level and structure of interest rates. Money market, capital market, and derivative contracts (futures and swaps) are evaluated from both investment and financing perspectives. Prerequisite: BADM 3501.

FINA 3401. A Brief History of Finance. 3 Credits.
History of financial events and practices and how finance has changed over time; how these events have shaped current practices and the impact of ethical issues.

FINA 3401W. A Brief History of Finance. 3 Credits.
History of financial events and practices and how finance has changed over time; how these events have shaped current practices and the impact of ethical issues. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

FINA 4001. Advanced Financial Management. 3 Credits.
Analysis and readings covering applications of theory to financial management. Case studies for decision making involving working capital, capital budgeting, financing, dividend policy, and valuation. Prerequisite or concurrent registration: BADM 3501 and FINA 3301 or FINA 3001.

FINA 4001W. Advanced Financial Management. 3 Credits.
Analysis and readings covering applications of theory to financial management. Case studies for decision making involving working capital, capital budgeting, financing, dividend policy, and valuation. Prerequisite or concurrent registration: BADM 3501 and FINA 3301 or FINA 3001.

FINA 4101. Applied Financial Securities Analysis. 3 Credits.
Practical security analysis techniques and investing approaches employed by professional investment managers. Prerequisite: BADM 3501.

FINA 4121W. Exploring Finance w/Simulation. 3 Credits.

FINA 4201. Real Estate Investment. 3 Credits.
Principles of real estate investment, including valuation, appraisal, financing, and development, in addition to a discussion of the mortgage market and its institutions. Prerequisite: BADM 3501.

FINA 4301. Financial Derivatives. 3 Credits.
The defining properties of and uses for financial derivatives. Institutional features; forward and futures contracts, option contracts, and swap agreements; and valuation methodologies. The proper use of financial derivatives and the potential for unintended consequences. Prerequisites: BADM 3501. Recommended background: undergraduate students in finance with exposure to another discipline such as mathematics, physics, computer science, economics, or statistics.

FINA 4900. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods. Prerequisite: BADM 3501.

FINA 4900W. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods.

FINA 4995. Independent Study. 1-15 Credits.
Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. Prerequisite: BADM 3501.

FINA 6220. Business Financial Management. 3 Credits.

FINA 6221. Financial Decision Making. 3 Credits.
Theory and practice of business finance, emphasizing the impacts of long- and short-term uses and sources of funds on the firm's market value. Prerequisite: MBAD 6234 or MBAD 6235.

FINA 6222. Capital Formation. 3 Credits.
Determinants of saving and investment and resultant funds flow are evaluated. Special emphasis on the level and risk structure and term structure of interest rates. The role and management of financial institutions is stressed. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6223. Investment Analysis and Portfolio Management. 3 Credits.
Risk–reward analysis of security investments, including analysis of national economy, industry, company, and market; introduction to portfolio management; emphasis on theory and computer methods. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6224. Financial Management. 3 Credits.
Advanced case studies in domestic and international financial management; working capital policy, capital budgeting, financing with debt and equity, dividend policy, valuation, project finance, venture capital, and mergers and acquisitions. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6230. Urban Development Economics. 3 Credits.

FINA 6231. Sem:Investment & Portfolio Mgt. 3 Credits.

FINA 6234. New Venture Financing: Due Diligence and Valuation Issues. 3 Credits.
Fundamentals and practice of due diligence and screening of early-stage investment opportunities. Prerequisites: MBAD 6234 or MBAD 6235. (Same as MGT 6293).

FINA 6235. Futures Markets: Trading and Hedging. 3 Credits.
Organization and regulation of futures markets. Alternative strategies for trading of futures contracts for possible hedging uses. High risk–high return investment alternatives. The use of futures markets to manage risks. Recommended: FINA 6221. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6236. Options. 3 Credits.
Pricing of options on financial instruments. Role of options in risk management, trading strategies, hedging implications for national and international investors, financial engineering, and structure and regulation of option markets. Recommended: FINA 6221. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6237. Private Wealth Management and Personal Financial Advising. 3 Credits.
Income and estate taxation, retirement plans and pensions, life and disability insurance, investment portfolio management, and personal finances. Prerequisites: MBAD 6234 or MBAD 6235. Recommended background: ACCY 6401 and knowledge of Excel.

FINA 6238. Financial Engineering. 3 Credits.
Valuation and risk management theory for bonds, forward contracts, swaps, options, exotic options, and interest rate options. Development of financial software, including Monte Carlo simulation modeling. Case studies of innovative solutions to investment, corporate finance, and financial institution management problems. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6239. Applied Portfolio Management. 3 Credits.
Synthesis of the theoretical concepts of securities analysis and portfolio management with the application of analyzing securities and building an actual portfolio. Prerequisites: (MBAD 6234 or MBAD 6235) and permission of instructor.

FINA 6240. Real Estate Development. 3 Credits.
Examination of the forces that shape real estate development; market analysis methods and techniques to evaluate project feasibility; the institutional and legal framework within which real estate development occurs and that influences controls, land value, and development potential. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6241. Financing Real Estate. 3 Credits.
Principles of real estate finance; evaluating different methods of financing real estate; sources of real estate funding with emphasis on securitization. Incentives provided by governments. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6242. Real Estate Valuation and Investment. 3 Credits.
Understanding the valuation of different types of real estate from different viewpoints. Analysis of the risks and opportunities of investing. Solid theoretical framework is augmented with practical examples and applications. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6245. Land Development Law. 3 Credits.

FINA 6247. Urban Development Economics. 3 Credits.

FINA 6248. Real Estate Development Cases. 3 Credits.
Case study analysis of large-scale commercial real estate developments to gain comprehension of financial, political, legal, and technical complexities and constraints inherent in the real estate development process. Prerequisite: FINA 6221 or permission of instructor.

FINA 6250. Securities Regulation and Financial Scandals. 3 Credits.
Philosophy and framework of laws governing the sale of securities, including stocks, bonds, and investment contracts; financial scandals and the role that changes in securities law and housing policy has played in such events.

FINA 6271. Financial Modeling and Econometrics. 4 Credits.
Applied statistical and econometric analysis and modeling in finance. Methodologies include descriptive and inferential statistics, multivariate regression, and time series analysis. Empirical studies are reviewed, and a series of research projects are undertaken. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6272. Global Financial Markets. 4 Credits.
Theories explaining domestic and international interest rate and exchange rate structures. Roles of financial institutions and markets are investigated and forecasting methodologies are applied. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6273. Cases in Financial Management and Investment Banking. 4 Credits.
Computer modeling for analysis and forecasting of a firm's financial statements to reflect possible future performance. Application and integration of financial accounting and financial analysis, using a different case study each week. Financial issues faced by companies and their commercial and investment bankers as tactical and strategic decisions are made about organic growth, growth through merger and acquisition, and corporate reorganization. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6274. Corporate Financial Management and Modeling. 4 Credits.
Causal connections between decisions made by business firms, their expected performance, and the resulting current valuation of the firm's common stock. Factors affecting the level and structure of interest rates, which are incorporated by many financial models, theories, and decisions. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6275. Investment Analysis and Global Portfolio Management. 4 Credits.
Financial markets and instruments viewed from the investor's perspective. Analysis of the value of equity and fixed-income securities and the construction of efficient portfolios in a global financial market. Issues of market efficiency, tax structures, and investment funds; computer-based models. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6276. Financial Engineering and Derivative Securities. 4 Credits.
Mathematical and theoretical foundations to value-derivative securities, including options, futures, and swaps; hedging and trading applications of these contracts. Arbitrage trading across cash and derivative markets and its role in maintaining equilibrium prices. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6277. Comparative Financial Market Regulation and Development. 4 Credits.
Theory and current status of comparative regulation of domestic and international financial institutions and markets. Effects on country economic development and international trade. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6278. Financial Theory and Research. 4 Credits.
Theoretical constructs of business investment and financing decisions and of financial asset pricing structures in domestic and international environments. Analytical and numerical models are developed, and empirical studies are evaluated. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6279. Real Estate Finance and Fixed-Income Security Valuation. 4 Credits.
Application of financial theory to real estate investment: the housing market, mortgage valuation and securitization, commercial properties, CMBS, and REITs. Fixed-income security valuation with focus on theory and data applications on interest rate movements, fixed-income security and derivative pricing, and credit risk. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6280. Financial Institution Management and Modeling. 4 Credits.
Analysis of the financial performance and condition of a bank, toward understanding of the financial environment in which banks operate and regulation of the banking system. Application of asset/liability management principles and statistical and mathematical models employed in bank risk management. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6281. Cases in Financial Modeling and Engineering. 4 Credits.
Through the use of real-world examples from various aspects of finance, students are exposed to the modeling of complex financial instruments and techniques used in market and credit risk management. Underlying mathematics and theoretical constructs are explored and solidified through modeling exercises that make use of analytical solutions and numerical methods. As a practical course, students are asked to implement models. Examples may be motivated by corporate finance, corporate and investment banking, asset management, or other activities. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6282. Advanced Financial Econometrics and Modeling. 0-4 Credits.
Testing of several types of applied financial econometric models typically used in practice. Advanced quantitative techniques applied to aspects of financial markets, the behavior of agents, and market and credit risk management. Various software packages used to implement and program models. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6290. Special Topics. 0-3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated once for credit.

FINA 6297. International Management Experience. 3 Credits.
Same as IBUS 6297/ MGT 6297/ MKTG 6297/ SMPP 6297. May be repeated for credit.

FINA 6298. Directed Readings and Research. 2-4 Credits.

FINA 6299. Thesis Seminar. 3 Credits.

FINA 6999. Thesis Research. 3 Credits.

FINA 8311. Seminar: PublicPrivate Sector Institutions and Relationships. 3 Credits.
An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Same as SMPP 8311.

FINA 8321. Seminar: Financial Markets Research. 3 Credits.
Market efficiency, utility testing, the capital asset pricing model, the arbitrage pricing theory, the option pricing model, and aggregate market volatility.

FINA 8322. Seminar: Corporate Finance Research. 3 Credits.
Capital budgeting, capital structure issues, dividend policy, microeconomic foundations, mergers, and agency theory.

FINA 8323. Seminar: Continuous-Time Finance. 3 Credits.
Review of the stochastic calculus methods needed for continuous-time pricing models. The most important continuous-time models, including pricing of derivative securities, consumption-portfolio selection models, continuous-time capital asset pricing models, consumption-based capital asset pricing models, continuous-time arbitrage pricing theory, and different yield curve models.

FINA 8324. Seminar: Financial Markets and Institutions. 3 Credits.
Multi-period asset pricing, term structure of interest rates, market imperfections and institutional factors, auctions, manipulation, derivative markets, market microstructure, and financial institutions.

FINA 8397. Doctoral Seminar. 1-3 Credits.

FINA 8998. Advanced Reading and Research. 1-12 Credits.
Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

FINA 8999. Dissertation Research. 1-12 Credits.
Limited to doctoral candidates. May be repeated for credit.

INFORMATION SYSTEMS AND TECHNOLOGY MANAGEMENT

UNDERGRADUATE

Bachelor's programs

- Bachelor of Business Administration with a concentration in information systems and technology management (p. 452)
- Combined Bachelor of Business Administration and Master of Science in Information Systems Technology (p. 504)

GRADUATE

Master's program

- Master of Science in Information Systems Technology (p. 471)

FACULTY

Professors E.G. Carayannis, M.J. Granger

Associate Professors J. Artz, S. Dasgupta, R.G. Donnelly (*Chair*), W. Duan, R.A. Lumley

Assistant Professors Y.C. Ho, , Y. Park

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: M.S.I.S.T. candidacy or departmental approval is prerequisite to ISTM 6201 Information Systems Development and Applications–ISTM 6225 Enterprise Architecture.

ISTM 6401 –ISTM 6490 are available only to students enrolled in the Executive Master of Science in Information Systems Technology.

ISTM 3119. Introduction to Programming. 3 Credits.
For students already familiar with basic computer concepts, who will learn a programming language, such as Visual Basic, useful for business applications. Emphasis on computer applications in accounting and management information systems through hands-on programming. Prerequisite: BADM 2301.

ISTM 4120. Business Systems Development. 3 Credits.
Analysis, design, and implementation of management information systems (MIS). Structured methodologies and techniques for various stages of the MIS development process. Computer-aided software engineering tools. May be taken for graduate credit with permission of program director and instructor. Prerequisites: CS 1111 or ISTM 3119 or permission of instructor.

ISTM 4121. Database Principles and Applications. 3 Credits.
Theory, architecture, and implementation of database management systems in corporate and organization information systems; fundamental concepts of database management and processing; hands-on experience with database management packages. Prerequisites: CS 1111 or ISTM 3119 or permission of instructor.

ISTM 4123. Business Data Communications. 3 Credits.
A technical overview of data communication concepts that are useful in the design and management of local and wide area networks. Internet technologies and their business applications are emphasized. Prerequisite: BADM 2301.

ISTM 4123W. Business Data Communications. 3 Credits.
A technical overview of data communication concepts that are useful in the design and management of local and wide area networks. Internet technologies and their business applications are emphasized. Prerequisite: BADM 2301.

ISTM 4130W. Writing On The Ethics of Technology. 3 Credits.
Complex ethical dilemmas inherent in the introduction of new technologies and the influence human behavior asserts on these problems. Students write stories to explore and evaluate specific ethical problems relative to technology from various perspectives.

ISTM 4215. Human-Computer Interaction. 3 Credits.
An introduction to and overview of the field of human-computer interaction (HCI), an interdisciplinary field that integrates theories and methodologies from computer science, cognitive psychology, design, and other areas. Readings cover current theory and practice in interface specification, design, and evaluation, and include current and classic research papers in the field.

ISTM 4900. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated once for credit.

ISTM 4900W. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated once for credit.

ISTM 4995. Independent Study. 3 Credits.
Assigned topics. Admission by prior permission of advisor. May be repeated once for credit.

ISTM 6201. Information Systems Development and Applications. 3 Credits.
The information systems life cycle evaluated in terms of technologies, impact, and management. Structured and object-oriented analysis, prototyping, software reuse, testing, life-cycle costs, software development environments, and organizational and behavioral aspects of development projects. Prerequisite: ISTM 4120 and M.S.I.S.T. candidacy or departmental approval.

ISTM 6202. Relational Databases. 3 Credits.
Introduces the theory of relational databases and commences an in-depth discussion of Relational database theory and design at the conceptual, logical, and physical levels. Structured query language (SQL) is covered in depth. Prerequisite: ISTM 4121 and M.S.I.S.T. candidacy or departmental approval.

ISTM 6203. Telecommunications and Enterprise Networks. 3 Credits.
The technologies and applications of telecommunication systems in the commercial and public sectors with emphasis on wireless, mobile, and Internet communication protocols. Systems technology and configurations to support business application requirements are evaluated. Functional characteristics of network technologies. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6204. Information Technology Project Management. 3 Credits.
Project and program management practices with an emphasis on information technology projects. The basic tools of project management: work breakdown structure, cost, schedule and performance goal setting, and risk analysis. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6205. Internet Computing. 3 Credits.
Concepts, architectures, frameworks, and technology of web application development. The Internet as hardware and software architecture for creating business applications. Web and web application servers, system development methods and techniques, client-side and server-side scripting. Prerequisite: ISTM 3119 and M.S.I.S.T. candidacy or departmental approval.

ISTM 6206. Information Systems Security. 3 Credits.
Comprehensive examination of computer security issues from the design, management, and business information system ownership perspectives. System security concepts, methods, and policies from the design and planning stages to multi-level system implementation. Design of risk assessment strategies to achieve security goals. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6207. Information Resources Management. 3 Credits.
Information resources management strategically assesses and exploits information technology assets for competitive advantage. The CIO role in information resources management, planning, security, information integration, enterprise model development, and data administration. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6209. Web and Social Analytics. 3 Credits.
Concepts, techniques, and tools of collecting, analyzing, and reporting digital data concerning how users interact with organizations through the Internet and social media; business intelligence; key performance indicators; new business models.

ISTM 6210. Integrated Information Systems Capstone. 3 Credits.
Capstone project course in which students apply conceptual and technical knowledge in analyzing, planning, and designing an on-line information system. Culminates with system proposal/design presentations. Restricted to eligible students in their final semester. Prerequisite: ISTM 6201– ISTM 6207 and M.S.I.S.T. candidacy or departmental approval.

ISTM 6211. Data Warehousing and Online Analytical Processing. 3 Credits.
Introduction to the theory of data warehousing, dimensional data modeling, and online analytical processing (OLAP) through case studies, technology, and a design project. Prerequisite: ISTM 6202 and M.S.I.S.T. candidacy or departmental approval.

ISTM 6212. Data Management for Analytics. 3 Credits.
Relational databases, data warehousing, and dimensional modeling. Practical experience with these and other traditional and contemporary methods for managing and analyzing data at scale, including Unix command line and Apache Spark.

ISTM 6213. Enterprise Web and Database Applications. 3 Credits.
Enterprise applications concepts, architecture, and technologies for emerging technologies and IT frameworks. The Internet as a major resource for globally distributed applications using grid and utility computing. Web servers, development methods and techniques, data stores for massively distributed applications, and client/server side scripting. Prerequisite: ISTM 6202, ISTM 6205 and M.S.I.S.T. candidacy or departmental approval.

ISTM 6214. Advanced Programming and Business Applications. 3 Credits.
Advanced programming design, development, and analysis topics with an emphasis on business applications. Problem modeling and development of algorithm solutions. Basic data structures and algorithms, such as linked list, stack and tree, graph theory, sorting and searching. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6215. Human-Computer Interaction. 3 Credits.
Human–computer interaction as an interdisciplinary endeavor integrating theories and methodologies from computer science, cognitive psychology, design, and many other areas. Theory and practice in interface specification design and evaluation, and research. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6221. Management Perspectives in Electronic Commerce. 3 Credits.
The tools, skills, and business concepts surrounding the emergence of E-commerce and its information technologies from operational and strategic perspectives. E-commerce security, privacy, content selection and rating, authentication, encryption, acceptable use policies, intellectual property rights, and legal liabilities. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6222. IS/IT Strategy and Implementation. 3 Credits.
The development and implementation of information systems and technology strategies designed to align with and maximize business strategy applications and approaches in a challenging and increasingly global business environment. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6223. Technology Entrepreneurship. 3 Credits.
Case studies on the innovation–entrepreneurship processes used to launch and build new ventures based on information technology and on technology more broadly. Organizing for innovation, raising venture capital, managing the small technology-based venture, marketing technology products and services, intellectual property considerations, and new venture proposal development. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6224. Management of Technology and Innovation. 3 Credits.
Business, technological, economic, and political factors that influence the development and deployment of new technology products, processes, and services. Concepts and practices useful in managing technology and enhancing corporate innovation, corporate organizational alternatives, new approaches, and sources of competitive advantages. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6225. Enterprise Architecture. 3 Credits.
Concepts of enterprise architecture as a management tool for organizations to align their information technology assets, people, operations, and projects with operational characteristics. Service-oriented architectures, performance reference models, configuration management, system development life cycles, and tiered application architectures. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6226. Principles of Information Systems. 3 Credits.
Overview of all information systems, including integration of management, information, and systems concepts into a unified framework. Management information systems development, design, implementation, evaluation strategies.

ISTM 6232. ISTM6242201303. 3 Credits.
Technology transfer among advanced countries and LDCs. Comparative science and technology policies and capabilities of countries. Technology basis for international trade, licensing, patenting, and joint ventures. Global transfer of military technologies and export controls. Technology in economic development.

ISTM 6233. Emerging Technologies. 3 Credits.
Exploration of new developments in scientific and technological innovation, including automation, energy, medicine, bioengineering, social science, information technology, and space. Emphasis on forecasting these technological advances and assessing their economic and social effects. The role of advancing technology in driving social change.

ISTM 6234. New Venture Financing. 3 Credits.
Fundamentals and practice of due diligence and screening of early-stage investment opportunities. Same as FINA 6234.

ISTM 6239. Sem:Competitiveness/Technology. 3 Credits.
Capstone course integrating the field of management of science, technology, and innovation. Commercialization of technology in the private sector and the impact on competitiveness. Implementation of technology in the public sector. Technology development, from new product concept to utilization. Prerequisite: ISTM 6224 or MBAD 6253; ISTM 6232 or ISTM 6233 or permission of instructor.

ISTM 6243. Human Factors in Information Systems. 3 Credits.
The user–computer interaction, human factors of on-line dialogues, interfacing, and various approaches to user–system interaction. Emphasis on the development and evaluation of user–computer interfaces using software such as Visual BASIC and Windows.

ISTM 6251. Info Systems Applications. 1.5 Credit.

ISTM 6290. Special Topics. 1-3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated once for credit.

ISTM 6298. Directed Readings and Research. 1-3 Credits.

ISTM 8300. Thesis Seminar. 3 Credits.

ISTM 8333. Seminar: Management of Science, Technology, and Innovation. 3 Credits.

ISTM 8340. Philosophical Issues in Information Systems. 3 Credits.
Seminar for doctoral students interested in information systems. Various philosophical traditions and insights from those traditions applied to problems in information systems.

ISTM 8341. Advanced Topics in MIS Rsrch. 3 Credits.
For information systems doctoral students. Seminal papers and leading methods and instruments as applied to MIS research.

ISTM 8385. Special Topics in Research Methods. 3 Credits.
Research problems and issues related to student dissertations form topics for readings, group discussions, and assigned papers.

ISTM 8390. Philosophical Foundations of Administrative Research. 3 Credits.
Philosophy of science as applied to research in administration. Topics include the nature and current problems of epistemology, the development and role of theories, and the relationship between theory, methodology, and empirical data.

ISTM 8391. Advanced Problems in Research Methodology. 3 Credits.
Use of models and theoretical frameworks in research; formulation of research questions, hypotheses, operational definitions, research designs, sampling and data analysis approaches. For doctoral candidates who have completed the general examination and all courses and are preparing for their dissertation.

ISTM 8397. Doctoral Seminar. 1-3 Credits.
Current research and scholarly issues in management science.

ISTM 8398. Advanced Rdgs and Research. 1-12 Credits.
Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

ISTM 8399. Dissertation Research. 1-12 Credits.
Limited to doctoral candidates. May be repeated for credit.

DUAL BACHELOR OF BUSINESS ADMINISTRATION AND MASTER OF SCIENCE IN INFORMATION SYSTEMS TECHNOLOGY

REQUIREMENTS

Students in the dual program leading to the master of science in information systems technology first pursue the B.B.A. with a concentration in information systems. Students pursue the regular B.B.A. curriculum in their first three years of study and are enrolled in courses at both the undergraduate and graduate levels during the final two years. Students can apply for admission to the program when they apply for admission to the University (they must meet specified GPA and other requirements to remain in the program), or they may apply after earning 75 credits. Students typically earn the B.B.A. after four years and the M.S.I.S.T. at the end of the fifth year. Students who choose to discontinue the program at the end of four years may be required to take additional courses to complete requirements for the B.B.A.

INTERNATIONAL BUSINESS

UNDERGRADUATE

Bachelor's program

- Bachelor of Business Administration with a concentration in international business (p. 452)

FACULTY

Professors H.G. Askari, J. Brinkerhoff, D. Leipziger *(Teaching)*, Y.S. Park, A. Phene (*Chair*), P.A. Rau, S.S. Rehman, F. Robles, J.W. Spencer, R. Weiner, J. Yang

Associate Professors M. Ayyagari, H. Berry, R.W. Click, N. Jensen, N. Maurer, L.A. Riddle

Assistant Professors W. Chen, A. Helm *(Teaching)*

COURSES

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

IBUS 3001. Introduction to International Business. 3 Credits.
The international business environment, including social, cultural, political, technological, and institutional domains; multinational corporation strategic imperatives and organizational challenges, including financial, marketing, human resources, and other aspects of management. Prerequisites: ECON 1011 or HONR 2043 and ECON 1012 or HONR 2044.

IBUS 3001W. Introduction to International Business. 3 Credits.
The international business environment, including social, cultural, political, technological, and institutional domains; multinational corporation strategic imperatives and organizational challenges, including financial, marketing, human resources, and other aspects of management. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: ECON 1011 or HONR 2043 and ECON 1012 or HONR 2044.

IBUS 3101. Global Financial Environment. 3 Credits.
The international economic, trade, and financial environment in which global business operates and how developments in these areas affect business activity. Prerequisites: ECON 1011 or HONR 2043 and ECON 1012 or HONR 2044.

IBUS 3201. International Marketing Management. 3 Credits.
Introduction to international marketing analysis and strategy, and the dynamic nature of international markets. Analysis of different types of international markets and formulation of strategies at the entry and global stages. Prerequisites: IBUS 3001.

IBUS 3301. International Business Finance. 3 Credits.
Analysis of the international economic environment and its influence on corporate financial management of international operations. Prerequisites: IBUS 3001, IBUS 3101and BADM 3501.

IBUS 4202. Regional Strategy for Multinationals. 3 Credits.
The business, economic, investment, and market environments in different regions of the world; regional strategy framework for responding to business opportunities in regional markets. Prerequisites: IBUS 3001.

IBUS 4203. Foreign Market Analysis. 3 Credits.
Project course involving market research for target market selection, market entry strategy, in-country marketing plan, and recommendations for strategy implementation in the target country. Focus on consulting process as ancillary component. Prerequisite: IBUS 3001, except by permission of instructor, and IBUS 3201.

IBUS 4302. International Banking. 3 Credits.
Theory and practice of international banking; analysis of international commercial and investment banking from a management perspective; subjects include current international monetary and financial environment, money and capital markets, and topical problems of international banking from a management perspective. Prerequisite: IBUS 3001, except by permission of instructor, and IBUS 3301.

IBUS 4303. International Monetary and Financial Issues. 3 Credits.
How authorities deal with financial problems; macro-economic framework that underpins the financial sector and the role of financial oversight institutions; Role of central banks and the risks facing the international monetary and financial system. Prerequisites: IBUS 3001 or IBUS 3101 and IBUS 3301.

IBUS 4401. Managing the Multinational Enterprise. 3 Credits.
The changing nature of the international environment and the resulting effects on strategy of U.S. and foreign multinational corporations. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 4402. Managing in Developing Countries. 3 Credits.
Challenges of operating in developing countries; cross-country experience and case studies exploring issues of institutions, corruption, infrastructure, private–public partnerships, competition, regulation, and global standards. Prerequisites: IBUS 3001 or IBUS 3101.

IBUS 4402W. Managing-Developing Countries. 3 Credits.
Challenges of operating in developing countries. Cross-country experience and case studies exploring issues of institutions, corruption, infrastructure, private–public partnerships, competition, regulation, and global standards. Prerequisites: IBUS 3001 or IBUS 3002, or permission of instructor.

IBUS 4900. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 4900W. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 4995. Independent Study. 1-12 Credits.
Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 6201. International Marketing. 3 Credits.
International marketing strategy formulation, including market entry, local market development, and global market integration; strategic challenge of global marketing formulation and local market adaptation, with attention to market conditions in mature, new growth, and emerging market environments; emerging trends.

IBUS 6202. Regional Strategy for Multinationals. 0-3 Credits.
Development of a framework to understand dynamic business, cultural, and economic environments in Asia and Latin America. Regional business strategies of multinational companies from outside and within Asia and Latin America that respond to business opportunities and challenges in these regions.

IBUS 6290. Special Topics. 0-3 Credits.
Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

IBUS 6297. International Management Experience. 1-6 Credits.
May be repeated for credit.

IBUS 6301. International Business Finance. 3 Credits.
Analysis of major issues and developments in the international financial environment and their impact on multinational corporations and financial institutions.

IBUS 6302. Seminar: International Banking. 3 Credits.
Evolution in international banking and other international financial institutions. Functioning of international banking operations, public policy issues and regulatory issues in international banking, and the effect of international banks on national monetary policies.

IBUS 6303. External Development Financing. 3 Credits.
Institutions, instruments, and theory of external development financing; financial flows to developing countries; development finance and the role of international and regional development banks; policies, methods, and practices of the World Bank, the IMF, and others; technical assistance, training, capacity building, and role of institutions in sustained development. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6304. Financial Crises and the Global Economy. 3 Credits.
The causes of a financial crisis and how various countries have responded to their specific crises; the relationship between financial crises and other economic developments, particularly in emerging market and developing economies; how global financial arrangements have evolved to help manage the risks of contagion. Recommended background: graduate-level study in macroeconomics.

IBUS 6305. Global Investment Banking. 3 Credits.
Examination of investment banking as practiced in a global context from a strategic perspective using case studies and readings. Topics covered include securities underwriting and derivatives instruments, risk management, and business development strategies. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6306. Seminar: International Financial Markets. 3 Credits.
Survey of international financial markets, focusing on structure, operations, and pricing. Primary emphasis on markets for foreign exchange, Eurocurrency, international bonds, and commodities. Derivatives markets, especially swaps and options embedded in international securities issues. Prerequisite: IBUS 6301 and MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6307. International Portfolio Management. 3 Credits.
Theory and practice of international investment. Portfolio construction and optimization. Effects of exchange rate changes on portfolio risk and return. International asset pricing models and trading institutions. Prerequisite: MBAD 6234; either MBAD 6243 or ECON 6284.

IBUS 6308. Intl Reporting and Contrl. 1.5 Credit.

IBUS 6309. International Accounting. 1.5 Credit.

IBUS 6310. Intl Fin. Reporting Standards. 1.5 Credit.

IBUS 6400. Oil: Industry, Economy, and Society. 3 Credits.
Multidisciplinary approach to the study of oil and its effects on business, nation-states, and the world economy, based primarily on political economy and management perspectives. Topics include the oil industry, the global oil environment, and the potential effects of oil on a society. (Same as IAFF 6378).

IBUS 6401. International Business Strategy. 3 Credits.
Discussion of the changing nature of the international environment and the resulting impact on strategy of both U.S. and foreign multinational corporations. Various aspects of strategy are considered, including marketing, production, and financial strategy. The focus of discussion is at the company level.

IBUS 6402. Managing in Developing Countries. 3 Credits.
Challenges of operating in developing countries. Cross-country experience and case studies exploring issues of institutions, corruption, infrastructure, private–public partnerships, competition, regulation, and global standards.

IBUS 6403. International Business Negotiations. 3 Credits.
Theories and application in International Business Negotiations (IBN). Formulation of concepts and frameworks; development of systematic approaches to planning for and conducting IBN. Integration of functional, environmental, and institutional contexts facing negotiators internationally. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6404. New Global Competitive Framewk. 3 Credits.
How industries develop sustained competitive advantages within the global framework. The European Union's "single market" and the Economic–Monetary Union; the transformation of formerly centrally planned economies; the changing Japanese economy and emerging Pacific Basin, with implications for the U.S. economy, industries, and firms. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6405. Legal Aspects of International and Multinational Business. 3 Credits.
Legal environment of international and multinational business including legal systems, antitrust laws, regulation of direct investment, international arbitration and expropriation; topics of current interest. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6500. Global Currency and Stock Trading. 1.5 Credit.
Linkages of global events and risks and their impact on financial markets; foreign exchange market trading philosophies, techniques, strategies, and rules. Real-time practical training in trading major currencies, stocks, and managing an emerging markets portfolio in the GWSB Capital Markets Trading Room. Restricted to students in the World Executive MBA program.

IBUS 6501. International Finance. 1.5 Credit.
The international financial environment; balance of payments and exchange rate regimes; exchange rate determination; interest rate parity and the foreign exchange market; purchasing power parity and other international parity conditions; fundamental hedging techniques to manage foreign exchange exposure in international transactions. Restricted to students in the World Executive MBA program.

IBUS 6995. Directed Readings and Research. 3 Credits.
Supervised readings or research in selected fields within business administration. Admission by prior permission of instructor. May be repeated once for credit.

IBUS 6999. Thesis Seminar. 3 Credits.
No fixed content.

IBUS 8311. Seminar: Public–Private Sector Institutions and Relationships. 3 Credits.
An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Same as SMPP 8311.

IBUS 8361. Colloquium on International Business. 3 Credits.
Examination of selected topics in international business, with emphasis on major new theoretical and empirical developments. Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details.

IBUS 8397. Doctoral Seminar. 1-3 Credits.
No fixed content.

IBUS 8900. Thesis Research. 3 Credits.
No fixed content.

IBUS 8998. Advanced Readings and Research. 1-12 Credits.
Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

IBUS 8999. Dissertation Research. 1-12 Credits.
Limited to doctoral candidates. May be repeated for credit.

MANAGEMENT

UNDERGRADUATE

Bachelor's program

- Bachelor of Business Administration (p. 460)

Combined program

- Dual Bachelor of Business Administration and Master of Tourism Administration (p. 467)

FACULTY

Professors J. Bailey, D. Hawkins, D.C. Kayes (*Chair*), L.A. Livingstone, G.T. Solomon, P.M. Swiercz, L. Yu

Associate Professors L. Delpy Neirotti, N.S. Hill, S. Levy (*Teaching*), P. McHugh, A. El Tarabishy (*Teaching*)

Assistant Professors N.A. Cohen, M. Hyman *(Teaching),* S. Singh

COURSES

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MGT 3201. Leadership in Action. 3 Credits.
Leadership in organizations and society. Consideration of whether leadership is a personal trait or a structured behavior and whether it is universal across domains or situation-specific. Modern and historical examples; issues of leadership in popular contexts.

MGT 3202. Managerial Negotiations. 3 Credits.
Negotiation concepts, strategies, and tactics as applied to managerial situations. The nature of interdependencies; competitive and collaborative negotiations; negotiations involving third-party dynamics, such as mediation and arbitration. Employee relations, including employee rights; the impact of unions and collective bargaining on management practices.

MGT 3203. Advanced Human Resource Management. 3 Credits.
The labor force and labor markets. The legal environment of human resource management. Human resource planning; employee recruiting, selection, training, development, compensation, motivation, discipline, health and safety. Prerequisite: BADM 3101.

MGT 3204. Contemporary Topics in Management. 3 Credits.
Contemporary practice in human resource planning, recruitment and selection, training and development, performance management, compensation and benefits, employee relations, and international human resource management. Interaction with practitioners through actual situations, case analyses, and presentations. Prerequisite: BADM 3101.

MGT 3300. Entrepreneurship. 3 Credits.
Students develop the knowledge and ability to launch their own venture. The entrepreneur and the process of entrepreneurship; key aspects of entrepreneurial success, from idea generation and development to launching a firm. Practical skills applicable to real-world scenarios.

MGT 3300W. Entrepreneurship. 3 Credits.
Students develop the knowledge and ability to launch their own venture. The entrepreneur and the process of entrepreneurship; key aspects of entrepreneurial success, from idea generation and development to launching a firm. Practical skills applicable to real-world scenarios.

MGT 3301. Small Business Management. 3 Credits.
Theory and practice of entrepreneurship. How to start or acquire a new business; effective management, including the essentials of planning, organizing, financing, marketing, and controlling the smaller enterprise. Students consult with a small D.C.-area company as part of a team research project. Prerequisite: MGT 3300W or permission of instructor.

MGT 3302. e-Entrepreneurship. 3 Credits.
The process of turning a web, mobile, or wearable business idea into a validated, repeatable, and scalable business model using lean startup methodologies; testing and user feedback, technology basics, promotions, and tracking core metrics. Prerequisites: MGT 3300W.

MGT 3303. Women's Entrepreneurial Leadership. 3 Credits.
Students create and execute a business plan while developing essential skills, mentoring relationships, and self-confidence and self-insight.

MGT 3305. Human Capital Sustainability. 3 Credits.
Managerial challenges associated with employment, economic efficiency, employee equity, and employee voice. How market forces, public policy, negotiations, and globalization affect sustainable employment relationships.

MGT 4003. Management of the Growing Entrepreneurial Venture. 3 Credits.
Examination of the data, dilemmas, and decisions that can confront leaders of post-startup entrepreneurial ventures.

MGT 4900. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated once for credit.

MGT 4900W. Special Topics. 3 Credits.

MGT 4995. Independent Research. 1-6 Credits.
Assigned topics. Admission by prior permission of advisor. May be repeated once for credit.

MGT 6210. Leading Teams. 3 Credits.
Knowledge and skills for effectively leading teams, including setting teams up for success, promoting effective team dynamics, and other leadership issues for contemporary teams that operate in a global, digital environment.

MGT 6213. Orgnztnl Factors/Pro of Change. 3 Credits.
Behavioral and organizational components of individual, team, and firm-wide change. The dynamics that often accompany the change process.

MGT 6214. Consultative Processes. 3 Credits.
Theories and methods of planning, introducing, and coping with change in management through the helping process. Intended both for managers seeking an understanding of the consultative approach to planned change and for persons in staff or consultative roles seeking understanding of the consultative process. Same as SMPP 6214/ TSTD 6214.

MGT 6215. Conflict Management and Negotiations. 3 Credits.
The nature and sources of conflict and interdependence in social and organizational dynamics. Various means of resolving conflict, including the use of competitive and collaborative negotiations and mediation. Case discussion, exercises, role-playing, and simulation. Managers as mediators and negotiators.

MGT 6216. Cross-Cultural Management. 3 Credits.
The cultural foundations of organizations and institutions, with an emphasis on managerial behavior. Cross-cultural differences as they affect work-related behaviors, such as communication, attitude, teamwork, negotiation, and decision making.

MGT 6252. Global Human Resource Management. 3 Credits.
International applications of human resource management functions. Selection, preparation, and compensation of U.S. managers and executives for service abroad. Adaptation of human resource management policies to conform to specific cultural environments.

MGT 6253. Leadership and Executive Development. 3 Credits.
The required skills, knowledge, and abilities for effective executive leadership in organizations. Contemporary and classical leadership theories and research approaches.

MGT 6254. Negotiations and Labor Relations. 3 Credits.
Negotiation theory and practice in the context of labor–management relations in both union and nonunion settings. Emphasis on negotiation and conflict resolution skills, arbitration and grievance procedures, public-sector labor relations, labor laws and public policy, and global labor relations issues.

MGT 6257. Performance Management and Development. 3 Credits.
Comprehensive review of performance appraisal and training and development. Students learn to develop customized training programs that relate to the performance appraisal process.

MGT 6258. Applied Organization Leadershp. 3 Credits.
In-depth studies of theories of leadership. Legal and ethical obligations of leadership. The leader in the process of assuming responsibility. Experiential exercises designed to develop the students' interpersonal abilities and leadership capacities.

MGT 6259. Employment Law and Ethics. 3 Credits.
An examination of the interaction of legal requirements and personal ethics and their influence on managerial decisions affecting the employment exchange. Special emphasis on equal employment opportunity and civil rights, workers' compensation, occupational health and safety, collective bargaining, and wrongful discharge.

MGT 6270. Consulting Processes. 3 Credits.

MGT 6271. Consulting Practicum. 3 Credits.
Instruction in and application of integrative problem solving, team work, client relationship, and communications skills required to be a successful management consultant. Students gain practical experience through a team-based assignment consulting for a client. Prerequisite: MGT 6270.

MGT 6277. Critical Thinking Skills for Executive Leadership. 3 Credits.
Theory and practice of critical thinking; how it differs from other types of thinking and other executive leadership competencies; approaches known to improve thinking skills.

MGT 6280. Entrepreneurship. 3 Credits.
In exploring the "entrepreneur as a phenomenon," students will be exposed to the theory and experiences associated with entrepreneurs, entrepreneurial acts, and entrepreneurship in all organizational settings—large, small, public, and private.

MGT 6281. Small Business Management. 3 Credits.
The start-up process and management of small firms. Field projects involve student teams as consultants to local businesses. Case studies. Emphasis on total customer service, international opportunities, and minority and women's issues.

MGT 6282. New Venture Initiation. 3 Credits.
Essentials of planning a new business venture. Sources of financing, evaluation of alternative new business ventures, and analysis of business functions. Creating and analyzing the business plan.

MGT 6283. Strategic Entrepreneurship. 3 Credits.
Capstone course for the small business/entrepreneurship concentration. Student teams assist companies in upgrading strategies. Prerequisites: MBAD 6265, MGT 6281, MGT 6282 and/or permission of instructor.

MGT 6284. Family Business Management. 3 Credits.
Challenges of managing a family business: risk strategies; successor development and succession planning; stages of family business growth; family motivations and goals. Field projects provide hands-on experience.

MGT 6285. Social Entrepreneurship. 3 Credits.
Theory and practice of social entrepreneurship. The power and limits of social entrepreneurship as a tool for creating sustainable and scalable social impact.

MGT 6286. Creativity and Innovation. 3 Credits.
How organizational culture encourages or discourages creativity in individuals and teams and how organizational policies support or undercut innovation. Methods for developing and strengthening creative ideas and innovative action. Factors such as breakthrough design that encourage creativity and support innovation. Students examine and assess, on both personal and organizational levels, the bases of and propensity for creativity and innovation.

MGT 6290. Special Topics. 0-3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated once for credit.

MGT 6297. International Mgt Experience. 3 Credits.
Same as FINA 6297/ IBUS 6297/ MKTG 6297/ SMPP 6297. May be repeated for credit.

MGT 6298. Directed Readings & Research. 1-6 Credits.

MGT 6299. Thesis Seminar. 3 Credits.

MGT 6301. Negotiations. 1.5 Credit.

MGT 6999. Thesis Research. 3 Credits.

MGT 8382. Fndtns/OrgnztnlBehavr&Devlpmnt. 3 Credits.
The individuals and institutions central to the field of organizational behavior and development. Students read about, meet with, and discuss the work of persons central to the development of the field. Prerequisite: Doctoral candidate status with organizational behavior and development as a major or supporting field, or consent of instructor.

MGT 8383. Field Research in Organizational Settings. 3 Credits.
Applications of field research techniques in formal organizational settings. Examination of the logic of inquiry and techniques of qualitative data collection. Intensive interviewing and participant observation in field settings are emphasized.

MGT 8385. Special Topics in Research Methods. 3 Credits.
Research problems and issues related to student dissertations form topics for readings, group discussions, and assigned papers.

MGT 8386. Management Ideas in Progress. 3 Credits.
Doctoral students work with a variety of faculty members as they develop new ideas, research projects, and engage in seminal inquiry. The content and structure of the course will depend upon the instructor. Prerequisites: Doctoral candidate status with organizational behavior and development as a major or supporting field, or consent of instructor.

MGT 8390. Philosphcl Foundtns-Adm Resrch. 3 Credits.
Philosophy of science as applied to research in administration. Topics include the nature and current problems of epistemology, the development and role of theories, and the relationship between theory, methodology, and empirical data.

MGT 8391. Adv Prob-Research Methodology. 3 Credits.
Use of models and theoretical frameworks in research; formulation of research questions, hypotheses, operational definitions, research designs, sampling and data analysis approaches. For doctoral candidates who have completed the general examination and all courses and are preparing for their dissertation.

MGT 8397. Advanced Special Topics. 1-3 Credits.
Current research and scholarly issues in management science.

MGT 8998. Advanced Reading and Research. 1-12 Credits.
Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

MGT 8999. Dissertation Research. 1-12 Credits.
Limited to doctoral candidates. May be repeated for credit.

MARKETING

UNDERGRADUATE

Bachelor's program

- Bachelor of Business Administration (http://bulletin.gwu.edu/business/undergraduate-programs/business-administration/marketing)

FACULTY

Professors R.S. Achrol, S.S. Hassan, D. Hoffman, L.M. Maddox, T. Novak, P.A. Rau (*Chair*)

Associate Professors S. Elliott *(Teaching)*, M.L. Liebrenz-Himes, V. Perry

Assistant Professor S. Ham

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Departmental prerequisite: BADM 3401 Basic Marketing Management is prerequisite to all courses in the Marketing Department; additional prerequisites are listed with the courses.

MKTG 3142. Consumer Behavior. 3 Credits.
Social, cultural, and psychological factors influencing the behavior of consumers. Models of buyer behavior, consumption patterns, market segmentation, attitude formation and change, brand loyalty, adoption of innovations, and store choice decisions. Marketing management and public policy implications of consumer research. Prerequisite: BADM 3401.

MKTG 3143. Marketing Research. 3 Credits.
Basic methods and techniques of market research. Designing a marketing research project: research questions, secondary and syndicated data, primary data collection approaches, data analysis and report presentation. Focus group interviews, questionnaire construction, statistical software packages. Prerequisite: BADM 3401 and STAT 2112 or STAT 2118.

MKTG 4148. Advertising and Marketing Communications. 3 Credits.
Executing and measuring the effectiveness of advertising and integrated marketing communications campaigns. Methods for gathering research for a customer-based campaign, defining key target personas, developing a singular message strategy, and reaching consumers through media typically used in marketing communications. Prerequisites: BADM 3401 and MKTG 3142 and MKTG 3143.

MKTG 4149. Advanced Advertising Campaigns. 3 Credits.
Participation in the National Student Advertising Competition. Research, media planning, copywriting, layout/design. Travel to competition site. Prerequisite: BADM 3401 and MKTG 4148 and permission of instructor; corequisite: MKTG 4151.

MKTG 4149W. Advanced Advertising Campaigns. 3 Credits.
Experiential learning prepares students to execute an advertising campaign for entry in the American Advertising Federation's National Student Advertising Competition. Research, media planning, copywriting, and layout and design. Students travel to the competition site. Prerequisites: BADM 3401 and MKTG 4148 and permission of the instructor.

MKTG 4150. Salesmanship and Sales Management. 3 Credits.
Development of personal selling and presentation skills; examination of types of selling situations. Organization of sales department, sales planning and forecasting, quotas, territories, performance standards, and analysis and control of distribution costs. Prerequisite: BADM 3401; MKTG 3142.

MKTG 4151. Marketing Communications Planning. 3 Credits.
Components of a marketing communications plan. Writing a professional proposal, plans book, executive summary, and speech. Prerequisite: BADM 3401 and MKTG 4148; corequisite: MKTG 4149.

MKTG 4151W. Mktg Communications Planning. 3 Credits.
Components of a marketing communications plan. Writing a professional proposal, plans book, executive summary, and speech. Restricted to Permission of instructor required. Prerequisites: BADM 3401; MKTG 4148.

MKTG 4152. Retailing Management. 3 Credits.
A study of retailing management and strategy covering the current environment of retailing, retail market and financial analysis, store location and design, inventory management, and non-store and service retailing. Industry executive and student presentations; case analyses. Prerequisites: BADM 3401; MKTG 3142; MKTG 3143.

MKTG 4154. Digital Marketing. 3 Credits.
Using the social Web to leverage a firm's marketing strategy; developing and improving a company's electronic marketing strategy for the next evolution in Web commerce. Prerequisites: BADM 3401, MKTG 3142 and MKTG 3143.

MKTG 4156. Integrated Marketing Communications. 3 Credits.
The ubiquity of advertising and promotion; fundamental shifts in how consumers get information and from whom, and how much trust they place in different sources; strategies to address a rapidly changing media environment; concepts, analyses, and activities that comprise advertising; assessing and solving advertising challenges. Prerequisites: BADM 3401 and MKTG 3142 and MKTG 3143.

MKTG 4159. Marketing Strategy. 3 Credits.
The capstone course for marketing majors. Analytical integration of material covered in previous marketing courses. Marketing strategy literature, financial dimensions of marketing decisions, and comprehensive cases. Prerequisites: BADM 3401 or BADM 3401W; MKTG 3142; MKTG 3143.

MKTG 4900. Special Topics. 0-3 Credits.
Experimental offering: new course topics and teaching methods. Prerequisites: BADM 3401; MKTG 3142; MKTG 3143.

MKTG 4900W. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods. Prerequisites: BADM 3401; MKTG 3142; MKTG 3143.

MKTG 4995. Independent Study. 1-12 Credits.
Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. Prerequisite: BADM 3401.

MKTG 6241. Advanced Marketing Management. 3 Credits.

MKTG 6242. Buyer Behavior. 3 Credits.
The buyer decision process model and how and why products and services are purchased; synthesis of behavioral sciences applied to understanding individual, family, and organizational decision processes; the impact of consumer decisions on the marketing strategies of business and public organizations; consumer marketing applications in high-tech and services industries and on a global scale.

MKTG 6243. Marketing Research. 3 Credits.
The marketing research process: designing, conducting, and using market research studies. Managing the market research project; qualitative research; survey and experimental designs; data analysis with statistical software packages. Prerequisite: MBAD 6221.

MKTG 6246. Marketing of Services. 3 Credits.

MKTG 6248. Advertising and Marketing Communications Strategy. 3 Credits.
Practical instruction in executing an advertising and integrated marketing communications campaign. Strategic planning, communication theory, planning from a consumer attitudes and behavioral perspective, and campaign execution are covered. Prerequisites: MBAD 6273 and MBAD 6272 or permission of the instructor. Recommended background: MKTG 6242.

MKTG 6250. Selling/Sales Management. 3 Credits.

MKTG 6251. Product Management. 3 Credits.

MKTG 6252. Digital Marketing. 3 Credits.
The impact of technology on sales and marketing strategy. Areas explored include e-branding, customer relationship management, permission e-mail, sales force technology enhancement, mobile commerce, online marketing research, and electronic channels of distributions.

MKTG 6255. Strategic Brand Management. 3 Credits.
Theoretical foundation for branding and brand management and practical application of these concepts in marketing management.

MKTG 6256. Integrated Marketing Communication. 3 Credits.
The ubiquitous nature of advertising and promotion. How and from whom consumers get information and their level of trust in different information sources; concepts, analyses, and activities related to advertising; assessing and solving challenges.

MKTG 6259. Marketing Strategy. 3 Credits.
Required capstone course for marketing students. Analysis of complex marketing problems involving policy and operational decisions; emphasis on creative marketing strategy.

MKTG 6290. Special Topics. 0-3 Credits.

MKTG 6297. International Management Experience. 3 Credits.
Same as FINA 6297/ IBUS 6297/ MGT 6297/ SMPP 6297. May be repeated for credit.

MKTG 6298. Directed Readings and Research. 1-3 Credits.

MKTG 6299. Thesis Seminar. 3 Credits.

MKTG 6999. Thesis Research. 3 Credits.

MKTG 8341. Seminar: Marketing. 3 Credits.

MKTG 8397. Doctoral Seminar. 0-3 Credits.

MKTG 8998. Advanced Reading/Research. 1-12 Credits.
Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

MKTG 8999. Dissertation Research. 1-12 Credits.
Limited to doctoral candidates. May be repeated for credit.

STRATEGIC MANAGEMENT AND PUBLIC POLICY

UNDERGRADUATE

Bachelor's program

- Bachelor of Business Administration (p. 457)

FACULTY

Professors J.H. Beales III (*Chair*), H.J. Davis, J.J. Griffin, D.J. Lenn, J. Rivera, J.B. Wade

Associate Professors J.W. Cook, E.J. Englander, J. Forrer (*Research*), J.B. Thurman, J. Walter

Assistant Professors E.H. Kim, K. Martin, S. Patnaik, T. Radin (*Teaching*), G. de los Reyes

COURSES

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SMPP 4900. Special Topics. 1-3 Credits.
Experimental offering; new course topics and teaching methods.

SMPP 4900W. Special Topics. 3 Credits.
Topics vary by semester. May be repeated for credit provided topics differ. Consult the Schedule of Classes for more details.

SMPP 4995. Independent Study. 1-12 Credits.
Assigned topics. Admission by prior permission of advisor. May be repeated once for credit.

SMPP 6201. Business and Public Policy. 3 Credits.

SMPP 6202. Business-Government Relations. 3 Credits.
Historical and philosophical foundations of the business–government relationship. Regulation, international trade, and corporate political activities. Public policy issues facing business and the business community's political response. Prerequisite: MBAD 6284 .

SMPP 6203. Fed Gov't Regulation-Society. 3 Credits.

SMPP 6205. Business Representation and Lobbying. 3 Credits.
Strategies, tactics, and techniques used by business in representing itself to the legislative and executive branches and regulatory agencies of the federal government. Legal and practical constraints. Ethical considerations.

SMPP 6206. Applied Microeconomics. 3 Credits.
Applications of economic theory to public and private decisions with emphasis on public policy analysis. Focus on market structure and its implications. Imperfect information, common property, public goods and externalities. Economic analysis of government behavior and legal institutions. Prerequisite: ECON 6217 or ECON 6219 and MBAD 6222 .

SMPP 6207. Environment, Energy, Technology, and Society. 3 Credits.
The identification, examination, and evaluation of how environment, energy, and technology are interrelated and how these interactions influence policy formulation and implementation at the international, national, regional, industrial, and organizational levels. Same as PPPA 6067.

SMPP 6208. Macroeconomic Policy and Business. 3 Credits.
Determination of national income, employment, inflation, and interest rates. The role of expectations in the economy. Impact of government purchases, tax policy, and deficits. Monetary policy institutions. The global economy and exchange rates. Prerequisite: ECON 6218 or 6219 and MBAD 6222.

SMPP 6209. Seminar: Business Economics and Public Policy. 3 Credits.
Analysis and discussion of selected issues by students and representatives of government and business. Prerequisite: SMPP 6202 or MBAD 6284.

SMPP 6210. Strategic Environmental Management. 3 Credits.
Examination and analysis of the orientation and actions of private, public, and nonprofit sectors in relation to their natural environments. Emphasis on organizational interaction and effectiveness, particularly regarding business firms and industry, on issues of environmental quality and sustainability.

SMPP 6211. Corp. Env. Mg. in Dev. Nations. 3 Credits.

SMPP 6212. Business Law: Enterprise Org. 3 Credits.

SMPP 6213. Management of Strategic Issues. 3 Credits.
The body of management theory and practice that has evolved to identify, analyze, and resolve strategic organizational issues. Methodology of the field; applications to critical issues in labor relations, energy and pollution, marketing and consumerism, business–government relations, and the global economy.

SMPP 6214. Consultative Processes. 3 Credits.
Theories and methods of planning, introducing, and coping with change in management through the helping process. Intended both for managers seeking an understanding of the consultative approach to planned change and for persons in staff or consultative roles seeking understanding of the consultative process. Same as MGT 6214/ TSTD 6214.

SMPP 6215. Corporate Governance and Ethics. 3 Credits.
The theory, practice, and public policy environment of corporate governance. Purpose, functioning, and responsibilities of boards of directors. Power, control, and compensation of corporate management. Shareholders and stakeholders. Corporate governance in comparative national settings. Same as ACCY 6801.

SMPP 6216. Public Policy, Governance, and the Global Market. 3 Credits.
The socioeconomic foundations of government regulation and public policy cooperation for the governance of firms, markets and globalization. The evolution of national, transatlantic and multilaterial frameworks for market and civil society governance, international competition policy cooperation, regulatory harmonization and industry standards. (Same as PPPA 6018).

SMPP 6217. Strategy and International Political Economy. 3 Credits.
Case-based study of the interactions of firms within their broader business environment; how firms pursue an integrated approach to strategic management by combining elements of non-market strategy and concepts from traditional market strategy.

SMPP 6241. GlobalCorporateResponsibility. 3 Credits.

SMPP 6271. Corporate Envir Mgmt & Policy. 1.5 Credit.

SMPP 6290. Special Topics. 1-3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated once for credit.

SMPP 6291. Ethics and Business. 3 Credits.
An in-depth, comprehensive exploration, analysis, and evaluation of specific for profit and non-profit organization values, approaches, and outcomes related to multiple ethical ideals, systems, and practices.

SMPP 6292. Co-Curricular Activities in Responsible Management. 0 Credits.
This 0-credit course is required for students taking the Graduate Certificate in Responsible Management. The three components include completing a project or case study with an organization or faculty member related to the CRM mission; attending a series of seminars, panel discussions, or other pre-approved events relating to responsible management and submitting written reports; and completing designated community service hours. Restricted to GWSB Graduate Students Admitted to the Graduate Certificate in Responsible Management.

SMPP 6293. American Business History. 3 Credits.
The history of American business institutions in manufacturing, distribution, transportation, and finance. Particular attention will be given to the period since industrialization, with consideration of business institutions in their economic, legal, governmental, and social contexts. Same as HIST 6322.

SMPP 6295. Interm Qual&Quant Analysis. 3 Credits.

SMPP 6297. International Management Experience. 3-6 Credits.
Same as FINA 6297/ IBUS6297/ MGT 6297/ MKTG 6297. May be repeated for credit.

SMPP 6298. Directed Readings and Research. 1-6 Credits.
Supervised readings or research. Admission by prior permission of instructor. May be repeated once for credit.

SMPP 6299. Thesis Seminar. 3 Credits.

SMPP 6999. Thesis Research. 3 Credits.

SMPP 8311. Seminar: PublicÝPrivate Sector Institutions and Relationships. 3 Credits.
An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Same as PPPA 8111. Prerequisite: doctoral degree candidate status.

SMPP 8321. Seminar in Strategic Management. 3 Credits.
Develops understanding of the major research streams in strategic management; exposure to theoretical research frameworks and methodological issues and approaches.

SMPP 8331. Seminar in Business and Public Policy. 3 Credits.
Develops understanding of the major research streams in business and public policy; exposure to theoretical research frameworks and methodological issues and approaches.

SMPP 8391. Seminar:Business Management. 3 Credits.
Examination of major current issues, both theoretical and empirical, affecting the development of the business enterprise. Topics to be announced. Emphasis on policy and strategic issues affecting the total enterprise. (Offered as the demand warrants).

SMPP 8998. Advanced Readings and Research. 1-12 Credits.
Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

SMPP 8999. Dissertation Research. 1-12 Credits.
Limited to doctoral candidates. May be repeated for credit.

GRADUATE SCHOOL OF EDUCATION AND HUMAN DEVELOPMENT

Dean M.J. Feuer
Senior Associate Dean C.H. Hoare
Associate Dean for Research and External Relations M.B. Freund
Interim Associate Dean for Doctoral Studies S.A. Dannels
Assistant Dean of Academic Services R.C. Jakeman

The Graduate School of Education and Human Development (http://gsehd.gwu.edu) is the administrative unit for the departments of Counseling and Human Development, Curriculum and Pedagogy, Educational Leadership, Human and Organizational Learning, and Special Education and Disability Studies. The School offers the master of arts in education and human development, master of arts in teaching, master of education, education specialist, doctor of philosophy, and doctor of education degree programs. Academic programs are offered in numerous fields of study.

In addition to its degree programs, the School offers graduate and post-graduate certificate programs; credit and noncredit workshops designed to meet the unique needs of metropolitan area school systems and other clientele in industry and government; and a wide range of courses for teachers who wish to pursue advanced studies and/or additional endorsements and for provisional teachers who wish to prepare for teaching certificates.

All programs are designed to meet the broad needs of individuals who seek the knowledge and skills necessary to provide effective learning and teaching, research, services, and leadership in a variety of settings that cover the entire life span. Special curricula are individually tailored for liberal arts graduates and graduates of other professional schools who are interested in teaching or in other human services areas.

Clinical facilities are provided by the Community Counseling Service Center (http://gsehd.gwu.edu/ccsc), which supports counseling internships as well as outreach services to the community. The Office of Professional Preparation and Accreditation supports liaison with schools for clinical experiences required for educator licensure. Field and internship experiences required in master's and doctoral programs are provided in cooperation with public and private schools, social and health agencies, museums, institutions in the business community, institutions of higher education, nonprofit and professional associations, and the federal government. Some programs and courses are also offered at off-campus locations or via distance education.

The educator preparation programs in the Graduate School of Education and Human Development are accredited by the Council for the Accreditation of Educator Preparation/National Council for Accreditation of Teacher Education (CAEP/NCATE) and the District of Columbia Office of the State Superintendent of Education (DC–OSSE). Programs that prepare students to become eligible for licensure/certification as teachers and other school personnel are state-approved by the DC–OSSE.

Mission

The Graduate School of Education and Human Development, strategically based in the nation's capital and serving the global community, develops informed and skilled leaders through innovative teaching and learning. Students engage in scholarly inquiry that links policy, research, and practice across the lifespan and fosters continuous self-examination and critical analysis towards excellence.

Bridging Concepts

The following bridging concepts are central to the unified conceptual framework of the School and weave through the mission, goals, and initiatives of its strategic plan.

- Research and scholarship are prerequisite to the improvement of educational practice.
- Leadership is critical in the transformation of education and human development at all levels.
- Building reflective practitioners through integration of theory and practice must be a focus of all programs.
- A community of diverse learners is prerequisite to success in the education and human service professions.

REGULATIONS

- **Admissions Requirements for the Master of Education, the Master of Arts in Education and Human Development, and the Master of Arts in Teaching (p. 515)**
- **Advanced Standing (p. 515)**
- **Plan of Study (p. 515)**
- **Thesis Option (p. 515)**
- **Grades (p. 515)**
- **Scholarship (p. 515)**
- **Master's Comprehensive Examination (p. 515)**
- **Continuous Enrollment and Residency (p. 516)**
- **Leave of Absence (p. 516)**
- **Class Attendance Policy (p. 516)**
- **PRAXIS® Teacher Assessments (p. 516)**
- **Second Master's Degree (p. 516)**

Admissions Requirements for the Master of Education, the Master of Arts in Education and Human Development, and the Master of Arts in Teaching

The Graduate School of Education and Human Development seeks applicants with strong academic potential, high motivation, and aptitude to do graduate-level work. Admission decisions are based on an evaluation of all material submitted in support of the application. The School requires a bachelor's degree from a regionally accredited institution, official transcripts of all previous undergraduate and graduate course work, and acceptable test scores on either the Graduate Record Examination or the Miller Analogies Test in *some* programs. These tests are waived in several master's programs.

Two letters of recommendation and a statement of purpose are required. Most programs also require an interview with program faculty. The interview may be waived with permission of the lead faculty of the desired program for those living outside the Washington metropolitan area. In addition to these basic requirements, individual programs may require relevant professional experience and other supporting documentation before a final decision on admission is made.

Advanced Standing

Advanced standing is granted for approved courses taken at other regionally accredited institutions, but a minimum of 24 credit hours must be completed in the Graduate School of Education and Human Development as a master's candidate. A maximum of 12 credit hours taken in nondegree status may be credited toward the master's degree. Advanced standing is not granted for work completed five or more years before application for admission or readmission to master's candidacy. All work accepted for advanced standing must have been earned with a grade of *B* or better and must be approved for acceptance by both the advisor and the dean. *Credit, Satisfactory, Audit,* or other nonletter grades are not acceptable.

Plan of Study

The plan of study leading to the degree of Master of Arts in Education and Human Development varies by degree, but requires a minimum of 30 hours of graduate credit. Programs include EDUC 6114 Introduction to Quantitative Research, or EDUC 6116 Introduction to Educational Statistics, or EDUC 6112 Foundations of Assessment, Testing, and Measurement in Education to satisfy the research requirements. Several programs have additional credit hour and/or capstone requirements.

All degree requirements must be completed within 6 years, whether study is full time or part time. An additional (or 7th) year is allowed in the case of a student who breaks enrollment and is subsequently readmitted.

Thesis Option

Students in select programs may elect a theses option. The choice of the thesis subject must be approved in writing by the student's advisor and filed in the office of the dean. All theses must be submitted electronically and meet the formatting and other requirements set forth online (http://library.gwu.edu/etd). Payment of tuition for the thesis course entitles the candidate, during the period of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, additional time may be granted. The student must, however, be enrolled continuously in the program.

Grades

Information on grades and computing the grade-point average is found under University Regulations (p. 21).

The symbol *I* (Incomplete) indicates that a satisfactory explanation of extenuating circumstances has been given to the instructor for the student's inability to complete the required work of the course during the semester of enrollment. The work must be completed within the designated time period agreed upon by the instructor, student, and School, but no more than one calendar year from the end of the semester in which the course was taken. All students who receive an Incomplete must maintain active student status during the subsequent semester(s) in which the work of the course is being completed. If not registered in other classes during this period, the student must register for Continuous Enrollment status.

When work for the course is completed, the instructor will complete a grade change form and turn it in to the Office of the Registrar. The final grade will replace the symbol of *I*. If work for the course is not completed within the designated time, the grade will be converted automatically to a grade of *F,* Failure, 0 quality points, and the grade-point average and academic standing recalculated. See University Regulations for full details.

Scholarship

A grade-point average of 3.0 is required for graduation. Students who receive a grade of *C* in more than 6 credit hours are subject to suspension. Students who receive a grade of *F* must confer with the academic advisor before enrollment for further course work is allowed. More detailed information for doctoral students can be found in the Doctoral Student Handbook.

Master's Comprehensive Examination

A comprehensive examination is required for some programs. Candidates who plan to take the examination must file a written application in the Office of Student Life of the Graduate School of Education and Human Development by the published deadline.

Continuous Enrollment and Residency

Students must be continuously enrolled in GSEHD unless the Dean's Office grants a leave of absence. Failure to register each semester of the academic year will result in lapse of candidacy. Subsequent readmission is subject to whatever new conditions and regulations have been established by the School. See Continuous Enrollment Status under University Regulations.

When master's degree candidates are sitting for a comprehensive examination and are not otherwise enrolled in course work, they may prepare for and sit for the exam in continuous enrollment status. All doctoral and education specialist students and those master's students who elect to take an additional semester to prepare for the examination or who must retake the examination are required to enroll in the examination preparation course, which carries a fee equivalent to 1 credit hour of tuition. See Master's Comprehensive Examination above.

Leave of Absence

Students who, for personal reasons, are temporarily unable to continue their program of studies may request a leave of absence for a specific period of time not to exceed one calendar year during the total period of degree candidacy. If the request is approved, the student must register for leave of absence each semester. If a student fails to register, degree candidacy is terminated. Students who need additional semesters of leave of absence must seek approval from the appropriate appeals committee.

Class Attendance Policy

Attending class and scheduled make-up classes, discussions, and other course meetings is a fundamental student responsibility. Faculty may use class attendance and participation as factors in determining course grades.

PRAXIS® Teacher Assessments

All degree programs preparing students for initial teacher licensure require completion of the Educational Testing Service PRAXIS® teacher assessments as specified by the Office of the State Superintendent of Education of the District of Columbia.

Second Master's Degree

Persons seeking a second master's degree in the Graduate School of Education and Human Development must complete all core and specialization requirements and a minimum residency requirement of 24 credit hours.

MASTER'S

Teacher Certification Preparation Programs

Programs are available to prepare students for teacher licensure in elementary, secondary, and special education through the Master of Arts in the field of education and human development, Master of Education, and Education Specialist degree programs. Students who plan to prepare for licensure must apply to the appropriate degree program. These degree programs are also available to credentialed teachers seeking additional endorsements.

In accordance with the 2008 Higher Education Opportunity Act, Title II, Section 205, The George Washington University Graduate School of Education and Human Development provides required information in response to any request by potential applicants, guidance counselors, and prospective employers. Visit the School's website (http://gsehd.gwu.edu) for additional information.

Master of Arts in Teaching

- Master of Arts in Teaching in the field of museum education (p. 530)

Master of Education

- Master of Education in the field of elementary education (p. 527)
- Master of Education in the field of secondary education (p. 534)

Master of Arts in Education and Human Development

- Master of Arts in Education and Human Development individualized program (p. 529)
- Master of Arts in Education and Human Development in the field of assessment, testing, and measurement in education (p. 520)
- Master of Arts in Education and Human Development in the field of clinical mental health counseling (p. 521)
- Master of Arts in Education and Human Development in the field of clinical rehabilitation counseling (p. 521)
- Master of Arts in Education and Human Development in the field of curriculum and instruction (p. 522)
- Master of Arts in Education and Human Development in the field of curriculum and instruction, concentration in elementary education (p. 522)
- Master of Arts in Education and Human Development in the field of curriculum and instruction, concentration in interdisciplinary studies of literacy and reading education (p. 523)
- Master of Arts in Education and Human Development in the field of curriculum and instruction, concentration in secondary education (p. 524)
- Master of Arts in Education and Human Development in the field of early childhood special education (p. 524)
- Master of Arts in Education and Human Development in the field of educational leadership and administration (p. 526)
- Master of Arts in Education and Human Development in the field of education policy studies (p. 525)
- Master of Arts in Education and Human Development in the field of educational technology leadership (p. 526)

- Master of Arts in Education and Human Development in the field of experiential education and Jewish cultural arts (p. 528)
- Master of Arts in Education and Human Development in the field of higher education administration (p. 528)
- Master of Arts in Education and Human Development in the field of international education (p. 530)
- Master of Arts in Education and Human Development in the field of organizational leadership and learning (p. 531)
- Master of Arts in Education and Human Development in the field of rehabilitation counseling (p. 532)
- Master of Arts in Education and Human Development in the field of school counseling (p. 533)
- Master of Arts in Education and Human Development in the field of secondary special education and transition services (p. 535)
- Master of Arts in Education and Human Development in the field of special education for children with emotional and behavioral disabilities (p. 537)
- Master of Arts in Education and Human Development in the field of special education for culturally and linguistically diverse learners

Joint Program

- Master of Arts in Education and Human Development in the field of Educational Policy and Juris Doctor (p. 550)

EDUCATION SPECIALIST

The Degree of Education Specialist

The program of advanced study leading to the degree of education specialist (Ed.S.) is for students with a master's degree in education who seek further professional preparation. The program is available in the fields of educational leadership and administration, counseling, curriculum and instruction, higher education administration, human and organizational learning, and special education.

Admission Requirements

The following are required for entrance to an education specialist program: an undergraduate degree and a master of arts in education and human development (M.A.Ed.&H.D.) or its equivalent from a regionally accredited institution, two years of pertinent experience in an education or human development field, and a graduate scholastic average of at least 3.3 and, in some programs, an acceptable score on either the Graduate Record Examination or Miller Analogies Test. Two letters of recommendation, one from a professional supervisor and one from the most recent graduate faculty advisor, are required, along with a statement of professional goals. Each applicant must be interviewed and recommended by a faculty advisor in the major field.

Programs of Study and Degree Requirements

Individual programs are developed, through a plan of study worked out with a faculty advisor, to fit the candidate's skills, interests, and career goals. A minimum of 30 credits beyond the requirements for an M.A.Ed.&H.D. degree is required. At least 21 credits of this work must be taken in residence at GW. A maximum of five calendar years is allowed for completion of the program.

At least 12 of the required 30 credits must be in appropriate graduate courses in education selected from the following areas: (1) foundations and cognate study, (2) background and general principles of the field of study, and (3) an area of specialization. A graduate-level research methods course must be included in the program if it was not completed in previous graduate work.

The Comprehensive Examination

Successful completion of a six-hour written or oral examination or its equivalent, at the option of the major field advisor, is required. Candidates taking the examination must be registered for at least 1 credit in the semester it is to be taken and submit an online comprehensive examination application by the published deadline.

Education Specialist Programs

- Education Specialist in the field of educational leadership and administration (p. 539)
- Education Specialist in the field of special education (p. 539)

(p. 539)

DOCTORAL

The Degree of Doctor of Philosophy

A Ph.D. in the field of counseling is accredited by the Council for Accreditation of Counseling and Related Educational Programs.

The Ph.D. in the field of educational science is designed to create opportunities for cross-disciplinary education research by concentrating on critical national and global problems in which education and human development play a significant role. To adequately address such critical national and global problems, scholars require both a strong foundation in educational science as well as theoretical and disciplinary grounding in multiple disciplines. The Ph.D. program is distinguished by four characteristics: (a) candidates apply to a cross-disciplinary research team (CRT) that is focused on a critical problem related to education, (b) approaches to the research problems require a cross-disciplinary lens, (c) students engage in research throughout their program, and (d) candidates aspire to careers in which the production of research is paramount.

Admission Requirements

A master's degree from a regionally accredited institution is required. Materials to be submitted include: official transcripts, GRE scores, TOEFL scores (for international applicants), three letters of recommendation, and a statement of purpose. Each program has more specific details about these materials and additional requirements. Selection is competitive and is based on the applicant's past achievements, perceived potential, and fit to the goals and mission of the program.

The Degree of Doctor of Education

The Graduate School of Education and Human Development offers programs of advanced study leading to the degree of Doctor of Education (Ed.D.). These programs provide major fields of study in curriculum and instruction, special education, educational administration and policy studies, human and organizational learning, and higher education administration. Supporting fields are available in educational administration, higher education administration, counseling, curriculum and instruction, education policy, elementary education, human development, human and organizational learning, international education, program evaluation, secondary education, special education, supervision, and teacher education. With the approval of a student's program planning committee, course work may be taken in or from other departments of the University and through the Consortium. All programs require a doctoral dissertation in the major field of study.

All doctoral programs are designed to accommodate the needs of full-time students as well as working professionals who must pursue their studies on a part-time basis. Required graduate courses, with few exceptions, are offered in the late afternoon and evening. In some programs, courses are offered at off-campus locations.

Admission Requirements

The applicant must have adequate preparation for advanced study, including the undergraduate degree and graduate work from a regionally accredited institution in the content area that supports his or her objective. This graduate work must be comparable to that required for the degree of Master of Arts in Education and Human Development at this University. Students with a master's degree in a field other than education may be considered for doctoral study provided that the degree and previous experience are judged relevant by the major field program faculty.

For an application to be considered by the major field program faculty, an applicant must have a minimum graduate scholastic average of 3.3 on a scale of 4.0 and an acceptable score on the Miller Analogies Test or Graduate Record Examination. In the field of human organizational learning, the Graduate Management Admissions Test is acceptable as well. Programs often set higher admissions standards, and the number of new doctoral students in each program is limited. All applicants must have an interview with faculty members in the major field. Students receiving favorable recommendations from the major field faculty are admitted to precandidacy for the degree.

Precandidacy and Candidacy

The Doctor of Education program is divided into two stages: precandidacy and candidacy. In general, the degree program requires three or more years of full-time study beyond the master's degree or the equivalent in part-time study. Course work and the comprehensive examination must be completed within five years, and the entire program must be completed within eight years. The minimum residency requirement in degree status for the Ed.D. is 36 credits of course work in the precandidacy stage and 12 to 24 credits of dissertation research in the candidacy stage. In most cases, course work beyond the minimum is required.

In the precandidacy stage, all course work in the program must be completed and the comprehensive examination passed. Course work toward the doctorate is established on the basis of a framework of seven domains: knowledge of foundations; critical literature review; research methods; clarity of thought, as expressed both in speech and in writing; professional development; technological skills; and depth of knowledge of the specialty area. A program plan of study is developed between the doctoral student and a doctoral study advising team, generally consisting of two members of the program faculty.

The comprehensive examination is generally a two-day examination held each semester and taken upon completion of all precandidacy course work. Students taking the examination must be registered for at least 1 credit in the semester it is to be taken and must file an online application in the dean's office by the published deadline.

The candidacy stage of doctoral study begins after successful completion of the content course work *and* the comprehensive examination. A doctoral research dissertation committee is established and the candidate develops a dissertation proposal (this may be while registered in Pre-Dissertation Seminar). Upon successful completion of course work listed on the approved program plan of study, students must register for dissertation research at the rate of 3 or 6 credits each fall and spring semester. A minimum of 12 dissertation research credits are required for graduation. Students who have not defended their dissertation after 12 credits continue to register at the rate of 3 or 6 credits until they have reached 24 credits of dissertation research. Once they have reached their 24 credit maximum, they must register each subsequent fall and spring semester for 1 credit of Continuing Research until completion of their degree program with the successful defense of the dissertation to the Dissertation Oral Examination Committee. The accepted dissertation is submitted electronically, with a processing fee paid directly to Proquest/UMI.

Detailed information on the Ed.D. program and its administration is available in the GSEHD Doctoral Student Handbook (http://gsehd.gwu.edu/sites/default/files/2014%20-

%202015%20Doctoral%20Handbook.pdf). Students completing their degree program should refer to the section on Graduation Requirements, Participating in the Commencement Ceremony, under University Regulations.

Doctoral programs

- Doctor of Education in the field of curriculum and instruction (p. 541)
- Doctor of Education in the field of educational administration and policy studies (p. 542)
- Doctor of Education in the field of higher education administration (p. 544)
- Doctor of Education in the field of human and organizational learning (p. 545)
- Doctor of Education in the field of special education (p. 547)
- Doctor of Philosophy in the field of counseling (p. 548)
- Doctor of Philosophy in the field of educational science (p. 549)

CERTIFICATES

The Graduate School of Education and Human Development offers the following graduate certificate programs. Graduate certificates do not constitute eligibility for an initial license or assure admission to a subsequent degree program. Courses taken as part of a certificate program may be applied toward advanced credentials or endorsements added to an initial license.

Graduate Certificates

- Assessment, Testing, and Measurement in Education (p. 551)
- Autism Spectrum Disorders (p. 551)
- Brain Injury: Educational and Transition Services (p. 552)
- Counseling and Life Transitions (p. 552)
- Design and Assessment of Adult Learning (p. 553)
- E-Learning (p. 554)
- Global Leadership in Teams and Organizations (p. 554)
- Incorporating International Perspectives in Education (p. 554)
- Instructional Design (p. 555)
- Integrating Technology into Education (p. 555)
- Job Development and Placement (p. 556)
- Leadership Development (p. 556)
- Leadership in Educational Technology (p. 556)
- Multimedia Development (p. 557)
- Organizational Learning and Change (p. 557)
- Secondary Special Education and Transition Services (p. 557)
- Special Education for Culturally and Linguistically Diverse Learners (p. 558)
- STEM Master Teacher (p. 558)
- Teaching English to Speakers of Other Languages (p. 559)
- Training and Educational Technology (p. 559)

Post-Master's Certificates

- Counseling (p. 552)
- Educational Leadership and Administration (p. 553)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

- Counseling (CNSL) (p. 1161)
- Curriculum and Pedagogy (CPED) (p. 1164)
- Education (EDUC) (p. 1179)
- Human Development (HDEV) (p. 1268)
- Human and Organizational Learning (HOL) (p. 1269)
- Special Education (SPED) (p. 1462)

MASTER'S PROGRAMS

Teacher Certification Preparation Programs

Programs are available to prepare students for teacher licensure in elementary, secondary, and special education through the Master of Arts in the field of education and human development, Master of Education, and Education Specialist degree programs. Students who plan to prepare for licensure must apply to the appropriate degree program. These degree programs are also available to credentialed teachers seeking additional endorsements.

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Master of Arts in Teaching

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- Master of Education in the field of elementary education (p. 527)
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Master of Arts in Education and Human Development

- Master of Arts in Education and Human Development individualized program (p. 529)
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- Master of Arts in Education and Human Development in the field of higher education administration (p. 528)
- Master of Arts in Education and Human Development in the field of international education (p. 530)
- Master of Arts in Education and Human Development in the field of organizational leadership and learning (p. 531)
- Master of Arts in Education and Human Development in the field of rehabilitation counseling (p. 532)
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- Master of Arts in Education and Human Development in the field of secondary special education and transition services (p. 535)
- Master of Arts in Education and Human Development in the field of special education for children with emotional and behavioral disabilities (p. 537)
- Master of Arts in Education and Human Development in the field of special education for culturally and linguistically diverse learners

Joint Program

- Master of Arts in Education and Human Development in the field of Educational Policy and Juris Doctor (p. 550)

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF ASSESSMENT, TESTING, AND MEASUREMENT IN EDUCATION

The master of arts in education and human development in the field of assessment, testing, and measurement (ATM) in education degree program is designed for individuals who are entering or advancing in positions associated with assessment, testing, and measurement in diverse settings. This specialized field combines the study of human behavior with statistical analysis, testing theory, educational measurement, and evaluation. ATM is the science of measuring educational factors such as learning, preference, aptitude, and personality. ATM specialists (commonly called psychometricians) design tests that collect empirical data and quantify the personal characteristics of individuals, comparing those results within or across populations. In addition to creating assessment instruments, some psychometricians govern the tests and analyze the results.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/assessment-testing-and-measurement-education) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 24 credits in required courses and 6 credits in electives, and completion of a written qualifying examination.

Code	Title	Credits
Required		
EDUC 6112	Foundations of Assessment, Testing, and Measurement in Education	

EDUC 8120	Group Comparison Designs and Analyses
EDUC 8170	Educational Measurement
EDUC 8171	Predictive Designs and Analyses
EDUC 8175	Item Response Theory
EDUC 8177	Assessment Engineering
EDUC 8179	Capstone Project in Assessment,Testing, and Measurement in Education (taken for 6 credits)
Electives	
6 credits in approved electives	
Elective courses should be selected in consultation with the program advisor.	
A written qualifying exam (administered during the early spring semester by an ATM committee).	

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF CLINICAL MENTAL HEALTH COUNSELING

The master of arts in education and human development in the field of mental health counseling degree program prepares graduates to enter the counseling profession in a variety of human service settings, including welfare and other social service agencies, mental health centers, penal institutions, court systems, employment centers, allied health agencies, government service agencies, community college counseling centers, employee assistance programs, and private practice. A subspecialty in employee assistance counseling is available to prepare counselors for business, industry, and government settings. The program is accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP).

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/clinical-mental-health-counseling) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 60 credits, including 54 credits in required courses and 6 credits in elective courses, and completion of 600 hours in internships and 100 hours in a practicum.

Required

EDUC 6114	Introduction to Quantitative Research
CNSL 6151	Professional and Ethical Orientation to Counseling
CNSL 6153	Counseling Interview Skills
CNSL 6154	Theories and Techniques of Counseling
CNSL 6155	Career Counseling
CNSL 6157	Individual Assessment in Counseling
CNSL 6159	Psychosocial Adaptation
CNSL 6161	Group Counseling
CNSL 6163	Social/Cultural Dimensions-Cns
CNSL 6169	Counseling Substance Abusers
CNSL 6171	Family Counseling
CNSL 6173	Diagnosis and Treatment Planning
CNSL 6174	Trauma and Crisis Intervention
CNSL 6185	Practicum/Internship in Counseling
CNSL 6186	Advanced Internship in Counseling
CNSL 6268	Foundations/Practicum: Clinical Mental Health Counseling
HDEV 6108	Life Span Human Development
HDEV 6109	Child Development
or HDEV 6110	Adolescent Development
or HDEV 8244	Adult and Aging Development
Elective	
6 credits in elective courses	
Elective courses should be selected in consultation with the program advisor	

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF CLINICAL REHABILITATION COUNSELING

The master of arts in education and human development in the field of clinical rehabilitation counseling degree program prepares graduates to design, develop, and evaluate clinical rehabilitation counseling services in order to best meet the needs of persons with disabilities in their professional counseling settings. Students learn to apply foundational

clinical rehabilitation counseling principles and develop a clinical counseling plan of services. Program graduates are eligible for both certification (certified rehabilitation counselor) and state licensure.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/masters-rehabilitation-counseling) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 60 credits in required courses.

Code	Title	Credits
Required		
CNSL 6151	Professional and Ethical Orientation to Counseling	
CNSL 6153	Counseling Interview Skills	
CNSL 6154	Theories and Techniques of Counseling	
CNSL 6155	Career Counseling	
CNSL 6157	Individual Assessment in Counseling	
CNSL 6159	Psychosocial Adaptation	
CNSL 6161	Group Counseling	
CNSL 6163	Social/Cultural Dimensions-Cns	
CNSL 6169	Counseling Substance Abusers	
CNSL 6171	Family Counseling	
CNSL 6173	Diagnosis and Treatment Planning	
CNSL 6174	Trauma and Crisis Intervention	
CNSL 6185	Practicum/Internship in Counseling	
CNSL 6186	Advanced Internship in Counseling	
CNSL 6376	Foundations/Practicum: Rehabilitation and Case Management	
CNSL 6378	Disability Management and Psychosocial Rehabilitation	
CNSL 6380	Job Placement and Supported Employment	
CNSL 6381	Medical and Psychosocial Aspects of Disabilities	
EDUC 6114	Introduction to Quantitative Research	
HDEV 6108	Life Span Human Development	

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF CURRICULUM AND INSTRUCTION

This program prepares teachers and other educational personnel for increased responsibilities in the planning, implementation, research, and evaluation of curriculum and instruction. The minimum 30-credit program includes study in curriculum development, research and evaluation of instructional practice, teacher education, work with special populations, and school policy and leadership. Students must select from one of the following program specialty concentrations:

- Concentration in elementary education (p. 522)
- Concentration in interdisciplinary studies of literacy and reading education (p. 523)
- Concentration in secondary education (p. 524)

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF CURRICULUM AND INSTRUCTION WITH A CONCENTRATION IN ELEMENTARY EDUCATION

The master of arts in education and human development in the field of curriculum and instruction with a concentration in elementary education degree program prepares teachers and other educational personnel for increased responsibilities in the planning, implementation, research, and evaluation of curriculum and instruction. The program includes study in curriculum development, research and evaluation of instructional practice, teacher education, work with special populations, and school policy and leadership. A program specialty concentration may include reading and literacy, elementary education, or secondary education.

Students enrolled in the master's in curriculum and instruction program may enroll concurrently in the graduate certificate in incorporating international perspectives in education program. Courses may be double counted toward earning the master's degree and certificate.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/masters-curriculum-and-instruction) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 33 credits, including 9 credits in core courses, 15 credits in courses in the concentration, 9 credits in elective courses, and successful completion of the master of arts in education and human development comprehensive examination.

Code	Title	Credits
Core		
EDUC 6114	Introduction to Quantitative Research	
CPED 6340	Teacher Leadership in Education	
CPED 6608	Development and Diversity	

Code	Title	Credits
Elementary education concentration		
CPED 6225	Introduction to International Curricula	
CPED 6305	Foundations of Curriculum Theory	
CPED 6606	Theories of Learning and Development	
CPED 6622	Foundations of Reading Development	
EDUC 6615	Internationalizing U.S. Schools	
Electives		
9 credits in elective courses selected in consultation with the program advisor.		
Other requirements		
Successful completion of the master of arts in education and human development comprehensive examination.		

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF CURRICULUM AND INSTRUCTION WITH A CONCENTRATION IN INTERDISCIPLINARY STUDIES OF LITERACY AND READING EDUCATION

The master of arts in education and human development in the field of curriculum and instruction with a concentration in interdisciplinary studies of literacy and reading education degree program prepares teachers, education professionals, and others with diverse experiences for leadership roles in school and out-of-school settings. The program incorporates traditional and novel contemporary aspects of literacy curriculum and instruction and provides pathways to becoming reading specialists and literacy coaches. Study in theories and practices in the arts, humanities, museums and informal learning environments, and digital technologies prepares educators for new teaching and learning opportunities.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/masters-curriculum-and-instruction) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 9 credits in core course, 21 credits in courses in the concentration,and successful completion of the master of arts in education and human development comprehensive examination.

Code	Title	Credits
Core		
EDUC 6114	Introduction to Quantitative Research	
CPED 6340	Teacher Leadership in Education	
CPED 6608	Development and Diversity	

Code	Title	Credits
Interdisciplinary studies of literacy and reading education concentration		
CPED 6223	Interdisciplinary Elementary School Literacies	
CPED 6289	New Literacies Coach and Reading Specialist	
CPED 6292	Practicum 2: Leadership in Interdisciplinary Literacies	
CPED 6624	Foundations and Research of Literacy and Reading Education	
CPED 6626	Practicum 1: Reading Diagnosis, Assessment and Solutions	
CPED 6628	Literacies in Informal Learning Environments	
CPED 6691	Interdisciplinary Adolescent Literacies	
Other requirements		

Successful completion of the master of arts in education and human development comprehensive examination.

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF CURRICULUM AND INSTRUCTION WITH A CONCENTRATION IN SECONDARY EDUCATION

The master of arts in education and human development in the field of curriculum and instruction with a concentration in secondary education degree program prepares teachers and other educational personnel for increased responsibilities in the planning, implementation, research, and evaluation of curriculum and instruction. The program of study includes curriculum development, research and evaluation of instructional practice, teacher education, work with special populations, and school policy and leadership. A program specialty concentration may include reading and literacy, elementary education, or secondary education.

Students enrolled in the master's in curriculum and instruction degree program may enroll concurrently in the graduate certificate in incorporating international perspectives in education. Courses can be double counted toward earning the master's degree and certificate.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/secondary-education) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 9 credits in core courses, 27 credits in the concentration, and successful completion of a comprehensive examination.

Code	Title	Credits
Core		
EDUC 6114	Introduction to Quantitative Research	
CPED 6340	Teacher Leadership in Education	
CPED 6608	Development and Diversity	

Code	Title	Credits
Secondary education concentration		
CPED 6305	Foundations of Curriculum Theory	
CPED 6239	Practicum in Curriculum and Instruction	

The remaining 21 credits should be selected in consultation with the departmental advisor.

Master of Arts in Education and Human Development comprehensive exam required.

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF EARLY CHILDHOOD SPECIAL EDUCATION

The master of arts in education and human development in the field of early childhood special education degree program offers students the opportunity to train in age-related subspecialties of preprimary, birth to age five, primary school age, or K - grade 3. The program is approved by the National Association for the Education of Young Children (NAEYC) and the Division of Early Childhood (DEC) of the Council for Exceptional Children. Students gain knowledge and skills in the specific content areas recommended by NAEYC and DEC: child development and learning; curriculum development and implementation; routine-based intervention in natural environments; family-centered services delivery models; child assessment, evaluation, and progress monitoring; cultural, linguistic, and economic diversity; and field-based practicum and internships.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/masters-early-childhood-special-education) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: for the regular degree—39 credits, including the required core courses and general courses; for the degree with an optional concentration in infant special education—42 credits, including the required core courses and infant special education concentration courses. In both cases, successful completion of the master of arts in education and human development comprehensive examination and completion of the relevant teacher licensure assessments (see below) are required.

Core		
EDUC 6114	Introduction to Quantitative Research	
SPED 6222	Legal Issues and Public Policy for Individuals With Disabilities	

SPED 6240	Family Support and Guidance in Special Education
or SPED 6100	Selected Topics
SPED 6261	Practicum: Methods and Materials for Young Children with Disabilities
SPED 6266	The Development of Language and Literacy
SPED 6268	Development of Children and Youth with Disabilities
SPED 6269	Etiology, Symptomatology, and Approaches to Intervention with Children with Disabilities
SPED 6290	Affective Development and Behavior Management in Special Education
Students may choose to complete the regular degree with the following four courses or to complete the degree with the optional concentration in infant special education, below.	
CPED 6622	Foundations of Reading Development
SPED 6260	Developmental Assessment in Special Education
SPED 6262	Formal Assessment of Young Children with Disabilities
SPED 6993	Internship: Teaching Young Children with Disabilities (taken for six credits)

Master of Arts in Education and Human Development comprehensive exam required

Completion of the relevant teacher licensure assessments (i.e., PRAXIS) required by the District of Columbia Educator Licensure Services Office

Infant special education concentration option courses

CPED 6221	Developmental Reading: Emergent Literacy
SPED 6242	Neurodevelopmental Assessment and Programming for Infants and Toddlers with Disabilities
SPED 6243	Developmental Assessment of Infants
SPED 6267	Instructional and Assistive Technology in Early Childhood Special Education
SPED 6994	Internship: Early Intervention (taken for six credits)

Master of Arts in Education and Human Development comprehensive exam required

Completion of the relevant teacher licensure assessments (i.e., PRAXIS) required by the District of Columbia Educator Licensure Services Office

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF EDUCATION POLICY STUDIES

The master of arts in education and human development in the field of education policy studies degree program develops skills to analyze education problems and policies at national, state, and local levels and in the K-12 and higher education sectors. The program is designed for students who wish to develop skills in policy research, program evaluation, and the technical, political, and managerial aspects of education policy. Emphasis is placed on developing both an understanding of the political, economic, and social environments affecting education policy and the competencies needed to apply research to analyze and effectively implement them or to evaluate their impact. Topics covered in this field include school reform, urban education problems, student achievement, school finance and its equity, teacher quality and effectiveness, equal opportunity, access to higher education, and accountability The 36-credit program includes 12 elective credits that are used to develop expertise and skills in a substantial area of education policy; these courses, with prior arrangement, may involve independent research and internships in federal, state, or professional organizations.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/masters-education-policy-studies) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 24 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
EDUC 6114	Introduction to Quantitative Research	
or EDUC 6116	Introduction to Educational Statistics	
EDUC 6314	History of American Education Reform	
EDUC 6368	Leadership and Education	

EDUC 6371	Education Policy
EDUC 6381	Program Evaluation: Theory and Practice
EDUC 6388	Analysis of Education Policy Issues
EDUC 8122	Qualitative Research Methods
One of the following	
EDUC 6601	International and Comparative Education
EDUC 6602	Regional Studies in International Education
EDUC 6610	Programs and Policies in International Education
EDUC 6650	Education and National Development
Electives	

12 credits in elective courses selected in consultation with the program advisor.

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF EDUCATIONAL LEADERSHIP AND ADMINISTRATION

The master of arts in education and human development (M.A.Ed.&H.D.) in the field of educational leadership and administration's 30-credit degree program is for students who seek preparation to lead in a culture of teaching and learning. Pursued either in the classroom or in an online learning format, students with at least one year of instructional experience are prepared for various school- based and central office positions of increased responsibility in teaching, leadership, and/or supervision. The curriculum addresses management, change, communication, organizational learning, administrative and legal issues, human relations, human resource development, general supervisory principles and responsibilities, and supervision of instruction. Graduates develop and expand their skills in technical, conceptual, political, and leadership arenas while positioning themselves to lead in diverse educational communities.

The program includes courses and PK-12 field experiences designed to meet administrative certification requirements in the District of Columbia, Maryland, Virginia, North Carolina, and other states that honor interstate compact agreements. The M.A.Ed.&H.D is nationally recognized by the Council for the Accreditation of Educator Preparation (CAEP), the National Council for Accreditation of Teacher Education (NCATE), and the Educational Leadership Constituent Council (ELCC).

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/educational-leadership-administration-0) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits in required courses.

Required	
EDUC 6422	Instructional Needs Analysis
EDUC 6240	Fundamentals of Educational Leadership and the Change Process
EDUC 6232	Supervision and Evaluation of Instruction
EDUC 6234	Site-Based Leadership: K-12
EDUC 6244	School-Community Relations
EDUC 6236	School Law and Policy
EDUC 6114	Introduction to Quantitative Research
EDUC 6246	Seminar: Applied Educational Administration
EDUC 6287	Internship: Administration (taken twice)

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF EDUCATIONAL TECHNOLOGY LEADERSHIP

The master of arts in education and human development in the field of educational technology leadership degree program is designed for individuals who are entering or advancing in positions associated with schools, higher education, alternative educational settings, or other human service occupations in which computers and related information delivery technologies are used. The program of study is delivered online and provides students with opportunities to develop the knowledge, understanding, and skills necessary to provide leadership in the rapidly changing environment of technology in education.

This pioneering program is delivered in an interactive distance learning format to students around the world. The required curriculum covers the theory and practice of educational technology, including the use of computers and other

instructional technology systems, technological management systems, policy making, research methods, and leadership.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/educational-technology-leadership) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 27 credits in required courses and 9 credits in elective courses.

Required	
EDUC 6114	Introduction to Quantitative Research
or EDUC 6116	Introduction to Educational Statistics
EDUC 6368	Power, Leadership & Education
EDUC 6371	Education Policy
EDUC 6401	Applying Educational Media and Technology
EDUC 6402	Computers in Education and Human Development
EDUC 6403	Educational Hardware Systems
EDUC 6404	Managing Computer Applications
EDUC 6405	Developing Multimedia Materials
EDUC 6406	Instructional Design
Elective	
Three of the following	
EDUC 6421	Critical Issues in Distance Education
EDUC 6422	Instructional Needs Analysis
EDUC 6425	Developing Effective Training with Technology
EDUC 6426	Computer Interface Design for Learning
EDUC 6427	Advanced Instructional Design
EDUC 6428	Developing Digital Professional Portfolios

MASTER OF EDUCATION IN THE FIELD OF ELEMENTARY EDUCATION

The master of education in the field of elementary education degree program is designed for those with an undergraduate degree in the arts and sciences. The program includes course work for students who wish to become eligible for licensure/certification for teaching at the elementary school level (grades 1–6). Additional course work in content areas may be needed to meet specific jurisdictional requirements for licensure/certification.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/elementary-education) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 33 credits in required courses.

Required	
Foundations	
CPED 6604	Perspectives in American Education
CPED 6606	Theories of Learning and Development
CPED 6608	Development and Diversity
SPED 6290	Affective Development and Behavior Management in Special Education
Methodology	
CPED 6410	Reading Children's Literature across the Curriculum
CPED 6412	Elementary School Curriculum and Methods (Math)
CPED 6412	Elementary School Curriculum and Methods (Science)
CPED 6412	Elementary School Curriculum and Methods (Language Arts)
CPED 6412	Elementary School Curriculum and Methods (Social Studies)
CPED 6623	Foundations of Reading Development
EDUC 6114	Introduction to Quantitative Research
Internship	

CPED 6635	Professional Internship in Elementary Education (taken for 6 credits)

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF EXPERIENTIAL EDUCATION AND JEWISH CULTURAL ARTS

The Graduate School of Education and Human Development, in concert with the Columbian College of Arts and Sciences, offers an intensive, interdisciplinary, 13-month degree program combining Jewish cultural arts, experiential education, and museum education. Graduates will be prepared for leadership in Jewish museums and arts institutions, community centers, college campus organizations, summer camps, and other innovative educational and cultural settings.

Partnering theory with practice, and the classroom with fieldwork, the EE/JCA curriculum enables students to become competent, creative, and reflective professionals. The program:

- Inspires students to develop exciting and relevant programming for a range of audiences,
- Offers a year-long series of internships at cultural arts and educational institutions, and
- Develops professional skills including budgeting, grant writing, workplace collaboration, and effective communication.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/experiential-education-jewish-cultural-arts) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits in required courses.

Required

EDUC 6100	Experimental Courses (Mosaic: The Institute I (taken for 1 credit)
EDUC 6100	Experimental Courses (Mosaic: The Institute II (taken for 2 credits)
EDUC 6100	Experimental Courses (An Introduction to Experiential Jewish Education (taken for 6 credits)
JSTD 6211	Displaying Jewish Culture: Landmark Exhibitions on Judaism and the Jewish Experience
or JSTD 6001	Topics in Judaic Studies
JSTD 6298	Behind the Scenes: The Jewish Arts World in Contemporary Perspective
or JSTD 6202	Multiple Lives: The Fate of Jewish Cultural Expression
EDUC 6711	Museum as a Learning Environment
EDUC 6100	Experimental Courses (Behind the Scenes: Experiential Museum Education (taken for 3 credits)
EDUC 6100	Experimental Courses (Artful Synthesis: Experiential Jewish Education in Theory and Practice (taken for 6 credits)
EDUC 6100	Experimental Courses (Capstone Fellows Program (taken for 3 credits)

Mosaic Workshop (credits earned in Mosaic: The Institute II)

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF HIGHER EDUCATION ADMINISTRATION

The master of arts in education and human development in the field of higher education administration (M.A.Ed.&H.D) degree program is designed to provide students with the skills and knowledge for successful work in entry- and mid-career professional positions in institutions of higher education, associations, national and international government agencies, and related organizations. Students may select a concentration in general administration, student affairs administration, higher education policy and finance, and international education. The program of study includes an introduction to higher education administration, research design and analysis, the concentration (in-depth focus on a particular aspect of higher education and its administration), application electives (including internships and practicums), and leadership integration.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/higher-education-administration-0) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 12 credits in required core courses, 12 credits in one concentration (15 credits in student affairs administration), 6 credits in elective courses (3 in student affairs administration), and a capstone project.

Code	Title	Credits
Higher education administration core courses:		
EDUC 6112	Foundations of Assessment, Testing, and Measurement in Education	
EDUC 6500	Intro Stu Aff & Higher Ed	
EDUC 6510	Administration of Higher Education	
EDUC 6585	Master's Internship in Higher Education Administration	
EDUC 6590	Capstone in Higher Education Administration	
General administration concentration:		
EDUC 6540	Group and Organizational Theories	
EDUC 6560	Legal Problems in Higher Education	
EDUC 6555	Higher Education Policy	
or EDUC 6565	Financing Higher Education	
EDUC 8560	Case Studies in Higher Education Administration	
Electives		
6 credits in elective courses to be selected in consultation with the advisor.		
Higher education policy and finance concentration:		
EDUC 6555	Higher Education Policy	
EDUC 6565	Financing Higher Education	
EDUC 6560	Legal Problems in Higher Education	
EDUC 8540	History of Higher Ed	
Electives		
6 credits in elective courses to be selected in consultation with the advisor.		
International education concentration:		
EDUC 6602	Regional Studies in International Education	
or EDUC 6615	Internationalizing U.S. Schools	
or EDUC 6630	International Experiences	
EDUC 6610	Programs and Policies in International Education	
EDUC 6620	Strategies and Analysis in International Education	
EDUC 8560	Case Studies in Higher Education Administration	
Electives		
6 credits in elective courses to be selected in consultation with the advisor.		
Student affairs administration concentration:		
EDUC 6520	Foundations of College Student Development	
EDUC 6525	Managing College Student Services Programs	
EDUC 6530	Intercultural Campus Ldrshp	
EDUC 6540	Group and Organizational Theories	
EDUC 6585	Master's Internship in Higher Education Administration	
Electives		
3 credits in elective courses to be selected in consultation with the advisor.		

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT - INDIVIDUALIZED PROGRAM

The master of art in education and human development individualized degree program provides students with an opportunity to develop a program of study that cuts across existing fields, both within the Graduate School of Education and Human Development and between the School and other schools and departments of the University and the Consortium. It is designed to meet specific career and professional objectives of applicants who have unique needs. The flexible program structure can be tailored to prepare for new and emerging fields in education and human development. This program is available within or across the five departments of the Graduate School of Education and Human Development.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

REQUIREMENTS

The following requirements must be fulfilled: 30 credits distributed as outlined below:

Code	Title	Credits
Required		
12 credits of core foundation curriculum courses in human development, social/historical/philosophical foundations in education, and curriculum		
12 credits of courses that meet student's program goals and objectives		
Minimum of 6 credits of fieldwork or the equivalent		
All work toward the degree must be specified at the time the initial program is developed.		

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF INTERNATIONAL EDUCATION

The master of arts in education and human development in the field of international education degree program is designed for individuals who are entering or advancing in positions associated with training, education, adult learning, and development activities in diverse settings that require international understanding. Students acquire knowledge of other countries and cultures, using the education system as a means of interpreting and translating knowledge across cultures, and analysis of the formal and non-formal school systems as they reflect history, culture, development, values, contemporary concerns, and future trends. In addition, students acquire tools, methods, and habits of analysis that enable them to play a variety of roles as leaders and change agents.

Students in this program can also enroll in and receive a graduate certificate in Incorporating International Perspectives in Education.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/international-education) for additional information.

REQUIREMENTS

Required: 36 credits, including 18 credits in required courses, 9 credits in courses in a specialization, and 9 credits in elective courses.

Required		
EDUC 6114	Introduction to Quantitative Research	
or EDUC 6116	Introduction to Educational Statistics	
And five of the following:		
EDUC 6601	International and Comparative Education	
EDUC 6602	Regional Studies in International Education	
EDUC 6610	Programs and Policies in International Education	
EDUC 6615	Internationalizing U.S. Schools	
EDUC 6620	Strategies and Analysis in International Education	
EDUC 6630	International Experiences	
EDUC 6660	Capstone in International Education	
EDUC 6631	Internship: International Education	
EDUC 6640	Selected Topics in International Education	
EDUC 6650	Education and National Development	
Specialization		
9 credits in a professional, academic, or regional specialization selected in consultation with the program advisor.		
Elective		
9 credits of approved electives selected in consultation with the program advisor.		

Up to 6 additional credit hours of internship may be required for students who do not have international education related experience.

MASTER OF ARTS IN TEACHING IN THE FIELD OF MUSEUM EDUCATION

The master of arts in teaching (M.A.T.) in the field of museum education degree program is an intensive, interdisciplinary program designed to prepare graduates for work fulfilling the educational mission of art, history or science museums; zoos, aquaria, or nature centers; and historical societies or sites. Graduates also qualify to serve as liaisons between schools and museums and as professionals in museum-related private and public agencies.

Students interested in museum studies more generally should refer to Museum Studies (p. 304).

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/museum-education) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 33 credits, including 27 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
EDUC 6701	Museums as Institutions I: Fundamentals	
EDUC 6702	Facilitating Museum Learning I: Fundamentals	
EDUC 6703	Museum Audiences	
EDUC 6704	Facilitating Museum Learning II: Field Placement and Seminar (taken for 6 credits)	
EDUC 6705	Museums as Institutions II: Field Placement and Seminar (taken for 6 credits)	
EDUC 6706	Evaluating Museum Learning	
EDUC 6707	Museum Proposal Writing	
Electives		
6 credits in elective courses.		

Elective courses should be selected in consultation with the program advisor.

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF ORGANIZATIONAL LEADERSHIP AND LEARNING

The master of arts in education and human development in the field of organizational leadership and learning degree program is designed for individuals entering or advancing in positions associated with learning in organizational settings in all sectors of society. Typical careers are in organizational development, internal and external consulting, and training and development. The program is interdisciplinary, and students are encouraged to tailor their programs to individual career needs and objectives.

The required courses in the 30-credit program cover human behavior in organizations, adult learning, group dynamics, research methods, organizational change, strategic change, global leadership, leadership development, and assessing the impact of change efforts. Project work in Washington-area business, industry, government, and community organizations may be a part of the learning experience.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/organizational-leadership-learning) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 21 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
Required		
EDUC 6112	Foundations of Assessment, Testing, and Measurement in Education	
HOL 6700	Human Behavior and Learning in Organizations	
HOL 6701	Adult Learning	
HOL 6702	Organizational Change I	
HOL 6703	Organizational Change II	
HOL 6704	Leadership in Organizations	
HOL 6746	Work Groups and Teams in Organizations	
Elective		
Any combination of 3 courses from the following tracks for a broader competency or 3 courses from any one track for a more in-depth competency		
Leadership Track		
HOL 6706	Current Issues in Organizational Leadership	
HOL 6708	Global Leadership	
HOL 6709	Leadership Development	
HOL 6101	Research and Independent Study	
HOL 6725	Internship in Human Resource Development	
Learning Track		
HOL 6101	Research and Independent Study	
HOL 6707	Organizational Learning	

HOL 6724	Increasing the Capacity to Learn
HOL 6725	Internship in Human Resource Development
HOL 6742	Design of Adult Learning Interventions
HOL 6743	Action Learning
Change Track	
HOL 6101	Research and Independent Study
HOL 6705	Strategic Change
HOL 6721	Assessing the Impact of Organizational Change
HOL 6725	Internship in Human Resource Development
HOL 6744	Meaningful Workplaces
Globalization Track	
HOL 6100	Special Workshop (Global Mindset)
HOL 6100	Special Workshop (Globalization, Change and Learning)
HOL 6101	Research and Independent Study
HOL 6725	Internship in Human Resource Development
HOL 6747	International and Multicultural Issues in Organizations

Note: Internship and research/independent study courses might be used as electives in a track, provided the subject matter of the work is relevant. For example, a research project in leadership could qualify for 3 elective credits in the Leadership Track.

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF REHABILITATION COUNSELING

The master of arts in education and human development (M.A. Ed.&H.D.) in the field of rehabilitation counseling degree program prepares highly knowledgeable students to become professional practitioners assisting persons who are physically, mentally, emotionally, or socially disabled to become empowered and to assume or to resume their place in society. This program leads to licensure and public and private employment opportunities.

Areas of concentration include autism spectrum disorder, traumatic brain injury, and psychiatric disabilities and substance abuse.

Specific admission requirements are shown on the Graduate Program (http://www.gwu.edu/all-graduate-programs)Finder.

Visit the program website (http://gsehd.gwu.edu/programs/rehabilitation-counseling) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: A minimum of 48 credits or 50 credits for the specialization in the rehabilitation of individuals who are mentally ill.

Regular program

Required	
CNSL 6130	Vocational Assessment of Individuals with Disabilities
or CNSL 6157	Individual Assessment in Counseling
CNSL 6151	Professional and Ethical Orientation to Counseling
CNSL 6153	Counseling Interview Skills
CNSL 6154	Theories and Techniques of Counseling
CNSL 6155	Career Counseling
CNSL 6161	Group Counseling
CNSL 6163	Social/Cultural Dimensions-Cns
CNSL 6185	Practicum/Internship in Counseling
CNSL 6186	Advanced Internship in Counseling
CNSL 6376	Foundations/Practicum: Rehabilitation and Case Management
CNSL 6378	Disability Management and Psychosocial Rehabilitation
CNSL 6380	Job Placement and Supported Employment
CNSL 6381	Medical and Psychosocial Aspects of Disabilities
EDUC 6114	Introduction to Quantitative Research
or EDUC 6116	Introduction to Educational Statistics
Electives	

Six credits of electives selected in consultation with advisor

Optional concentrations are available in autism and spectrum disorders, substance abuse and psychiatric disabilities, and traumatic brain injury.

Specialization in the rehabilitation of individuals who are mentally ill

Students who are admitted to the program with a specialization in the rehabilitation of individuals who are mentally ill must complete 50 credits of the following:

EDUC 6114	Introduction to Quantitative Research
CNSL 6100	Special Workshop
CNSL 6101	Research and Independent Study
CNSL 6130	Vocational Assessment of Individuals with Disabilities
CNSL 6151	Professional and Ethical Orientation to Counseling
CNSL 6153	Counseling Interview Skills
CNSL 6154	Theories and Techniques of Counseling
CNSL 6155	Career Counseling
CNSL 6161	Group Counseling
CNSL 6163	Social/Cultural Dimensions-Cns
CNSL 6173	Diagnosis and Treatment Planning
CNSL 6185	Practicum/Internship in Counseling
CNSL 6186	Advanced Internship in Counseling
CNSL 6376	Foundations/Practicum: Rehabilitation and Case Management
CNSL 6378	Disability Management and Psychosocial Rehabilitation
CNSL 6380	Job Placement and Supported Employment
CNSL 6381	Medical and Psychosocial Aspects of Disabilities

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF SCHOOL COUNSELING

The master of arts in education and human development (M.A.Ed.&H.D.) in the field of school counseling degree program is accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP) and provides professional preparation for individuals who wish to become certified as counselors in public and private schools. The program is designed to equip students with the requisite knowledge and skills to provide professional counseling, assessment, consultation, and guidance services in a school setting.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/school-counseling) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits, including 42 credits in required courses and 6 credits in elective courses:

Required	
EDUC 6114	Introduction to Quantitative Research
or EDUC 6116	Introduction to Educational Statistics
CNSL 6151	Professional and Ethical Orientation to Counseling
CNSL 6153	Counseling Interview Skills
CNSL 6154	Theories and Techniques of Counseling
CNSL 6155	Career Counseling
CNSL 6157	Individual Assessment in Counseling
CNSL 6159	Psychosocial Adaptation
CNSL 6161	Group Counseling
CNSL 6163	Social/Cultural Dimensions-Cns
CNSL 6185	Practicum/Internship in Counseling
CNSL 6186	Advanced Internship in Counseling
CNSL 6466	Foundations of School Counseling K–12
HDEV 6108	Life Span Human Development
HDEV 6109	Child Development
or HDEV 6110	Adolescent Development
Elective	
6 credits of approved electives	
The remaining credits should be selected in consultation with the program advisor.	

Counseling students are required to complete 600 hours as part of their internships (300 hours per course) and 100 hours as part of their practicum.

MASTER OF EDUCATION IN THE FIELD OF SECONDARY EDUCATION

The master of education (M.Ed.) in the field of secondary education degree program is designed for those individuals with an undergraduate degree in the arts and sciences, or equivalent. Degree candidates may specialize in English, English as a second language, foreign languages (Arabic, Chinese, French, German, Italian, Latin, Russian, and Spanish), mathematics, science (biology, chemistry, general science, and physics), or social studies. Required program course work includes credits leading to eligibility for teacher licensure/certification; specific course work in the subject area to be taught may be needed to meet jurisdictional requirements for licensure/certification.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/secondary-education) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits (36 credits for the ESL concentration), all required core courses, and all courses and elective credits indicated in one of the concentrations.

In addition, all students are required to complete a comprehensive examination and the relevant teacher licensure assessments, the latter of which are required by the District of Columbia Educator Licensure Services Office.

Code	Title	Credits
Required core		
CPED 6340	Teacher Leadership in Education	
CPED 6507	Instructional Models and Classroom Management	
CPED 6532	Professional Internship in Middle School Education (taken twice)	
Or		
CPED 6534	Professional Internship in Secondary Education (taken twice)	
Or		
CPED 6532 & CPED 6534	Professional Internship in Middle School Education and Professional Internship in Secondary Education	
CPED 6606	Theories of Learning and Development	
CPED 6608	Development and Diversity	
EDUC 6112	Foundations of Assessment, Testing, and Measurement in Education	

Code	Title	Credits
English concentration		
CPED 6546	Teaching English in Secondary Schools	
CPED 6691	Interdisciplinary Adolescent Literacies	
Electives		
3 credits of electives selected in consultation with program advisor		

Code	Title	Credits
General science concentration		
Required		
CPED 6547	Teaching Science in Secondary Schools	
CPED 6691	Interdisciplinary Adolescent Literacies	
Elective		
3 credits in electives courses selected in consultation with program advisor		

Code	Title	Credits
Social studies concentration		
Required		
CPED 6548	Teaching Social Studies in Secondary Schools	
CPED 6691	Interdisciplinary Adolescent Literacies	
Electives		
3 credits of elective courses selected in consultation with program advisor		

Code	Title	Credits
Mathematics concentration		

Required	
CPED 6550	Teaching Mathematics in Secondary Schools
CPED 6691	Interdisciplinary Adolescent Literacies
Electives	
3 credits in elective courses selected in consultation with program advisor	

Code	Title	Credits
Foreign language concentration		
Required		
CPED 6551	Second Language Instructional Methods	
CPED 6557	Second Language Acquisition	
CPED 6627	Teaching Second Language Reading and Writing	

Code	Title	Credits
ESL concentration		
Required		
CPED 6176	Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student	
CPED 6551	Second Language Instructional Methods	
CPED 6556	Linguistic Applications in English as a Second Language	
CPED 6557	Second Language Acquisition	
CPED 6627	Teaching Second Language Reading and Writing	

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF SECONDARY SPECIAL EDUCATION AND TRANSITION SERVICES

This interdisciplinary master of arts in education and human development (M.A.Ed.&H.D.) degree program prepares educators and support personnel to address the needs of youth and young adults with special needs for careers and transition from school to postsecondary education, employment, and independent living and community participation. Several programs offer teacher licensure certification preparation in categorical learning, emotional, and behavioral disabilities, or noncategorical special education. Other programs are non-teacher licensure and focus on development of interdisciplinary transition knowledge, competencies, and skills.

The curriculum integrates the roles of relevant disciplines and service agencies, including postsecondary planning, evidence-based practices, instructional and curriculum strategies, service delivery models, and accommodations and supports from the classroom to postsecondary education. The program includes traditional course work, practicum, and internship, as well as field-based professional practice and research. Students can plan their programs to emphasize interdisciplinary secondary and career programming, learning disabilities, traumatic brain injury, and culturally and linguistically diverse learners.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/secondary-special-education-and-transition-services) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: a minimum of 39 credits, including 15 credits in core courses, 24 to 27 credits within a concentration, and successful completion of the master's comprehensive examination.

Students in concentrations other than **brain injury specialist (without licensure) and interdisciplinary transition services (without licensure) also must complete** the relevant teacher licensure assessments (i.e., PRAXIS) required by the District of Columbia Educator Licensure Services Office.

Requirements for completion of the comprehensive examination and for teacher licensure assessments vary by concentration.

Secondary special education and transition services required core courses:

EDUC 6114	Introduction to Quantitative Research
SPED 6222	Legal Issues and Public Policy for Individuals With Disabilities
SPED 6233	Curriculum in Secondary Special Education and Transition
SPED 6236	Introduction to Career and Career–Technical Education and Transition Services

SPED 6280	Developmental Assessment of Adolescents

Adolescents with Emotional and Behavioral Disabilities Concentration

Code	Title	Credits
CPED 6626	Practicum 1: Reading Diagnosis, Assessment and Solutions	
SPED 6201	Introduction to Special Education	
SPED 6231	Instructional Methods in Secondary Special Education and Transition	
SPED 6238	Issues in Educating Individuals with Learning, Emotional, and Intellectual Disabilities	
SPED 6239	Collaboration for Professionals Working with Students with Disabilities	
SPED 6288	Characteristics of Individuals with Learning, Emotional, and Intellectual Disabilities	
SPED 6290	Affective Development and Behavior Management in Special Education	
SPED 6992	Behavior Management Practicum: Adolescents with Disabilities	
SPED 6996	Teaching Internship in Transition Special Education	

Adolescents with Learning Disabilities Concentration

Code	Title	Credits
CPED 6626	Practicum 1: Reading Diagnosis, Assessment and Solutions	
SPED 6201	Introduction to Special Education	
SPED 6231	Instructional Methods in Secondary Special Education and Transition	
SPED 6238	Issues in Educating Individuals with Learning, Emotional, and Intellectual Disabilities	
SPED 6239	Collaboration for Professionals Working with Students with Disabilities	
SPED 6288	Characteristics of Individuals with Learning, Emotional, and Intellectual Disabilities	
SPED 6290	Affective Development and Behavior Management in Special Education	
SPED 6996	Teaching Internship in Transition Special Education (taken twice)	

Brain Injury Special Educator Concentration

Code	Title	Credits
CPED 6626	Practicum 1: Reading Diagnosis, Assessment and Solutions	
SPED 6201	Introduction to Special Education	
SPED 6223	Introduction to Brain Injury: Programs, Policies, and Resources	
SPED 6224	Brain Function and Impact of Brain Injury on Learning and Education	
SPED 6231	Instructional Methods in Secondary Special Education and Transition	
SPED 6240	Family Support and Guidance in Special Education	
SPED 6255	Collaboration with Systems and Families	
SPED 6290	Affective Development and Behavior Management in Special Education	
SPED 6996	Teaching Internship in Transition Special Education (taken twice)	

Brain Injury Specialist Concentration (without licensure)

Code	Title	Credits
SPED 6223	Introduction to Brain Injury: Programs, Policies, and Resources	
SPED 6224	Brain Function and Impact of Brain Injury on Learning and Education	
SPED 6230	Vocational Assessment of Individuals with Disabilities (taken for 3 credits)	
or SPED 6231	Instructional Methods in Secondary Special Education and Transition	
SPED 6240	Family Support and Guidance in Special Education	
or SPED 6100	Selected Topics	
SPED 6255	Collaboration with Systems and Families	
SPED 6290	Affective Development and Behavior Management in Special Education	

SPED 6995	School- and Community-Based Internship in Special Education and Transition (taken twice)

Interdisciplinary Transition Services Concentration (without licensure)

Code	Title	Credits
SPED 6210	Universal Design for Learning and Assessment	
SPED 6230	Vocational Assessment of Individuals with Disabilities (taken for 3 credits)	
SPED 6231	Instructional Methods in Secondary Special Education and Transition	
SPED 6234	Seminar in Advanced Writing and Professional Presentation (taken for 3 credits)	
SPED 6235	Employment Models for Individuals with Disabilities	
SPED 6255	Collaboration with Systems and Families	
SPED 6995	School- and Community-Based Internship in Special Education and Transition (taken twice)	

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF SPECIAL EDUCATION FOR CHILDREN WITH EMOTIONAL AND BEHAVIORAL DISABILITIES

The master of arts in education and human development (M.A.Ed.&H.D.) in the field of special education for children with emotional and behavioral disabilities (EBD) is an intensive degree program that prepares its graduates to work with learning and emotional problems of students in grades K-8. The program is designed to develop competencies in the nature and needs of troubled children; assessment, programming, and teaching; and working effectively as an interdisciplinary and interagency team member. Graduate students have the opportunity to work intensively with students with disabilities in a therapeutic school setting, applying their course work directly to practice while being mentored by school-based cooperating teachers and University faculty and staff.

The program is nationally recognized by the Council for Exceptional Children, is accredited by the Council for the Accreditation of Educator Preparation (CAEP), and has been training exemplary special educators for twenty years.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/special-education-children-emotional-behavioral-disorders) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 39 credits in required courses, successful completion of the master of arts in education and human development comprehensive examination, and completion of the relevant teacher licensure assessments (see below).

Required	
CPED 6224	Diagnostic Teaching of Reading: K–6
CPED 6236	Analysis of Teaching
CPED 6411	Elementary School Curriculum and Methods (in subject matter Social Studies, Mathematics, Science, or Language Arts)
CPED 6411	Elementary School Curriculum and Methods (in subject matter Social Studies, Mathematics, Science, or Language Arts)
EDUC 6114	Introduction to Quantitative Research
SPED 6201	Introduction to Special Education
SPED 6238	Issues in Educating Individuals with Learning, Emotional, and Intellectual Disabilities
SPED 6239	Collaboration for Professionals Working with Students with Disabilities
SPED 6260	Developmental Assessment in Special Education
SPED 6288	Characteristics of Individuals with Learning, Emotional, and Intellectual Disabilities
SPED 6290	Affective Development and Behavior Management in Special Education
SPED 6990	Internship in Teaching Children with Emotional and Behavioral Disabilities: Assistant Teacher
SPED 6991	Internship in Teaching Children with Emotional and Behavioral Disabilities: Co-Teacher

Master of Arts in Education and Human Development comprehensive exam

Completion of the relevant teacher licensure assessments (i.e., PRAXIS) required by the District of Columbia Educator Licensure Services Office

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF SPECIAL EDUCATION FOR CULTURALLY AND LINGUISTICALLY DIVERSE LEARNERS

This master of arts in education and human development (M.A.Ed. & H.D.) degree program equips current educators with the knowledge and skills needed to understand and address the cultural, linguistic, social, and learning needs of students—including those with special needs—whose diversity impacts their school success. The program is designed for licensed teachers and educators who wish to expand their knowledge to address the changing demographics of the modern classroom. Program course work and field experiences are built around competencies in the areas of assessment, lesson planning, and teaching, with a focus on culturally and linguistically diverse students. Master's degree students develop a professional portfolio and sit for the ESOL PRAXIS, and SPED PRAXIS exams at the end of the program. Graduates are prepared to work with students who have disabilities and those in the process of second language acquisition. Course work is offered in both distance learning and on-campus formats.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/special-education-culturally-linguistically-diverse-learners) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 33 credits in required courses; and successful completion of the master of arts in education and human development comprehensive examination; and completion of the relevant teacher licensure assessments (see below).

Code	Title	Credits
Required		
CPED 6551	Second Language Instructional Methods	
CPED 6556	Linguistic Applications in English as a Second Language	
CPED 6627	Teaching Second Language Reading and Writing	
EDUC 6114	Introduction to Quantitative Research	
SPED 6266	The Development of Language and Literacy	
SPED 6268	Development of Children and Youth with Disabilities	
SPED 6275	The Culturally and Linguistically Diverse Student with Disabilities: Policy, Research, and Trends	
SPED 6276	Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student (taken twice)	
SPED 6277	Teaching Culturally and Linguistically Diverse Students with Disabilities	
SPED 6997	Internship in Teaching Culturally and Linguistically Diverse Students with Disabilities (taken for 3 credits)	

Master of Arts in Education and Human Development comprehensive exam required

Completion of the relevant teacher licensure assessments (i.e., PRAXIS) required by the District of Columbia Educator Licensure Services Office

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EDUCATION SPECIALIST PROGRAMS

The Degree of Education Specialist

The program of advanced study leading to the degree of education specialist (Ed.S.) is for students with a master's degree in education who seek further professional preparation. The program is available in the fields of educational leadership and administration, counseling, curriculum and instruction, higher education administration, human and organizational learning, and special education.

Admission Requirements

The following are required for entrance to an education specialist program: an undergraduate degree and a master of arts in education and human development (M.A.Ed.&H.D.) or its equivalent from a regionally accredited institution, two years of pertinent experience in an education or human development field, and a graduate scholastic average of at least 3.3 and, in some programs, an acceptable score on either the Graduate Record Examination or Miller Analogies Test. Two letters of

recommendation, one from a professional supervisor and one from the most recent graduate faculty advisor, are required, along with a statement of professional goals. Each applicant must be interviewed and recommended by a faculty advisor in the major field.

Programs of Study and Degree Requirements

Individual programs are developed, through a plan of study worked out with a faculty advisor, to fit the candidate's skills, interests, and career goals. A minimum of 30 credits beyond the requirements for an M.A.Ed.&H.D. degree is required. At least 21 credits of this work must be taken in residence at GW. A maximum of five calendar years is allowed for completion of the program.

At least 12 of the required 30 credits must be in appropriate graduate courses in education selected from the following areas: (1) foundations and cognate study, (2) background and general principles of the field of study, and (3) an area of specialization. A graduate-level research methods course must be included in the program if it was not completed in previous graduate work.

The Comprehensive Examination

Successful completion of a six-hour written or oral examination or its equivalent, at the option of the major field advisor, is required. Candidates taking the examination must be registered for at least 1 credit in the semester it is to be taken and submit an online comprehensive examination application by the published deadline.

Education Specialist Programs

- Education Specialist in the field of educational leadership and administration (p. 539)
- Education Specialist in the field of special education (p. 539)

EDUCATION SPECIALIST IN THE FIELD OF EDUCATIONAL LEADERSHIP AND ADMINISTRATION

The education specialist in the field of educational leadership and administration degree program is designed for students who have at least one year of instructional experience and seek further professional preparation for specific objectives, including leadership and promotion of high-quality student achievement at the district, sub-district, or school-wide level. This post-master's program can be pursued either in the classroom or in a distance learning format. Graduates are prepared with the skills to become PK-12 leaders who understand curriculum design, instructional excellence, motivation and support of classroom professionals, and the needs of diverse learning communities. Evidence-based course work emphasizes leadership and management, change, communication, administrative and legal issues, human relations, supervision of instruction, and curriculum analysis.

The Ed.S. program is nationally recognized by the Council for the Accreditation of Educator Preparation (CAEP) the National Council for Teacher Education (NCATE), and the Educational Leadership Constituent Council (ELCC).

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/education-specialist-educational-leadership-and-administration) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits in required courses.

Code	Title	Credits
Required		
EDUC 6100	Experimental Courses (Leading Evidence-Based Action Research for School Improvement)	
EDUC 6232	Supervision and Evaluation of Instruction	
EDUC 6234	Site-Based Leadership: K-12	
EDUC 6236	School Law and Policy	
EDUC 6240	Fundamentals of Educational Leadership and the Change Process	
EDUC 6244	School-Community Relations	
EDUC 6246	Seminar: Applied Educational Administration	
EDUC 6287	Internship: Administration (taken twice)	
EDUC 6422	Instructional Needs Analysis	

EDUCATION SPECIALIST IN THE FIELD OF SPECIAL EDUCATION

The educational specialist (Ed.S.) in the field of special education degree program offers advanced study for students with master's degrees in education who seek further professional preparation in the various subfields of special education and disability studies. Specific programs are developed in concert with faculty advisors and consist of a minimum of 30 graduate credits.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits in a program developed in consultation with the advisor. This program must include at least 12 credits in graduate courses in the following general areas:

- background and general principles of the field of study
- an area of specialization
- research methods
- professional internship

DOCTORAL PROGRAMS

The Degree of Doctor of Philosophy

A Ph.D. in the field of counseling is accredited by the Council for Accreditation of Counseling and Related Educational Programs.

The Ph.D. in the field of educational science is designed to create opportunities for cross-disciplinary education research by concentrating on critical national and global problems in which education and human development play a significant role. To adequately address such critical national and global problems, scholars require both a strong foundation in educational science as well as theoretical and disciplinary grounding in multiple disciplines. The Ph.D. program is distinguished by four characteristics: (a) candidates apply to a cross-disciplinary research team (CRT) that is focused on a critical problem related to education, (b) approaches to the research problems require a cross-disciplinary lens, (c) students engage in research throughout their program, and (d) candidates aspire to careers in which the production of research is paramount.

Admission Requirements

A master's degree from a regionally accredited institution is required. Materials to be submitted include: official transcripts, GRE scores, TOEFL scores (for international applicants), three letters of recommendation, and a statement of purpose. Each program has more specific details about these materials and additional requirements. Selection is competitive and is based on the applicant's past achievements, perceived potential, and fit to the goals and mission of the program.

The Degree of Doctor of Education

The Graduate School of Education and Human Development offers programs of advanced study leading to the degree of Doctor of Education (Ed.D.). These programs provide major fields of study in curriculum and instruction, special education, educational administration and policy studies, human and organizational learning, and higher education administration. Supporting fields are available in educational administration, higher education administration, counseling, curriculum and instruction, education policy, elementary education, human development, human and organizational learning, international education, program evaluation, secondary education, special education, supervision, and teacher education. With the approval of a student's program planning committee, course work may be taken in or from other departments of the University and through the Consortium. All programs require a doctoral dissertation in the major field of study.

All doctoral programs are designed to accommodate the needs of full-time students as well as working professionals who must pursue their studies on a part-time basis. Required graduate courses, with few exceptions, are offered in the late afternoon and evening. In some programs, courses are offered at off-campus locations.

Admission Requirements

The applicant must have adequate preparation for advanced study, including the undergraduate degree and graduate work from a regionally accredited institution in the content area that supports his or her objective. This graduate work must be comparable to that required for the degree of Master of Arts in Education and Human Development at this University. Students with a master's degree in a field other than education may be considered for doctoral study provided that the degree and previous experience are judged relevant by the major field program faculty.

For an application to be considered by the major field program faculty, an applicant must have a minimum graduate scholastic average of 3.3 on a scale of 4.0 and an acceptable score on the Miller Analogies Test or Graduate Record Examination. In the field of human organizational learning, the Graduate Management Admissions Test is acceptable as well. Programs often set higher admissions standards, and the number of new doctoral students in each program is limited. All applicants must have an interview with faculty members in the major field. Students receiving favorable recommendations from the major field faculty are admitted to precandidacy for the degree.

Precandidacy and Candidacy

The Doctor of Education program is divided into two stages: precandidacy and candidacy. In general, the degree program requires three or more years of full-time study beyond the master's degree or the equivalent in part-time study. Course work and the comprehensive examination must be completed within five years, and the entire program must be completed within eight years. The minimum residency requirement in degree status for the Ed.D. is 36 credits of course work in the precandidacy stage and 12 to 24 credits of dissertation research in the candidacy stage. In most cases, course work beyond the minimum is required.

In the precandidacy stage, all course work in the program must be completed and the comprehensive examination passed. Course work toward the doctorate is established on the basis of a framework of seven domains: knowledge of foundations; critical literature review; research methods; clarity of thought, as expressed both in speech and in writing; professional development; technological skills; and depth of knowledge of the specialty area. A program plan of study is developed

between the doctoral student and a doctoral study advising team, generally consisting of two members of the program faculty.

The comprehensive examination is generally a two-day examination held each semester and taken upon completion of all precandidacy course work. Students taking the examination must be registered for at least 1 credit in the semester it is to be taken and must file an online application in the dean's office by the published deadline.

The candidacy stage of doctoral study begins after successful completion of the content course work *and* the comprehensive examination. A doctoral research dissertation committee is established and the candidate develops a dissertation proposal (this may be while registered in Pre-Dissertation Seminar). Upon successful completion of course work listed on the approved program plan of study, students must register for dissertation research at the rate of 3 or 6 credits each fall and spring semester. A minimum of 12 dissertation research credits are required for graduation. Students who have not defended their dissertation after 12 credits continue to register at the rate of 3 or 6 credits until they have reached 24 credits of dissertation research. Once they have reached their 24 credit maximum, they must register each subsequent fall and spring semester for 1 credit of Continuing Research until completion of their degree program with the successful defense of the dissertation to the Dissertation Oral Examination Committee. The accepted dissertation is submitted electronically, with a processing fee paid directly to Proquest/UMI.

Detailed information on the Ed.D. program and its administration is available in the GSEHD Doctoral Student Handbook (http://gsehd.gwu.edu/sites/default/files/2014%20-%202015%20Doctoral%20Handbook.pdf). Students completing their degree program should refer to the section on Graduation Requirements, Participating in the Commencement Ceremony, under University Regulations.

Doctoral programs

- Doctor of Education in the field of curriculum and instruction (p. 541)
- Doctor of Education in the field of educational administration and policy studies (p. 542)
- Doctor of Education in the field of higher education administration (p. 544)
- Doctor of Education in the field of human and organizational learning (p. 545)
- Doctor of Education in the field of special education (p. 547)
- Doctor of Philosophy in the field of counseling (p. 548)
- Doctor of Philosophy in the field of educational science (p. 549)

DOCTOR OF EDUCATION IN THE FIELD OF CURRICULUM AND INSTRUCTION

The doctor of education in curriculum and instruction degree program prepares education leaders whose objective is to improve pre-K through 16+ education in local, national, and international settings. The program encourages critical thought and creative work through course work focusing on curriculum, instruction, research, and other learning opportunities that intentionally link teaching and learning, policy, and evaluation to students' prior experiences.

The program focuses on understanding how curriculum and instruction can be constructed and applied to educational reform and diverse student populations. Doctoral students become part of a community that links scholars with practicing professionals, policy makers, and educational organizations in Washington, D.C., and beyond. Students can also use the program to expand their content knowledge or delve into other fields through linkages with Columbian College of Arts and Sciences or other schools at GW.

Graduates of the program can be found working in government agencies, teaching in university settings, or running informal education organizations. They may be curriculum supervisors in school systems or master teacher leaders in schools.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/curriculum-instruction) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

Requirements for the doctor of education program (p. 540).

A minimum of 66 credits.

Code	Title	Credits
Required		
CPED 6305	Foundations of Curriculum Theory	
CPED 8325	Advanced Ideas in Curriculum Theory	
CPED 8330	Paradigms of Instruction and Assessment	
CPED 8331	Seminar in Instruction	
CPED 8334	Seminar in Research in Curriculum and Instruction I	

EDUC 8110	Advanced Study: Ideas, Issues, and Practices in Education
Policy and evaluation	
CPED 8340	Education Policy, Reform & Teacher Leadership
CPED 8341	Evaluation in Curriculum & Instruction
Area of specialization	
9 credits selected in consultation with advisor	
Up to 6 credits of CPED 8101 may be counted towards the area of specialization	
Research	
CPED 8335	Seminar in Research in Curriculum and Instruction II
EDUC 8120	Group Comparison Designs and Analyses *
EDUC 8122	Qualitative Research Methods
6 credits from the following:	
EDUC 8100	Experimental Courses
EDUC 8130	Survey Research Methods
EDUC 8131	Case Study Research Methods
EDUC 8140	Ethnographic Research Methods
EDUC 8142	Phenomenological Research Methods
EDUC 8144	Discourse Analysis
EDUC 8170	Educational Measurement
EDUC 8171	Predictive Designs and Analyses
Doctoral internship	
CPED 8354	Doctoral Internship: Teacher Education (taken for 3 credits)
Dissertation	
CPED 8998	Doctoral Seminar in Curriculum and Instruction (taken for 3 credits)
CPED 8999	Dissertation Research (minimum 12 credits needed to complete requirement)
Approved dissertation proposal required	
Comprehensive Examination	
Successful completion of a comprehensive examination is required.	

*Prerequisite statistics courses must be taken during the master's degree or must be completed prior to taking required advanced courses. For students who have not had an introductory statistics course or do not feel confident in their understanding and application of basic statistical techniques (i.e. through one way analysis of variance), EDUC 6116 Introduction to Educational Statistics, should be completed prior to enrolling in EDUC 8120 Group Comparison Designs and Analyses.

DOCTOR OF EDUCATION IN THE FIELD OF EDUCATIONAL ADMINISTRATION AND POLICY STUDIES

The doctor of education (Ed.D.) in educational administration and policy studies degree program provides students with the skill and knowledge they need either to excel within policy research and analysis or achieve high-level success in a K-12 school setting. Though the education administration and policy studies specialties are offered under the same degree title, they are offered at different campus locations with entirely different curricula.

Education Administration Specialty
The education administration specialty is offered at three GW campus locations—the Virginia Science and Technology Campus, in Herndon, Virginia; Alexandria Graduate Center in Alexandria, Virginia; and Hampton Roads Center in Hampton Roads, Virginia. This academically rigorous program prepares students for leadership responsibilities within all facets of the educational arena. Researchers and practitioners who aspire to high levels of responsibility in educational organizations will develop leadership skills through course work, seminars, research associations with faculty, and self-directed activities.

Please visit the Doctorate in Education Administration website (http://gsehd.gwu.edu/programs/doctorate-education-administration) for more information.

Education Policy Specialty
The Education Policy specialty is offered at GW's Foggy Bottom campus in downtown Washington, D.C. The interdisciplinary program relies on approaches and methods from various fields to help students develop the skills needed to examine and assess education problems in the context of their social environments. The program is designed for students who wish to develop skills in policy research, program evaluation, and the technical, political aspects of education policy. Emphasis is placed on developing both an understanding of the political, economic, and social environments affecting education policy and the competencies needed to apply research to analyze and effectively implement them or to evaluate their impact. Topics

covered in this field include school reform, urban education problems, student achievement, school finance and its equity, teacher quality and effectiveness, equal opportunity, access to higher education, and accountability.

Please visit the Doctorate in Education Policy website (http://gsehd.gwu.edu/programs/doctorate-education-policy) for more information.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The degree is offered in two specialized areas. All requirements in one specialized area must be fulfilled:

Educational administration specialty—a minimum of 48 credits, including 27 credits in required courses, a 3-credit research course, 18 credits in dissertation courses, and successful completion of the comprehensive examination.

Education policy specialty—a minimum of 54 credits, including 12 credits in required courses, 12 credits in research courses, 15 credits in dissertation courses, 15 credits in elective courses, and successful completion of the comprehensive examination. Six additional credits in prerequisite courses may be required.

Fulfillment of the requirements for the Doctor of Education programs (p. 540) is required for both specialties.

Educational Administration and Policy Studies (Educational Administration)

Code	Title	Credits
Required		
EDUC 6116	Introduction to Educational Statistics	
EDUC 6368	Leadership and Education	
EDUC 6371	Education Policy	
EDUC 6570	Educational Planning	
EDUC 8120	Group Comparison Designs and Analyses	
EDUC 8122	Qualitative Research Methods	
EDUC 8276	Seminar: Administration and Supervision	
EDUC 8277	Advanced Instructional Leadership for School Improvement	
EDUC 8280	Critical Review of Educational Leadership Literature	
Research		
3 credits from the following:		
EDUC 8100	Experimental Courses	
EDUC 8130	Survey Research Methods	
EDUC 8131	Case Study Research Methods	
EDUC 8140	Ethnographic Research Methods	
EDUC 8142	Phenomenological Research Methods	
EDUC 8144	Discourse Analysis	
EDUC 8170	Educational Measurement	
EDUC 8171	Predictive Designs and Analyses	
Dissertation		
EDUC 8998	Pre-Dissertation Seminar (taken for 6 credits)	
EDUC 8999	Dissertation Research (12 credits minimum)	
Approved dissertation proposal required		
Successful completion of comprehensive exam required		

Educational Administration and Policy Studies (Education Policy)

Code	Title	Credits
Prerequisites		
EDUC 6116	Introduction to Educational Statistics	
EDUC 6371	Education Policy	
Required		
EDUC 8320	The Politics of Education	
EDUC 8321	Economics of Education	
EDUC 8322	Education Policy Implementation	
EDUC 8340	Methods of Policy Analysis in Education	
Research		
EDUC 6381	Program Evaluation: Theory and Practice	
EDUC 8120	Group Comparison Designs and Analyses	
EDUC 8122	Qualitative Research Methods	
EDUC 8171	Predictive Designs and Analyses	

Dissertation	
EDUC 8998	Pre-Dissertation Seminar (taken for 3 credits)
EDUC 8999	Dissertation Research (minimum 12 credits)
Approved dissertation proposal required	
Electives	
15 credits selected in consultation with advisor	
Students may elect to take elective courses to develop expertise in a specific area in policy and/or take additional research methods courses to advance their research methods skills.	
Successful completion of comprehensive exam required	

DOCTOR OF EDUCATION IN THE FIELD OF HIGHER EDUCATION ADMINISTRATION

The mission of the doctor of education in higher education administration degree program is to prepare exceptional leaders for administrative, academic, and research positions in two- and four-year higher education institutions, national and international associations, government agencies, and other post-secondary educational settings. The degree provides students with opportunities to integrate theory and research seamlessly with practice.

Program graduates rise rapidly within administrative and scholarly ranks based on their knowledge of critical issues in the field of higher education, ability to conduct independent primary research, and possession of the skills necessary for academic and administrative career development.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/higher-education-administration) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The requirements for the Doctor of Education programs (p. 540).

A minimum of 53 credits and successful completion of a comprehensive examination.

Code	Title	Credits
Required		
EDUC 6510	Administration of Higher Education	
EDUC 6520	Foundations of College Student Development	
EDUC 6555	Higher Education Policy	
EDUC 6565	Financing Higher Education	
EDUC 6610	Programs and Policies in International Education	
EDUC 8505	Seminar: Higher Education Administration	
EDUC 8525	College and University Curriculum	
EDUC 8530	Leadership in Higher Education	
Electives		
2 credits selected in consultation with advisor		
Research		
EDUC 8120	Group Comparison Designs and Analyses	
EDUC 8122	Qualitative Research Methods	
3 credits from the following:		
EDUC 8100	Experimental Courses	
EDUC 8130	Survey Research Methods	
EDUC 8131	Case Study Research Methods	
EDUC 8140	Ethnographic Research Methods	
EDUC 8142	Phenomenological Research Methods	
EDUC 8144	Discourse Analysis	
EDUC 8170	Educational Measurement	
EDUC 8171	Predictive Designs and Analyses	
Dissertation		
EDUC 8280	Critical Review of Educational Leadership Literature	
EDUC 8998	Pre-Dissertation Seminar (taken for 3 credits)	
EDUC 8999	Dissertation Research (minimum 12 credits needed to complete requirement)	
Approved dissertation proposal required		
Successful completion of comprehensive exam required		

DOCTOR OF EDUCATION IN THE FIELD OF HUMAN AND ORGANIZATIONAL LEARNING

The Doctor of Education (Ed.D.) in Human and Organizational Learning is designed to provide professionals with a foundation in relevant theories, concepts, and practices towards facilitating change initiatives and in becoming more effective leaders and decision makers.

The program is offered with two distinct focuses at different GW campuses.

Foggy Bottom Campus-Based Program

The Foggy Bottom campus offers working professionals evening courses on weeknights. The curriculum focuses on organizational issues such as strategic change, transformational leadership, individual and group learning processes, organizational development, global and international issues, the humane organization, virtual organizations, meaning of work, and self-directed learning. In addition to completing the required course work, students work with an advisor to create an individually designed program around the student's area of interest. All classes at the Foggy Bottom campus are offered on weeknights.

Virginia Science and Technology Campus-Based Program: Executive Leadership

The Virginia Science and Technology campus cohort focuses on the interrelationships among people, organizations, and learning, while using systemic change processes. The program encourages students to challenge assumptions through critical reflection and fosters group and self-directed learning. Program students come from a variety of professions including business, health care, the military, education, federal agencies, information technology, and manufacturing, and have a variety of academic backgrounds with degrees in fields such as engineering, psychology, health and medical sciences, the humanities, and business. This diverse population enriches the learning experience for fellow students and provides both local and global networking opportunities. All classes at the Virginia Science and Technology campus are offered over a two-day period—Friday and Saturday—once per month, enabling students to continue working full time while pursuing the degree. In addition to the general requirements for admission to the Ed.D., applicants must have at least five years of full-time experience in a field related to human and organizational learning.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/human-organizational-learning)for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

Requirements for the Doctor of Education program (p. 540).

The doctoral (Ed.D.) program is available in two formats, each totaling 69 credits.

Main Campus Program

Code	Title	Credits
Required		
EDUC 8110	Advanced Study: Ideas, Issues, and Practices in Education (or equivalent, with on-campus program coordinator approval)	
HOL 8700	Foundations of Human and Organizational Learning	
HOL 8701	Theory, Research, and Practice in Adult Learning and Development	
HOL 8702	Theory and Design of Organizational Diagnosis and Development	
HOL 8703	Human Systems Change	
HOL 8704	Leadership Theory, Research, and Practice	
HOL 8706	Interdisciplinary Readings in Human and Organizational Learning	
Research methods		
EDUC 8120	Group Comparison Designs and Analyses	
EDUC 8122	Qualitative Research Methods	
HOL 8720	Seminar: Applied Research in Human and Organizational Learning	
HOL 8722	Seminar: Advanced Issues in Human and Organizational Learning	
Three credits from the following:		
EDUC 8100	Experimental Courses	
EDUC 8130	Survey Research Methods	
EDUC 8131	Case Study Research Methods	
EDUC 8140	Ethnographic Research Methods	
EDUC 8142	Phenomenological Research Methods	
EDUC 8144	Discourse Analysis	

EDUC 8170	Educational Measurement
EDUC 8171	Predictive Designs and Analyses
EDUC 8173	Structural Equation Modeling
Dissertation	
HOL 8998	Predissertation Seminar
HOL 8999	Dissertation Research (minimum 12 credits needed to complete requirement)
Approved dissertation proposal required	
Electives	
18 credits in elective courses selected from the following in consultation with advisor:	
HOL 6100	Special Workshop
HOL 6707	Organizational Learning
HOL 6721	Assessing the Impact of Organizational Change
HOL 6724	Increasing the Capacity to Learn
HOL 6743	Action Learning
HOL 6744	Meaningful Workplaces
HOL 6746	Work Groups and Teams in Organizations
HOL 6747	International and Multicultural Issues in Organizations
HOL 8101	Research and Independent Study
HOL 8721	Practicum in Human and Organizational Learning
HOL 8742	Work, Identity, and Adult Development
Successful completion of comprehensive examination is required.	

Executive Leadership Program

Code	Title	Credits
Required		
EDUC 8110	Advanced Study: Ideas, Issues, and Practices in Education (or equivalent, with Executive Leadership Program faculty approval)	
HOL 8100	Special Topics in Human and Organizational Learning - Doctoral Studies (taken for 6 credits)	
HOL 8700	Foundations of Human and Organizational Learning	
HOL 8701	Theory, Research, and Practice in Adult Learning and Development	
HOL 8702	Theory and Design of Organizational Diagnosis and Development	
HOL 8703	Human Systems Change	
HOL 8704	Leadership Theory, Research, and Practice	
HOL 8705	Organizational Culture	
HOL 8706	Interdisciplinary Readings in Human and Organizational Learning	
HOL 8720	Seminar: Applied Research in Human and Organizational Learning	
HOL 8721	Practicum in Human and Organizational Learning (taken for 9 credits)	
HOL 8722	Seminar: Advanced Issues in Human and Organizational Learning	
Research methods		
EDUC 8120	Group Comparison Designs and Analyses	
EDUC 8122	Qualitative Research Methods	
Three credits from the following:		
EDUC 8100	Experimental Courses	
EDUC 8130	Survey Research Methods	
EDUC 8131	Case Study Research Methods	
EDUC 8140	Ethnographic Research Methods	
EDUC 8142	Phenomenological Research Methods	
EDUC 8144	Discourse Analysis	
EDUC 8170	Educational Measurement	
EDUC 8171	Predictive Designs and Analyses	
Dissertation		
HOL 8998	Predissertation Seminar	

HOL 8999	Dissertation Research (minimum 12 credits needed to complete requirement)
Approved dissertation proposal is required.	
Successful completion of a comprehensive examination is required.	
Electives	
3 credits in an elective course selected in consultation with advisor.	

DOCTOR OF EDUCATION IN THE FIELD OF SPECIAL EDUCATION

The doctor of education in the field of special education degree program advances students' understanding of the relationship between structural and functional changes in the brain across time and experiences, examines cognitive processing, and considers the implications of these findings for teaching, learning, and educational policy. The program also addresses the challenging demands of disability in society and institutional improvements essential to supporting individuals with disabilities. The curriculum includes leadership, policy, and research courses, as well as foundational courses in brain development from early childhood through adulthood. The program works closely with Graduate School of Education and Human Development's Center for Applied Developmental Science and Neuroeducation (http://gsehd.gwu.edu/center-applied-developmental-science-and-neuroeducation) to provide research and internship opportunities for students to translate and apply research related to learning for diverse populations. Graduates leave prepared to have an impact through leadership in academic settings, research communities, policy institutions, and advocacy organizations.

Specific admission requirements are shown on the Graduate Program Finder.

Visit the program website for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The requirements for the Doctor of Education programs (p. 540).

66 credits, including 27 credits in required courses, a minimum 12 credits in research courses including 3 credits in advanced research, 6 credits in internship courses, a minimum 15 credits in dissertation courses, 6 credits in elective courses, and successful completion of a comprehensive examination.

Required	
SPED 8305	Foundations of Neuroscience in Special Education
SPED 8306	Advanced Study in Development Science and Variance I: The Early Years
SPED 8310	Advanced Study in Development Science and Variance II: The Later Years
SPED 8311	Proseminar in Special Education: The Interdisciplinary Foundations
EDUC 8110	Advanced Study: Ideas, Issues, and Practices in Education
SPED 8100	Selected Topics
SPED 8352	Disability and Public Policy
SPED 8304	Research and Trends in Special Education
SPED 8308	Preparation for the Professoriate in Special Education
Research (minimum 12 credits)	
EDUC 6116	Introduction to Educational Statistics
EDUC 8120	Group Comparison Designs and Analyses
EDUC 8122	Qualitative Research Methods
Advanced research	
3 credits from the following:	
EDUC 8100	Experimental Courses
EDUC 8130	Survey Research Methods
EDUC 8131	Case Study Research Methods
EDUC 8140	Ethnographic Research Methods
EDUC 8142	Phenomenological Research Methods
EDUC 8144	Discourse Analysis
EDUC 8170	Educational Measurement
EDUC 8171	Predictive Designs and Analyses
Internship	
SPED 8353	Post-Master's Internship in Special Education
SPED 8354	Doctoral Internship: Special Education
Dissertation	

SPED 8998	Doctoral Seminar in Special Education
SPED 8999	Dissertation Research (minimum 12 credits needed to complete requirement)
Approved dissertation proposal required	
Electives	
6 credits in consultation with advisor	
Successful completion of comprehensive exam required	

DOCTOR OF PHILOSOPHY IN THE FIELD OF COUNSELING

The doctor of philosophy. in counseling degree program balances rigorous research with clinical work to graduate scholar practitioners. Graduates are prepared for a number of roles, such as teaching in universities, practicing in a variety of settings from directing high school counseling departments to leading county mental health treatment programs. The program offers challenging course work, practical experience at mental health sites, and the opportunity to train as supervisors at the Graduate School of Education and Human Development's Community Counseling Service Center. Designed to be completed in four to five years, the program is unique in building students' knowledge and capacity to conduct research, publish, provide clinical services, and educate at the graduate level. Instruction is provided in areas including trauma, human sexuality, child and adolescent development, grief and loss, substance abuse, multicultural counseling, as well as a deep knowledge of diagnosis, assessments, interventions, and treatment approaches. The program is accredited by the Council for the Accreditation of Counseling and Related Educational Programs (CACREP).

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/counseling) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

A minimum of 69 credits, including 24 credits in core courses, 15 credits in research courses, 6 credits in human development courses, 9 credits in an area of specialization, 15 credits in dissertation courses, and successful completion of the comprehensive examination.

Requirements of the Doctor of Philosophy (p. 540) program.

Code	Title	Credits
Required		
CNSL 6173	Diagnosis and Treatment Planning	
CNSL 8252	Advanced Leadership and Advocacy in Counseling	
CNSL 8254	Advanced Multicultural Counseling	
CNSL 8255	Advanced Supervision in Counseling	
CNSL 8257	Doctoral Practicum in Counseling	
CNSL 8258	Advanced Theories of Counseling	
CNSL 8259	Doctoral Internship in Counseling and Counselor Supervision I	
CNSL 8260	Doctoral Internship in Counseling and Counselor Supervision II	
Research		
CNSL 8961	Seminar: Counseling (taken for 3 credits)	
EDUC 8120	Group Comparison Designs and Analyses *	
EDUC 8122	Qualitative Research Methods	
EDUC 8171	Predictive Designs and Analyses	
One of the following (planned in consultation with advisor to fit dissertation proposal)		
EDUC 8100	Experimental Courses	
EDUC 8130	Survey Research Methods	
EDUC 8131	Case Study Research Methods	
EDUC 8140	Ethnographic Research Methods	
EDUC 8142	Phenomenological Research Methods	
EDUC 8144	Discourse Analysis	
EDUC 8170	Educational Measurement	
EDUC 8172	Multivariate Analysis	
EDUC 8173	Structural Equation Modeling	
Human development emphasis		
Two of the following:		
HDEV 6129	Cultural Effects on Human Development	

HDEV 8100	Issues and Special Topics in Human Development
HDEV 8241	Emotional and Cognitive Dev
HDEV 8244	Adult and Aging Development
HDEV 8253	Work, Identity, and Adult Development
Area of specialization	
9 credits selected in consultation with program advisor	
Dissertation	
CNSL 8998	Predissertation Seminar
CNSL 8999	Dissertation Research (minimum 12 credits needed to complete requirement)
Approved dissertation proposal required	
Successful completion of comprehensive exam required	

*Prerequisite statistics courses must be taken during the master's degree or must be completed prior to taking the following required advanced courses. For students who have not had an introductory statistics course, have not had one in a long time, or do not feel confident in their understanding and application of basic statistical techniques (i.e. through one way analysis of variance), EDUC 6116, Introduction to Educational Statistics, should be completed prior to enrolling in EDUC 8120, Group Comparison Designs and Analyses.

DOCTOR OF PHILOSOPHY IN THE FIELD OF EDUCATIONAL SCIENCE

The doctor of philosophy (Ph.D.). in educational science degree program is designed to create opportunities for cross-disciplinary education research by concentrating on critical national and global problems in which education and human development play a significant role. To adequately address such critical national and global problems, scholars require both a strong foundation in educational science as well as theoretical and disciplinary grounding in multiple disciplines. The Ph.D. program is distinguished by four characteristics: (1) candidates apply to a cross-disciplinary research team (CRT) that is focused on a critical problem related to education, (2) approaches to the research problems require a cross-disciplinary lens, (3) students engage in research throughout their program, and (4) candidates aspire to careers in which the production of research is paramount.

REQUIREMENTS

The following requirements must be fulfilled:

Requirements of the Doctor of Philosophy (p. 540) program

Code	Title	Credits
Required		
Educational foundations		
EDUC 8100	Experimental Courses (taken four times for 3 credits each time)	
Research methods		
EDUC 8120	Group Comparison Designs and Analyses	
EDUC 8122	Qualitative Research Methods	
6 credits from the following:		
EDUC 8130	Survey Research Methods	
EDUC 8131	Case Study Research Methods	
EDUC 8140	Ethnographic Research Methods	
EDUC 8142	Phenomenological Research Methods	
EDUC 8144	Discourse Analysis	
EDUC 8170	Educational Measurement	
EDUC 8171	Predictive Designs and Analyses	
EDUC 8172	Multivariate Analysis	
EDUC 8173	Structural Equation Modeling	
EDUC 8100	Experimental Courses	
Cross-disciplinary concentration		
24 credits in graduate-level courses determined in consultation with the advisor at the time of admission. Course selections are determined by the focus of the cross-disciplinary research team and the specific interests of the student.		
Dissertation		
EDUC 8999	Dissertation Research (taken for a minimum of 12 credits)	
An approved dissertation proposal is required.		

The successful completion of a comprehensive examination required.

JURIS DOCTOR AND MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF EDUCATION POLICY STUDIES

Students must be admitted to the master of arts in education and human development in the field of education policy studies (http://bulletin.gwu.edu/education-human-development/masters-program/education-human-development-education-policy-studies) (M.A.Ed.&H.D.) degree program and, separately, to the juris doctor (http://www.law.gwu.edu/Admissions/JD/Pages/Default.aspx) degree program. Each school separately must approve a student's application to pursue the joint degree.

Once a student has been admitted to both schools as a joint degree candidate, the first year of study must be devoted exclusively to the prescribed law curriculum. Subsequently, any combination of law and master's degree courses may be taken in any semester.

Under Law School regulations, the grade of Credit (*CR*) or No Credit (*NC*) is recorded for courses taken at any other GW school, and a student must receive a grade of at least *B-* to receive a grade of *CR*. Grades of *CR* and *NC* resulting from courses taken outside of the Law School count toward the total of 17 credits allowed under the School's Credit/No Credit (*CR/NC*) option. Law students receive 1 credit for each 700 minutes of scheduled class time in a semester; therefore, a law student may in some cases earn only 2 credits for a course offered by another school of the University for 3 credits.

The joint degrees must be conferred simultaneously and only after all requirements for both degrees have been met. The Law School Records Office and Dean of Students Office work in consultation to transfer 12 credits earned as part of the M.A.Ed.&H.D. degree to the J.D. degree transcript in the final month before graduation. It is the responsibility of each joint degree student to ensure that grades from their final semester or summer session of study are transferred to the Law School for credit to qualify for graduation. Capstone projects, language requirements, and/or any other requirements for the M.A.Ed.&H.D. must be fully met before the law degree will be conferred.

A number of other regulations govern the joint degree programs. Students interested in entering one of these programs should consult with both admissions offices, and, in the Law School, the Dean of Students Office.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

GSEHD course requirements

EDUC 6116	Introduction to Educational Statistics
EDUC 6314	History of American Education Reform
EDUC 6368	Leadership and Education
EDUC 6371	Education Policy
EDUC 6381	Program Evaluation: Theory and Practice
EDUC 6388	Analysis of Education Policy Issues
EDUC 8122	Qualitative Research Methods
One of the following:	
EDUC 6601	International and Comparative Education
EDUC 6602	Regional Studies in International Education
EDUC 6610	Programs and Policies in International Education
EDUC 6650	Education and National Development
Electives	

12 credits in approved electives taken through the Law School or GSEHD. Joint degree students must seek prior approval from their GSEHD faculty advisor to ensure that any course taken will be considered toward M.A.Ed. and H.D. electives. The Law School Dean of Students should approve credit for additional GSEHD courses that are law-related and develop policy analysis skills.

GRADUATE CERTIFICATE PROGRAMS

The Graduate School of Education and Human Development offers the following graduate certificate programs. Graduate certificates do not constitute eligibility for an initial license or assure admission to a subsequent degree program. Courses taken as part of a certificate program may be applied toward advanced credentials or endorsements added to an initial license.

Graduate Certificates

- Assessment, Testing, and Measurement in Education (p. 551)
- Autism Spectrum Disorders (p. 551)
- Brain Injury: Educational and Transition Services (p. 552)
- Counseling and Life Transitions (p. 552)
- Design and Assessment of Adult Learning (p. 553)
- E-Learning (p. 554)
- Global Leadership in Teams and Organizations (p. 554)

- Incorporating International Perspectives in Education (p. 554)
- Instructional Design (p. 555)
- Integrating Technology into Education (p. 555)
- Job Development and Placement (p. 556)
- Leadership Development (p. 556)
- Leadership in Educational Technology (p. 556)
- Multimedia Development (p. 557)
- Organizational Learning and Change (p. 557)
- Secondary Special Education and Transition Services (p. 557)
- Special Education for Culturally and Linguistically Diverse Learners (p. 558)
- STEM Master Teacher (p. 558)
- Teaching English to Speakers of Other Languages (p. 559)
- Training and Educational Technology (p. 559)

Post-Master's Certificates

- Counseling (p. 552)
- Educational Leadership and Administration (p. 553)

Visit the G (http://gsehd.gwu.edu/home)raduate School of Education and Human Development website (http://gsehd.gwu.edu/home) for more information.

GRADUATE CERTIFICATE IN ASSESSMENT, MEASUREMENT, AND TEACHING IN EDUCATION

Assessment, Testing, and Measurement (ATM) is a specialization within education and human development that combines statistical analysis, testing theory, and the study of human behavior, educational measurement, and evaluation. This 18-credit graduate certificate program is designed for individuals who are entering or advancing in positions associated with ATM in diverse settings as well as those who are preparing for admission to a master's or Ph.D. program in the field.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/graduate-certificate-assessment-testing-and-measurement-education) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Required:

EDUC 6112	Foundations of Assessment, Testing, and Measurement in Education
EDUC 8170	Educational Measurement
EDUC 8171	Predictive Designs and Analyses
EDUC 8175	Item Response Theory
EDUC 8177	Assessment Engineering
EDUC 8179	Capstone Project in Assessment,Testing, and Measurement in Education

GRADUATE CERTIFICATE IN AUTISM SPECTRUM DISORDERS

The graduate certificate in autism spectrum disorders prepares students to more effectively address the following issues in working with children with autism spectrum disorders: (1) academic achievement and study skills commensurate with their cognitive strength; this will provide the widest range of options for college and career choices, (2) social skills for navigating all of the environments in which they live, work, and play, and (3) problem-solving strategies that enable them to respond flexibly and successfully in challenging situations.

The certificate program is designed for individuals with a bachelor's or master's degree who are interested in focusing on a multi-intervention approach to instructing students with autism spectrum disorders.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 15 credits in required courses.

Code	Title	Credits
Required		
SPED 6240	Family Support and Guidance in Special Education	
SPED 6253	Introduction to Autism Spectrum Disorders	
SPED 6260	Developmental Assessment in Special Education	
SPED 6261	Practicum: Methods and Materials for Young Children with Disabilities (3 credits)	

SPED 6290	Affective Development and Behavior Management in Special Education

GRADUATE CERTIFICATE IN BRAIN INJURY: EDUCATIONAL AND TRANSITION SERVICES

The graduate certificate in brain injury: educational and transition services is offered through an interdisciplinary program that prepares educators and support personnel to address the needs of youth and young adults with brain injury as they transition from school to postsecondary education, employment, and independent self-adjustment. The program integrates the roles of relevant disciplines and service agencies, including postsecondary planning, alternative service models, and extended career support and adjustment to independent living.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 15 credits in required courses.

Code	Title	Credits
Required		
SPED 6223	Introduction to Brain Injury: Programs, Policies, and Resources	
SPED 6224	Brain Function and Impact of Brain Injury on Learning and Education	
SPED 6231	Instructional Methods in Secondary Special Education and Transition	
SPED 6240	Family Support and Guidance in Special Education	
SPED 6255	Collaboration with Systems and Families	

POST-MASTER'S CERTIFICATE IN COUNSELING

The post-master's certificate in counseling is designed for students who have a 48-credit master's degree in counseling and wish to earn the additional credits needed for licensure.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Please visit the program website (http://gsehd.gwu.edu/programs/post-masters-certificate-counseling) for more information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
CNSL 6169	Counseling Substance Abusers	
CNSL 6171	Family Counseling	
CNSL 6175	Living and Dying: A Counseling Perspective	
CNSL 6190	Advanced Career Counseling	

GRADUATE CERTIFICATE IN COUNSELING AND LIFE TRANSITIONS

The graduate certificate in counseling and life transitions prepares counselors with the knowledge to effectively and compassionately counsel the chronically ill and dying, their caregivers, and bereaved loved ones, or work with others facing difficult life transitions, such as unemployment. This specialized program is ideal for counselors, social workers, clergy, and other professionals who work with those facing loss and life transitions.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (http://gsehd.gwu.edu/programs/graduate-certificate-counseling-and-life-transitions) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 3 credits in a required course and 9 credits in elective courses.

Code	Title	Credits
Required		
HDEV 6108	Life Span Human Development	
Electives		
Three elective courses selected in consultation with the advisor to be taken in one of the following specializations:		
Grief, loss, and life transitions		

CNSL 6100	Special Workshop (Grief, Loss, and Life Transitions Focus)
CNSL 6170	Grief and Loss
CNSL 6175	Living and Dying: A Counseling Perspective
CNSL 6177	Spirituality and Loss
CNSL 6179	Children and Loss
Career and workforce development	
CNSL 6155	Career Counseling
CNSL 6190	Advanced Career Counseling
CNSL 6188	Systems in Career Counseling Development
CNSL 6189	Career Development and the Contemporary Workforce
CNSL 8253	Work, Identity, and Adult Development
or HDEV 8253	Work, Identity, and Adult Development
CNSL 6100	Special Workshop (Career Counseling Focus)
Human development	
CNSL 6161	Group Counseling
CNSL 8253	Work, Identity, and Adult Development
CNSL 6154	Theories and Techniques of Counseling
CNSL 6155	Career Counseling
CNSL 6170	Grief and Loss
CNSL 6179	Children and Loss
HDEV 6109	Child Development
HDEV 6110	Adolescent Development
HDEV 6701	Adult Learning

GRADUATE CERTIFICATE IN DESIGN AND ASSESSMENT OF ADULT LEARNING

The graduate certificate in design and assessment of adult learning provides the theoretical foundation and the practical tools to determine when training and education solutions are appropriate for the workplace. Students obtain skills in designing, developing, delivering, and evaluating workplace educational interventions.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/graduate-certificate-design-and-assessment-adult-learning) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
HOL 6701	Adult Learning	
HOL 6721	Assessing the Impact of Organizational Change	
HOL 6742	Design of Adult Learning Interventions	
Electives		
One 3-credit elective course selected in consultation with the advisor.		

POST MASTER'S CERTIFICATE IN EDUCATIONAL LEADERSHIP AND ADMINISTRATION

The graduate certificate in educational leadership and administration is designed for students who hold a master's degree and have at least one year of PreK-12 instructional experience. Students are prepared to promote high-quality student achievement and become a leader in various public school-based and central office positions. The academic program includes courses and PK-12 field experiences designed to meet administrative certification requirements in the District of Columbia, Maryland, Virginia, North Carolina, and other states that honor interstate compact agreements.

This accelerated program can be pursued either in the classroom or in an online, distance learning format and is nationally recognized by the Council for the Accreditation of Educator Preparation (CAEP), the National Council for Teacher Education (NCATE), and the Educational Leadership Constituent Council (ELCC).

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/post-masters-certificate-educational-leadership-and-administration) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required		
EDUC 6232	Supervision and Evaluation of Instruction	
EDUC 6234	Site-Based Leadership: K-12	
EDUC 6236	School Law and Policy	
EDUC 6287	Internship: Administration (taken twice for 3 credits each time)	
EDUC 6422	Instructional Needs Analysis	

GRADUATE CERTIFICATE IN E-LEARNING

The graduate certificate in e-learning—offered exclusively online—is ideal for individuals involved in instructional aspects of distance learning, including instructors currently teaching at a distance and those who wish to develop the skills to do so. The program helps students to acquire the skills needed to be successful e-teachers and e-learners. The program prepares students to apply the theories, principles, models, tools, and techniques associated with e-learning in diverse organizational settings.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/graduate-certificate-e-learning) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required		
EDUC 6401	Applying Educational Media and Technology	
EDUC 6405	Developing Multimedia Materials	
EDUC 6406	Instructional Design	
EDUC 6421	Critical Issues in Distance Education	
EDUC 6424	Learning Technologies and Organizations	
EDUC 6426	Computer Interface Design for Learning	

GRADUATE CERTIFICATE IN GLOBAL LEADERSHIP IN TEAMS AND ORGANIZATIONS

The graduate certificate in global leadership in teams and organizations is designed to explore the impact of culture and globalization on the lives of individuals, organizations, and societies. It examines models and conceptual frameworks of culture to understand the nature of learning, change, and leadership across cultures. The program of study includes international company site visits, cultural exchanges, and world-renowned faculty and guest speakers.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
HOL 6704	Leadership in Organizations	
HOL 6706	Current Issues in Organizational Leadership	
HOL 6746	Work Groups and Teams in Organizations	
HOL 6747	International and Multicultural Issues in Organizations	

GRADUATE CERTIFICATE IN INCORPORATING INTERNATIONAL PERSPECTIVES IN EDUCATION

The 12-credit incorporating international perspectives in education certificate is designed for individuals with either a bachelor's or master's degree who are interested in introducing global perspectives into curriculum, pedagogy, and school policy and practice. The curriculum of two required and two elective courses allows students to pursue individual interests while providing a foundation in internationalization as

it relates to school systems and the development of curriculum in K-12 settings.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 6 credits in required courses and 6 credits in elective courses.

Required	
CPED 6305	Foundations of Curriculum Theory
EDUC 6615	Internationalizing U.S. Schools
Elective	
6 credits from the following:	
CPED 6225	Introduction to International Curricula
CPED 6557	Second Language Acquisition
CPED 6608	Development and Diversity
CPED 6627	Teaching Second Language Reading and Writing
EDUC 6602	Regional Studies in International Education (Comparative Solutions to Common Educational Problems)
EDUC 6602	Regional Studies in International Education (Education and Modernization in Asia)
EDUC 6602	Regional Studies in International Education (Education and Transition in Eastern Europe and the former Soviet Union)
EDUC 6602	Regional Studies in International Education (Education and Equality in Latin America and the Caribbean)
EDUC 6602	Regional Studies in International Education (Education and Tradition in Islamic Societies)
EDUC 6602	Regional Studies in International Education (Education and Diversity in Europe and the EU)
EDUC 6640	Selected Topics in International Education (Citizen, Culture, Language and Nation-building in the Global Era)

GRADUATE CERTIFICATE IN INSTRUCTIONAL DESIGN

The graduate certificate in instructional design—offered exclusively online—prepares students to apply the theories, principles, models, tools, and techniques of systematic instructional design in diverse organizational settings. Students have numerous opportunities to integrate their professional experiences into their learning, to apply their course assignments to their current professional activities, and to actively engage with other professionals in the development of valued instructional design proficiencies.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required		
EDUC 6401	Applying Educational Media and Technology	
EDUC 6405	Developing Multimedia Materials	
EDUC 6406	Instructional Design	
EDUC 6422	Instructional Needs Analysis	
EDUC 6426	Computer Interface Design for Learning	
EDUC 6427	Advanced Instructional Design	

GRADUATE CERTIFICATE IN INTEGRATING TECHNOLOGY INTO EDUCATION

The graduate certificate in integrating technology into education—offered exclusively online—provides students from varied professional educational backgrounds (including public and private sectors, K-12, and higher education) with the foundational knowledge and skills required to integrate technology effectively into their instruction. The curriculum, which is taught in a distance learning format, prepares students to apply, manage, and evaluate theories, standards, technologies, and techniques for integrating technology within their professional educational settings. Students integrate their professional experiences into their learning, apply their course assignments to their current professional activities, and actively engage with other professionals.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Required	
EDUC 6368	Power, Leadership & Education
EDUC 6401	Applying Educational Media and Technology
EDUC 6402	Computers in Education and Human Development
EDUC 6404	Managing Computer Applications
EDUC 6405	Developing Multimedia Materials
EDUC 6406	Instructional Design

GRADUATE CERTIFICATE IN JOB DEVELOPMENT AND PLACEMENT

The graduate certificate in job development and placement is ideal for a variety of professionals in state, federal, nonprofit, and community-based rehabilitation. Students delve into the social and cultural dimensions of rehabilitation counseling, as well as job development and job placement methods and techniques. The curriculum provides specialized experiential learning opportunities by integrating classroom course work with hands-on experience through a required 50-hour practicum.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Required:

CNSL 6130	Vocational Assessment of Individuals with Disabilities
or SPED 6230	Vocational Assessment of Individuals with Disabilities
CNSL 6163	Social/Cultural Dimensions-Cns
CNSL 6376	Foundations/Practicum: Rehabilitation and Case Management
CNSL 6380	Job Placement and Supported Employment

In addition to the required coursework, students are required to complete a 50-hour supervised practicum in a vocational rehabilitation agency (public or community partner program) to gain job development and job placement experience. The practicum must be completed within one year from date of entry to the program in order for the student to complete all requirements in the allowed period and receive the certificate. Students should consult with the program coordinator and/or academic advisor prior to beginning the practicum.

GRADUATE CERTIFICATE IN LEADERSHIP DEVELOPMENT

The graduate certificate in leadership development provides in-depth understanding of organizations as human systems and the practical knowledge required to improve organizational effectiveness through leadership and training. Students acquire knowledge and skills in the areas of adult learning, group processes, organizational diagnosis, and consulting strategies.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses, and 12 credits in elective courses chosen on consultation with Master's coordinator.

Code	Title	Credits
Required		
HOL 6700	Human Behavior and Learning in Organizations	
HOL 6704	Leadership in Organizations	
Electives		
12 credits chosen in consultation with Master's coordinator		

GRADUATE CERTIFICATE IN LEADERSHIP IN EDUCATIONAL TECHNOLOGY

The graduate certificate in leadership in educational technology—offered exclusively online—provides students with the foundational knowledge and skills required to be effective leaders in an educational technology environment. Students acquire leadership skills. They also learn how technology can be effectively applied in their organizations. In this vein, they will be exposed to everything from software and hardware systems to the evaluation of sound educational technology software and implementation plans.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required		
EDUC 6368	Leadership and Education	
EDUC 6371	Education Policy	
EDUC 6401	Applying Educational Media and Technology	
EDUC 6403	Educational Hardware Systems	
EDUC 6404	Managing Computer Applications	
EDUC 6424	Learning Technologies and Organizations	

GRADUATE CERTIFICATE IN MULTIMEDIA DEVELOPMENT

The graduate certificate in multimedia development—offered exclusively online—provides students from varied professional backgrounds the knowledge and foundational skills required to plan, design, develop, implement, and evaluate multimedia materials for instructional use. Students will have the opportunity to create a portfolio that demonstrates their skills in multimedia development.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required		
EDUC 6402	Computers in Education and Human Development	
EDUC 6405	Developing Multimedia Materials	
EDUC 6406	Instructional Design	
EDUC 6426	Computer Interface Design for Learning	
EDUC 6427	Advanced Instructional Design	
EDUC 6428	Developing Digital Professional Portfolios	

GRADUATE CERTIFICATE IN ORGANIZATIONAL LEARNING AND CHANGE

The graduate certificate in organization**al** learning and change provides an in-depth understanding of how a learning focus helps organizations improve their performance and create sustainable change. Students acquire the practical knowledge and skills necessary to assess organizational performance, and help design and lead effective change initiatives.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/graduate-certificate-organizational-learning-and-change) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
HOL 6702	Organizational Change I	
HOL 6703	Organizational Change II	
HOL 6704	Leadership in Organizations	
HOL 6707	Organizational Learning	

GRADUATE CERTIFICATE IN SECONDARY SPECIAL EDUCATION AND TRANSITION SERVICES

The graduate certificate in secondary special education and transition services is offered through an interdisciplinary program that prepares educators and support personnel to address the needs of youth and young adults with special needs in their transition from school to postsecondary education, employment, and independent self-adjustment. This program integrates the roles of relevant disciplines and service agencies, including postsecondary planning, alternative service models, and extended career support and adjustment to independent living.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
SPED 6230	Vocational Assessment of Individuals with Disabilities (taken for 3 credits)	
SPED 6235	Employment Models for Individuals with Disabilities	
or SPED 6231	Instructional Methods in Secondary Special Education and Transition	
SPED 6236	Introduction to Career and Career-Technical Education and Transition Services (taken for 3 credits)	
SPED 6255	Collaboration with Systems and Families	
SPED 6277	Teaching Culturally and Linguistically Diverse Students with Disabilities	
Electives		
12 credits from the following:		
CPED 6221	Developmental Reading: Emergent Literacy	
CPED 6551	Second Language Instructional Methods	
CPED 6556	Linguistic Applications in English as a Second Language	
CPED 6627	Teaching Second Language Reading and Writing	
SPED 6266	The Development of Language and Literacy	
SPED 6268	Development of Children and Youth with Disabilities	
SPED 6272	Strategies for Inclusion: Addressing the Needs of Diverse Learners	
SPED 6275	The Culturally and Linguistically Diverse Student with Disabilities: Policy, Research, and Trends	

GRADUATE CERTIFICATE IN SPECIAL EDUCATION FOR CULTURALLY AND LINGUISTICALLY DIVERSE LEARNERS

The graduate certificate in special education for culturally and linguistically diverse learners is designed to enhance skills to meet the needs of students with diverse cultural and linguistic backgrounds and those with varying social and learning abilities. Students focus on the inter-relationships of school, home, and community to improve the quality of education for children with diverse needs. A holistic approach to the curriculum utilizes the latest research, theory, and data-driven best practices to prepare you to empower and improve the quality of learning for children with diverse needs.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 6 credits in required courses and 12 credits in electives.

Code	Title	Credits
Required		
SPED 6276	Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student	

GRADUATE CERTIFICATE IN STEM MASTER TEACHER

The graduate certificate in STEM master teacher provides licensed K-12 educators with an opportunity to expand their skills and methods for engaging students in rich, powerful STEM (science, technology, engineering, and mathematics) learning experiences. The establishment of this 12-credit certificate coincides with adoption of the Next Generation Science Standards and Common Core State Standards for Mathematics and addresses the anticipated professional development needs of school districts adopting these new standards.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/graduate-certificate-stem-teaching) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and a 3-credit elective course.

Required

CPED 6701	Arts in the STEM Curriculum
CPED 6702	Integrating Engineering in the Math and Science Classroom
CPED 6703	Advanced STEM Teaching Methods
Elective	
One of the following:	
CPED 6367	Perspectives and Research in Teaching Science
CPED 6370	Perspectives and Research in Teaching Mathematics
CPED 8309	Supervising Preservice Clinical Experience

Students may apply courses toward the Master of Arts in Education and Human Development in the field of Curriculum and Instruction.

GRADUATE CERTIFICATE IN TEACHING ENGLISH TO SPEAKERS OF OTHER LANGUAGES

The graduate certificate in teaching English to speakers of other languages is ideal for prospective teachers in both ESL and content areas who wish to teach in the United States and abroad. Students learn to identify and interpret the characteristics and needs of English learners and apply knowledge in the practice of instructional methodology and assessment that develops academic and social English proficiency. The four courses in the TESOL graduate certificate count towards most state licensure or add-on endorsement requirements and provide students with knowledge and skills needed to achieve on the English for Speakers of Other Languages Praxis Test.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gsehd.gwu.edu/programs/teaching-english-language-learners-graduate-certificate) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

All courses must be completed with a minimum grade of *B*.

The proposed TESOL Graduate Certificate Program will require completion of the following courses with grades B or above:

1. CPED 6557: Second Language Acquisition
2. CPED 6551: Second Language Instruction (Methods)
3. CPED 6627: Teaching Second Language Reading and Writing
4. CPED 6556: Linguistic Applications in English as a Second Language (ESL)

The recommended sequence of courses is:

- Fall Semester (6 credits): CPED 6551: *Second Language Instruction* and CPED 6557: *Second Language Acquisition*
- Spring Semester (3 credits): CPED 6627: *Teaching Second Language Reading and Writing*
- Summer Semester: CPED 6556 (3 credits): *Linguistic Applications in ESL* (online)

Students can complete the proposed TESOL Graduate Certificate Program in two semesters and a summer, or approximately 11 months. Offering the final course in the sequence online will accommodate students who move outside the GW area as they complete the program.

Students also have the option of completing the certificate in four semesters by enrolling in 3 credits each semester. It is recommended that students in the four-semester option would take CPED 6551: *Second Language Instruction* during the first semester (Fall I) and CPED 6557: *Second Language Acquisition* during the fourth semester (Fall II).

GRADUATE CERTIFICATE IN TRAINING AND EDUCATIONAL TECHNOLOGY

The graduate certificate in training and educational technology —offered exclusively online—prepares students to apply the theories, principles, models, and tools of instructional technology and distance education in diverse organizational learning activities and settings. Skills and experiences acquired range from conducting a needs analysis to applying the systematic design of instruction to evaluating the role of technology in leadership development and the assessment of distance education (or e-learning) opportunities.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required		
EDUC 6368	Leadership and Education	
EDUC 6404	Managing Computer Applications	

EDUC 6406	Instructional Design
EDUC 6422	Instructional Needs Analysis
EDUC 6424	Learning Technologies and Organizations
EDUC 6425	Developing Effective Training with Technology

COUNSELING AND HUMAN DEVELOPMENT

GRADUATE

Master's programs

- Master of Arts in Education and Human Development in the field of clinical mental health counseling (p. 521)
- Master of Arts in Education and Human Development in the field of clinical rehabilitation counseling (p. 521)
- Master of Arts in Education and Human Development in the field of rehabilitation counseling (p. 532)
- Master of Arts in Education and Human Development in the field of school counseling (p. 533)
- Master of Arts in Education and Human Development individualized program (p. 529)

Doctoral program

- Doctor of Philosophy in the field of counseling (p. 548)

FACULTY

Professors J. Garcia, K.C. Hergenrather, C.H. Hoare, S.A. Marotta-Walters

Associate Professors R. Lanthier (*Chair*), M.C. McGuire-Kuletz, M.M. Megivern, S. Steen

Assistant Professors S. Beveridge, S.C. Kim, R.M. Dedmond, D.M. Pittman

Professorial Lecturers O. Madison, R.J. Pasi, B.J. Thompson, R.C. Windham

Lecturers E. Rhymers, P. Tschudi

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Programs in counseling are offered at the graduate level by the Graduate School of Education and Human Development (http://gsehd.gwu.edu) through its Department of Counseling and Human Development (http://gsehd.gwu.edu/content/department-counseling-and-human-development).

CNSL 0920. Continuing Research - Masters. 1 Credit.

CNSL 0940. Cont Research - Doctoral. 1 Credit.

CNSL 2102. Foundations of Counseling. 3 Credits.

CNSL 2162. Professional and Ethical Orientation to Counseling. 3 Credits.
The roles and functions of a professional counselor and the ethical standards that govern the profession.

CNSL 2163. Psychosocial Adjustment. 3 Credits.
Mental health problems; emphasis on needs of counselors, teachers, and others working with children and adolescents.

CNSL 2376. Introduction to Rehabilitation Counseling. 3 Credits.
Overview of rehabilitation profession, including philosophy, history, ethics, theory, legislation, settings, and practice.

CNSL 2378. Disability Management and Psychosocial Rehabilitation. 3 Credits.
Case management services for persons with physical, mental, and emotional disabilities.

CNSL 2381. Medical and Psychosocial Aspects of Disabilities. 3 Credits.
Chronic and traumatic disorders; rehabilitation and psychosocial implications.

CNSL 6100. Special Workshop. 1-12 Credits.
Topics to be announced in the Schedule of Classes. May be repeated for credit.

CNSL 6101. Research and Independent Study. 1-3 Credits.
Individual research under guidance of a staff member. Program and conferences arranged with an instructor.

CNSL 6103. Thesis Research. 3 Credits.

CNSL 6104. Thesis Research. 3 Credits.

CNSL 6130. Vocational Assessment of Individuals with Disabilities. 3 Credits.
Investigation of vocational appraisal processes and techniques for individuals with disabilities. Includes assessment for transition using field-based assignments. Three credits of practicum experience for students specializing in vocational evaluation. Material fee. Same as SPED 6230.

CNSL 6151. Professional and Ethical Orientation to Counseling. 3 Credits.
The roles and functions of a professional counselor and the ethical standards that govern the profession.

CNSL 6153. Counseling Interview Skills. 3 Credits.
Acquisition of counseling skills common to all theories through lectures, demonstrations by faculty, role playing, and videotaping. Prerequisite or concurrent registration: CNSL 6151 (for counseling majors); permission of instructor is required for others. Material fee.

CNSL 6154. Theories and Techniques of Counseling. 3 Credits.
An introduction to basic counseling and psychotherapeutic theories and associated techniques. Prerequisite or concurrent registration: CNSL 6151 (for counseling majors); permission of instructor is required for others.

CNSL 6155. Career Counseling. 3 Credits.
A consideration of theory, practice, and the body of information related to career counseling, choice, and development over the life span. Prerequisite: CNSL 6153, EDUC 6114 for counseling majors; permission of instructor is required for others. Material fee.

CNSL 6157. Individual Assessment in Counseling. 3 Credits.
Detailed study of individual analysis and appraisal techniques. Development of systematic case study. Prerequisite: CNSL 6153, EDUC 6114 for counseling majors; permission of instructor is required for others. Material fee.

CNSL 6159. Psychosocial Adaptation. 3 Credits.
Mental health problems; emphasis on needs of counselors, teachers, and others working with children, adolescents, and adults.

CNSL 6161. Group Counseling. 3 Credits.
Principles of group dynamics as related to interaction within groups. Techniques and practice in group counseling. Prerequisite or concurrent registration: CNSL 6151 (for counseling majors); permission of instructor is required for others.

CNSL 6163. Social/Cultural Dimensions-Cns. 3 Credits.
Basic sociocultural concepts in counseling theory and how they apply to the practice of the counseling profession. Prerequisite or concurrent registration: CNSL 6153 (for counseling majors); permission of instructor is required for others.

CNSL 6164. Values, Spiritual, and Religious Issues in Counseling. 3 Credits.
The theoretical and practical intersection of counseling, psychotherapy, and mental health considerations with religion and spirituality. The clinically effective and ethically responsible integration of religion and spirituality into counseling. Prerequisite or concurrent registration: CNSL 6151 (for counseling majors); permission of instructor is required for others.

CNSL 6169. Counseling Substance Abusers. 3 Credits.
Individual, group, family, and self-help counseling applied to substance abusers. Prerequisite or concurrent registration: CNSL 6153 (for counseling majors); permission of instructor is required for others.

CNSL 6170. Grief and Loss. 3 Credits.
Exploration and discussion of grief and loss from theoretical, practical, cross-cultural, and personal perspectives; implications for counselors within a multidisciplinary environment.

CNSL 6171. Family Counseling. 3 Credits.
The family as a system: how it affects the client and how the client affects it. Didactic presentations, role playing, and work with simulated families. Prerequisite or concurrent registration: CNSL 6153 (for counseling majors); permission of instructor is required for others.

CNSL 6172. Human Sexuality for Counselors. 3 Credits.
Issues of sexuality as related to counseling in contemporary society. Prerequisite or concurrent registration: CNSL 6153 (for counseling majors); permission of instructor is required for others.

CNSL 6173. Diagnosis and Treatment Planning. 3 Credits.
For counselors and mental health practitioners. Symptoms and treatment of various mental disorders. The process of making psychiatric diagnoses. A variety of treatment strategies are covered, along with their application to various disorders. Prerequisite: CNSL 6153.

CNSL 6174. Trauma and Crisis Intervention. 3 Credits.
This course provides the counseling student with an introduction to research, theory, and practices within the field of traumatology. The course will cover the historical evolution of the field; biopsychosocial underpinnings of trauma and trauma spectrum disorders; issues in diagnosis, assessment, and intervention from a culturally diverse framework; and a synthesis of best practices as they are currently evolving. Using a developmental and systemic approach, the course will provide a counseling perspective on the knowledge base from the multiple disciplines that contribute to the field of traumatology.

CNSL 6175. Living and Dying: A Counseling Perspective. 3 Credits.
Survey of fundamental psychosocial issues surrounding grief, loss, and life-threatening illness. Topics include AIDS, suicide, multiple loss, caregiver's grief, spirituality, and cross-cultural issues.

CNSL 6177. Spirituality and Loss. 3 Credits.
Exploration of how spiritual beliefs, faith traditions, and life philosophy affect the process of dying, bereavement, and grieving. Effective counseling approaches.

CNSL 6179. Children and Loss. 3 Credits.
The process of grief, loss, and death as experienced by children and adolescents from theoretical, moral, spiritual, and developmental perspectives. Development of effective and sensitive skills and competencies to meet the needs of children and their families as they face life-challenging transitions.

CNSL 6185. Practicum/Internship in Counseling. 3 Credits.
Part of a two-semester clinical experience for degree and certificate candidates in counseling. Includes 100 hours of supervised practicum in a counseling setting. Material fee.

CNSL 6186. Advanced Internship in Counseling. 3-6 Credits.
Part of a two-semester clinical experience for degree and certificate candidates in counseling. Material fee. Prerequisite: CNSL 6185.

CNSL 6188. Systems in Career Counseling Development. 3 Credits.
The complex role of systems in career counseling and development. Class and work experience in the areas of career assessment, computerized career planning, and the design and evaluation of career counseling systems.

CNSL 6189. Career Development and the Contemporary Workforce. 3 Credits.
Through case studies, simulations, and group work, the demographics and challenges of the workforce in the United States are examined. The knowledge, skills, and competencies necessary to respond to current trends and projected changes in the global workforce.

CNSL 6190. Advanced Career Counseling. 3 Credits.
Expansion of career development theory, concepts, and practice: the helping relationship, delivery systems, current market and economic information, and available resources. Prerequisite: CNSL 6155 (for counseling majors); permission of instructor is required for others. Material fee.

CNSL 6268. Foundations/Practicum: Clinical Mental Health Counseling. 3 Credits.
Description of community counseling settings, problems clients present, and a consideration of appropriate intervention strategies.

CNSL 6376. Foundations/Practicum: Rehabilitation and Case Management. 3 Credits.
Survey of history, philosophy, basic principles, legislation, roles, and services.

CNSL 6378. Disability Management and Psychosocial Rehabilitation. 3 Credits.
Disability management services; psychosocial aspects of disability; rehabilitation services for persons with psychiatric disabilities.

CNSL 6380. Job Placement and Supported Employment. 3 Credits.
Job development and modification: placement of persons with disabilities.

CNSL 6381. Medical and Psychosocial Aspects of Disabilities. 3 Credits.
Chronic and traumatic disorders with rehabilitation and psychosocial implications.

CNSL 6395. Foundations of Forensic Rehabilitation Counseling I. 3 Credits.
Overview of the roles and functions of professionals who provide forensic rehabilitation services in matters of litigation. Vocational assessments, labor market issues, transferable skills analysis, job analyses. Instruments utilized in forensic rehabilitation.

CNSL 6396. Foundations of Forensic Rehabilitation Counseling II. 3 Credits.
Workers' compensation, personal injury, medical/professional malpractice, catastrophic injury, loss of earnings capacity, and life care planning. Ethical standards, practices, federal court rules, and common situations found in the litigation process.

CNSL 6397. Law and the Rehabilitation Consultant. 3 Credits.
Overview of law and court procedures for forensic rehabilitation professionals. Qualification of forensic experts, roles and functions of expert witnesses, discovery, work product, hearsay, direct and cross-examination, admissibility of evidence, and opinions in state and federal venues.

CNSL 6398. Psychopharmacology. 3 Credits.

CNSL 6466. Foundations of School Counseling K–12. 3 Credits.
Study of the environmental and specialty elements for school counseling, with special attention to the principles and practices of school counseling.

CNSL 8100. Special Workshop. 1-12 Credits.
Topics to be announced in the Schedule of Classes. May be repeated for credit.

CNSL 8101. Research and Independent Study. 1-3 Credits.
Guided individual research. Program and conferences arranged with an instructor.

CNSL 8244. Advanced Group Counseling. 3-6 Credits.
A post-master's course on interpersonal process groups, with didactic, experiential, and supervisory components. Prerequisite: CNSL 6161 ; permission of instructor is required.

CNSL 8252. Advanced Leadership and Advocacy in Counseling. 3 Credits.
Theory and practice of consultation and administration, with focus on school, community, and rehabilitation settings. Research issues. Admission by permission of instructor.

CNSL 8253. Work, Identity, and Adult Development. 3 Credits.
The influence of work on identity, intellectual and personality development, and other developmental attributes. Same as HDEV 8253/HOL 8742.

CNSL 8254. Advanced Multicultural Counseling. 3 Credits.
Recent research addressing key aspects of multicultural counseling. Practical knowledge about effective skills practice in the provision of services to clients from different cultural backgrounds, with emphasis on experiential and cognitive/behavioral approaches. Restricted to Admission by permission of instructor. Prerequisites: CNSL6163 Social and Cultural Dimensions of Counseling. Recommended background: PhD degree student in the field of counseling; completed a master's degree in counseling.

CNSL 8255. Advanced Supervision in Counseling. 3 Credits.
Theory and practice of clinical supervision and consultation for preparation to enter supervisory positions in the field of counselor education. Current thinking regarding supervisory theory/models, practice, research, and ethics. Restricted to Admission by permission of instructor. Recommended background: For PhD degree students.

CNSL 8257. Doctoral Practicum in Counseling. 3 Credits.
Experiential learning of advanced counseling and counseling-related competencies through direct, supervised participation in group work, research, teaching, and/or consultation. Admission by permission of instructor.

CNSL 8258. Advanced Theories of Counseling. 3 Credits.
Current research on counseling and psychotherapy process and outcome; critical analysis of theory with applications for practice and research. For Ed.S. and Ph.D. degree candidates in the field of counseling. Admission by permission of instructor.

CNSL 8259. Doctoral Internship in Counseling and Counselor Supervision I. 3 Credits.

CNSL 8260. Doctoral Internship in Counseling and Counselor Supervision II. 3 Credits.

CNSL 8961. Seminar: Counseling. 1-12 Credits.

CNSL 8998. Predissertation Seminar. 3 Credits.

CNSL 8999. Dissertation Research. 3,6 Credits.
Prerequisite: CNSL 8998/ EDUC 8998.

HDEV 6108. Life Span Human Development. 3 Credits.
Continuity and change in developmental attributes. The developing person in relation to social norms, roles, and stage-graded expectations from birth to death. Interaction between biogenetics and environment.

HDEV 6109. Child Development. 3 Credits.
Typical development and the familial and social antecedents of developmental risk. Environments that foster competent children and developmental sequelae of childhood vulnerability and trauma. For graduate students in counseling, psychology, and related disciplines.

HDEV 6110. Adolescent Development. 3 Credits.
Key attributes and problems in adolescent development. Typical adolescent development and contemporary social problems in relation to stress, risk, and resilience. For graduate students in counseling, psychology, and related areas.

HDEV 6129. Cultural Effects on Human Development. 3 Credits.
Effects of culture on the experience and expression of self, others, space, time, faith systems, norms, and other attributes. Egocentric and sociocentric effects, primitive and technological effects. Group immersion as the basis for prejudice. Developmental consequences as a consequence of cultural context.

HDEV 6161. Practicum in Human Development. 3 Credits.
Admission by permission of instructor.

HDEV 6162. Internship in Human Development. 3 Credits.
Admission by permission of instructor.

HDEV 6701. Adult Learning. 3 Credits.
Same as HOL 6701.

HDEV 8100. Issues and Special Topics in Human Development. 3-6 Credits.
Issues and special contemporary topics related to child, adolescent, and adult development. Applications for professional roles.

HDEV 8241. Emotional and Cognitive Dev. 3 Credits.
Emotional and cognitive development as related to self-esteem, social cognition, and interpersonal skills. Relationships among cognitive development, intellectual reasoning, insight, and social development.

HDEV 8244. Adult and Aging Development. 3 Credits.
Theories and research on personality and intelligence in adulthood. Research designs and methods. Implications of developmental data for counseling and selected professional roles.

HDEV 8253. Work, Identity, and Adult Development. 3 Credits.
The influence of work on identity, intellectual and personality development, and other developmental attributes. Same as CNSL 8253/ HOL 8742.

CURRICULUM AND PEDAGOGY

GRADUATE

Master's programs

- Master of Arts in Education and Human Development in the field of curriculum and instruction (p. 522)
- Master of Arts in Education and Human Development in the field of curriculum and instruction, concentration in elementary education (p. 522)
- Master of Arts in Education and Human Development in the field of curriculum and instruction, concentration in interdisciplinary studies of literacy and reading education (p. 523)
- Master of Arts in Education and Human Development in the field of curriculum and instruction, concentration in secondary education (p. 524)
- Master of Arts in Education and Human Development individualized program (p. 529)
- Master of Education in the field of elementary education (p. 527)
- Master of Education in the field of secondary education (p. 534)

Doctoral program

- Doctor of Education in the field of curriculum and instruction (p. 541)

FACULTY

Professors S.J. Lynch

Associate Professors S.S. Beck, B. Casemore (*Chair*), J. Eakle, C. Green, C.L. Pyke, P.S. Tate

Assistant Professors J. Grooms, M.G. Sheppard, T. Sikorski

Research Instructors A.M. Bitler, M.M. Hollibaugh Baker

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CPED 0920. Continuing Research - Masters. 1 Credit.

CPED 0940. Continuing Research - Doctoral. 1 Credit.

CPED 6100. Special Topics. 1-12 Credits.
Topics and fees announced in the Schedule of Classes.

CPED 6100W. Special Topics. 1-12 Credits.

CPED 6101. Research and Independent Study. 1-3 Credits.
Individual research under the guidance of a staff member; program and conferences arranged with an instructor.

CPED 6172. Strategies for Inclusion: Addressing the Needs of Diverse Learners. 3 Credits.
Strategies by which teachers can more effectively assume the responsibility to serve all children in an inclusionary setting, including those who are second language learners and students with disabilities. Same as SPED 6272.

CPED 6175. The Culturally and Linguistically Diverse Student with Special Needs: Policy, Research, and Trends. 3 Credits.
Educational service delivery for the culturally and linguistically diverse student. National, state, and local policies; current research in bilingual education, special education, and bilingual special education. Material fee. Same as SPED 6275.

CPED 6176. Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student. 3 Credits.
Issues in academic and psychosocial assessment of second language learners. The impact of second language acquisition and culture on the assessment process; differentiation between language difference and disability; IEP development; the use of interpreters and translators; the involvement of family and communities; standardized and alternative assessments; and legislative mandates. Material fee. Same as SPED 6276.

CPED 6199. Federal Education Policy Institute. 3 Credits.
The federal role in education policymaking in the context of national, state, and local efforts to create school environments for effective learning and the promotion of social and emotional health in children and youth. Same as SPED 6299.

CPED 6221. Developmental Reading: Emergent Literacy. 3 Credits.
The components of a balanced literacy program for emergent, beginning, and early-instructional-level readers. Incorporation of phonological awareness, phonics, fluency, reading comprehension, and writing lessons into a balanced reading–literacy program.

CPED 6223. Interdisciplinary Elementary School Literacies. 3 Credits.
Theory and practice of interdisciplinary elementary school studied in the context of the interactions between the domain-specific and strategic processes involved in teaching and learning from printed text and other media in science, literature, mathematics, social studies, and the arts.

CPED 6224. Diagnostic Teaching of Reading: K–6. 3 Credits.
Collection of diagnostic data; construction of informal traditional and non-traditional reading and writing tests; other instruments of evaluation; selecting and planning activities suitable to specific problems. Prerequisite: at least one previous course in reading.

CPED 6225. Introduction to International Curricula. 3 Credits.

CPED 6229. Current Issues in Elementary Education. 3 Credits.
Identification, definition, and analysis of some of the most important problems facing the contemporary American elementary school.

CPED 6236. Analysis of Teaching. 3 Credits.
Teaching viewed as a system; component aspects are examined with a view toward developing a critical method of analysis. Material fee.

CPED 6239. Practicum in Curriculum and Instruction. 3-6 Credits.
Supervised field experience in curriculum and instruction. Admission by permission of instructor.

CPED 6289. New Literacies Coach and Reading Specialist. 3 Credits.
Contemporary issues and conditions influencing literacy/reading leadership roles and the expanded roles of the new literacy reading coach and reading specialist. Topics include designing and evaluating interdisciplinary literacy education environments. Students work with educators on instructional and professional development activities to meet the literacy education needs of children. Prerequisites: CPED 6224 and departmental approval.

CPED 6292. Practicum 2: Leadership in Interdisciplinary Literacies. 3-6 Credits.
Drawing on prior program experiences in leadership and interdisciplinary literacies, students develop and refine effective interdisciplinary literacy education leadership qualities and skills, facilitate change in school communities, and foster teacher growth and student achievement. Students demonstrate lessons and provide assistance with lesson planning to teachers in, across, and between subject area disciplines and conduct professional development workshops in school settings. Prerequisite: CPED 6289.

CPED 6305. Foundations of Curriculum Theory. 3 Credits.
Examination of the educational ideas of individuals and groups that have influenced American and international curriculum development and practice during the 20th and 21st centuries. Comparisons of the issues, models, and principles that have guided curricular thought, development, and innovation.

CPED 6340. Teacher Leadership in Education. 3 Credits.
From the perspectives of educational theory and practice, the ideals and realities of contemporary public school teaching are viewed within a system of local, state, and federal organizations, with the goal of enhancing the role of teachers as knowledgeable and effective leaders in their profession. Material fee.

CPED 6353. Post-Master's Internship in Curriculum and Instruction. 3-6 Credits.
Supervised professional internship in curriculum, instruction, teaching, research, or policymaking. Internships are individually arranged. (Same as SPED 8353).

CPED 6365. Perspectives and Research in Teaching Computer Science. 3 Credits.

CPED 6366. Perspectives and Research in Teaching English. 3 Credits.
Prerequisite: the appropriate subject content course from CPED 6545 through CPED 6550.

CPED 6367. Perspectives and Research in Teaching Science. 3 Credits.
Significant trends, findings, and perspectives in science education in the United States from the early 19th century to the present.

CPED 6368. Perspectives and Research in Teaching Social Studies. 3 Credits.
Deepens students' understanding of the social studies curriculum through analysis of current research, theory, and practice, and application of this knowledge to instructional planning.

CPED 6370. Perspectives and Research in Teaching Mathematics. 3 Credits.
Survey of the history of mathematics, mathematics education research, instructional design, and the teaching of science, technology, engineering, and mathematics (STEM) curriculum standards. The impact of history in the field and research on teaching.

CPED 6410. Reading Children's Literature across the Curriculum. 2,3 Credits.
Participants read and analyze multicultural children's literature (from folktale to nonfiction) while simultaneously practicing discussion, dramatization, art, and writing response strategies suitable for involving all students and integrating literature across the school curriculum.

CPED 6411. Elementary School Curriculum and Methods. 3 Credits.
A comprehensive block course with subsections in mathematics, science, language arts, and social studies. Integrated with CPED 6635. May be repeated for up to 15 credits; with permission, up to four blocks (to a total of 12 credits) may be taken in one semester. Admission by permission of advisor. Material fee.

CPED 6412. Elementary School Curriculum and Methods. 2 Credits.
A comprehensive block course with sections in mathematics, science, language arts, and social studies. Integrated with CPED 6635. Pre-service teachers taking the four sections learn to be successful teachers of elementary methods in all content areas, including how to incorporate content and pedagogy into practice at their internships. May be repeated for up to 8 credits; with permission, up to four blocks (to a total of 8 credits) may be taken in one semester. Restricted to Admission by permission of advisor.

CPED 6507. Instructional Models and Classroom Management. 3 Credits.
The interconnections between effective instruction and positive classroom management. Through planning, implementing, and evaluating learning activities that apply research-based practices, students link instructional and management strategies to specific content and thinking goals. Microteaching lab. Material fee.

CPED 6530. Assessment in the Secondary Classroom. 3 Credits.
Key concepts and principles in the field of educational assessment, with emphasis on practical applications for classroom teachers. Students design and evaluate a range of assessment tools in their content areas.

CPED 6532. Professional Internship in Middle School Education. 3-6 Credits.
Supervised internship in middle schools; required seminar. Admission by permission of instructor. Material fee.

CPED 6534. Professional Internship in Secondary Education. 3-6 Credits.
Supervised internship; required seminar. Admission by permission of instructor. Material fee.

CPED 6544. Educational Technology and Computer Literacy Methods. 3 Credits.
Computers and related technologies in educational settings. Using national technology standards for teachers as a framework, the course combines discussion of key issues related to technology in education, demonstration of technology-related instructional methods, and hands-on computer use and materials development. Material fee.

CPED 6545. Teaching Computer Science in Secondary Schools. 3 Credits.
Theoretical, curricular, and practical considerations. Thirty hours of field experience in a secondary classroom is required. Material fee.

CPED 6546. Teaching English in Secondary Schools. 3 Credits.
Offers theoretical, curricular, and practical considerations for teaching the content area concerned. Requires a 30-hour field experience in a secondary classroom. Prerequisite: CPED 6606 and CPED 6507 and the approved certification course work in the content area. Material fee.

CPED 6547. Teaching Science in Secondary Schools. 3 Credits.
Offers theoretical, curricular, and practical considerations for teaching the content area concerned. Requires a 30-hour field experience in a secondary classroom. Prerequisite: CPED 6606 and CPED 6507 and the approved certification course work in the content area. Material fee.

CPED 6548. Teaching Social Studies in Secondary Schools. 3 Credits.
Theoretical, curricular, and practical considerations. 30-hour field experience in a secondary classroom is required. Material fee. Prerequisites: CPED 6606, CPED 6507.

CPED 6549. Teaching Art in Secondary Schools. 3 Credits.
Theoretical, curricular, and practical considerations. Material fee.

CPED 6550. Teaching Mathematics in Secondary Schools. 3 Credits.
Introductory course in mathematics teaching that derives its goals from pedagogy standards for secondary mathematics developed in collaboration with the National Council of Teachers of Mathematics (NCTM). Focus on developing and understanding middle and high school curriculum standards. Material fee.

CPED 6551. Second Language Instructional Methods. 3 Credits.
Knowledge and skills related to the instruction and assessment of language students in ESL/FL and FL settings. Past second language teaching methods, contemporary instructional approaches and materials, and other considerations in developing academic and social language proficiency. Materials fee. Prerequisites: CPED 6507 and CPED 6606 and the approved certification coursework in the content area.

CPED 6554. Issues, Study & Practices-ESL. 3 Credits.
A critical review of scholarship and research findings in English as a second language. Major policy issues and implications that relate to ESL practice.

CPED 6555. Educating Language Minorities. 3 Credits.
A study of federal, state, and local policies and issues affecting the education of linguistically diverse populations. Resources for use with specific linguistically diverse groups.

CPED 6556. Linguistic Applications in English as a Second Language. 3 Credits.
The science of language and how its different branches may be used for English as a Second Language (ESL) teacher training, classroom instruction, material development, evaluation, research, and policy development.

CPED 6557. Second Language Acquisition. 3 Credits.
The nature of first and second language acquisition and development; emphasis on sociolinguistics and psycholinguistics most pertinent to educational settings.

CPED 6604. Perspectives in American Education. 3 Credits.
Historical and social development of education in the United States; evolution of American education related to the growth of the nation and the changing social order; examination of selected issues in contemporary education.

CPED 6606. Theories of Learning and Development. 3 Credits.
A comprehensive investigation of the complex relationship between teaching and learning. How learning takes place, how it is motivated, and how it is influenced. Material fee.

CPED 6608. Development and Diversity. 3 Credits.
Student diversity in relation to theories of human growth and development. Diverse student strengths and needs; the special needs population; dynamics of inclusion; and intercultural issues related to the teaching/learning process. Material fee.

CPED 6623. Foundations of Reading Development. 2 Credits.
Basic theories and processes of reading acquisition and assessment; linguistic, cognitive, developmental, social, and affective bases of reading; influences of media, instructional strategies, including formal and informal assessment. Design and implementation of instruction in critical literacy.

CPED 6624. Foundations and Research of Literacy and Reading Education. 3 Credits.
Study of the scholarship on foundational and new literacy knowledge, concepts, and practices. Topics include models of literacy, theories and relations of multimodal and printed text reading (e.g., linguistic, psychological, and sociocultural), and the uses of these theories for the teaching and learning of literacies.

CPED 6626. Practicum 1: Reading Diagnosis, Assessment and Solutions. 3 Credits.
Candidates learn advanced diagnostic and assessment procedures to determine specific difficulties associated with printed-text reading, generate diagnostic profiles, and make instructional recommendations. Data are collected from children who struggle with printed texts; and, from those data, case studies are developed with implications for instruction.

CPED 6627. Teaching Second Language Reading and Writing. 3 Credits.
Literacy development for language learners; theories of literacy development in a second or foreign language, strengths and needs of language learners, reading and writing instructional strategies for language and content classrooms. Appropriate for students interested in teaching ESL, foreign languages, or content areas in elementary or secondary schools. Materials fee.

CPED 6628. Literacies in Informal Learning Environments. 3 Credits.
How culture, language, and out-of-school literacy experiences, particularly those in museums, influence attitude, learning, affective and interdisciplinary knowledge, and teaching practices. New literacy research, curriculum, and literature, and how social and cultural factors contribute to the literacies of everyday life.

CPED 6635. Professional Internship in Elementary Education. 3-6 Credits.
Supervised internship; required seminar. Admission by permission of instructor. Material fee.

CPED 6691. Interdisciplinary Adolescent Literacies. 3 Credits.
Theory and practice of interdisciplinary adolescent literacies studied in the context of the interactions between the domain-specific and strategic processes involved in teaching and learning from printed text and other media in science, literature, mathematics, social studies, and the arts.

CPED 6701. Arts in the STEM Curriculum. 3 Credits.
In-depth coverage of approaches to integrating arts and design into STEM curricula ("STEAM") for student learning; criteria and approaches for assessing student learning in arts-integrated STEM curricula; building a culture of craftsmanship; and collaborating with arts and design professionals.

CPED 6702. Integrating Engineering in the Math and Science Classroom. 3 Credits.
Approaches to integrating engineering and design into K-12 math and science classrooms. Students develop competencies by engaging in various forms of engineering and design, from small "design challenges" to more complex, semester-long engineering projects.

CPED 6703. Advanced STEM Teaching Methods. 3 Credits.
Advanced approaches for integrating science, technology, engineering, and mathematics into the K-12 classroom.

CPED 8100. Special Topics. 1-12 Credits.
Topics and fees announced in the Schedule of Classes.

CPED 8101. Research and Independent Study. 1-3 Credits.
Individual research under guidance of a faculty member. Program and conferences arranged with an instructor.

CPED 8199. Federal Educ Policy Institute. 3 Credits.

CPED 8309. Supervising Preservice Clinical Experience. 1-3 Credits.
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CPED 8325. Advanced Ideas in Curriculum Theory. 3 Credits.
Examination of reviews and research studies on curriculum theory. Focus on trends, values, interpretations, design systems, and evaluation. Prerequisite: CPED 6305.

CPED 8330. Paradigms of Instruction and Assessment. 3 Credits.
A foundation of theory, models, and variables that have contributed to the fields of instruction and assessment. The major paradigms of instruction and assessment. Material fee.

CPED 8331. Seminar in Instruction. 3 Credits.
Analysis of alternative models of instruction and the factors that influence the instructional process in schools. Connections among learning, instructional theory, research, and practice. Material fee.

CPED 8332. Search of the Literature in Curriculum and Instruction. 3 Credits.
Analysis of types of literature reviews in the field of curriculum and instruction and development of a literature review; the relationship of theory building to review of literature, and how research questions arise from extant theory and related literature. For doctoral students in curriculum and instruction, to precede CPED 8998. Material fee.

CPED 8333. School Reform through Professional Development. 3 Credits.
Fundamental perspectives of school reform through professional development of educators (K–12); evolution of contemporary professional development models and trends: examination of interactive modules using selected professional development activities. Material fee.

CPED 8334. Seminar in Research in Curriculum and Instruction I. 1-3 Credits.
Models of curriculum and instruction research that span various research methods.

CPED 8335. Seminar in Research in Curriculum and Instruction II. 1-3 Credits.
Development of initial research proposal ideas for the dissertation.

CPED 8340. Education Policy, Reform & Teacher Leadership. 3 Credits.
This online course will engage students in the study of education policies and reforms that specifically focus on teaching and teachers. Further, this course will examine teacher leadership as it impacts school reform through professional development initiatives that sustain change efforts. Four areas of study ground the focus of this course: education policy, change theories and school reform, teacher leadership, and professional development. Restricted to Doctoral level course; masters students by permission of instructor. Prerequisites: None.

CPED 8341. Evaluation in Curriculum & Instruction. 3 Credits.
This course will teach doctoral and masters' students about evaluating curriculum and instruction related programs, projects, or policies. This course provides students with the theoretical grounding and practical experiences they need to develop and implement evaluation research. Students in the course are required to: 1) read current literature that covers the breadth of theories and models applied in the field of evaluation, 2) participate in live online discussions and instructor presentations and, 3) design, implement and report on a targeted evaluation of a curriculum and instruction related program, project or policy. Restricted to doctoral students; masters students with approval of instructor.

CPED 8354. Doctoral Internship: Teacher Education. 3-6 Credits.
Supervised professional internship in college teaching, administration, supervision, research, policymaking, or private agency function. Admission by permission of advisor.

CPED 8998. Doctoral Seminar in Curriculum and Instruction. 3-6 Credits.
Review of literature; preparation of a dissertation proposal and a manuscript of publishable quality. Admission by permission of instructor and approval of major advisor. Material fee.

CPED 8999. Dissertation Research. 3-6 Credits.
Prerequisite: CPED 8998.

EDUCATIONAL LEADERSHIP

GRADUATE

Master's programs

- Master of Arts in Education and Human Development in the field of assessment, testing, and measurement in education (p. 520)
- Master of Arts in Education and Human Development in the field of education policy studies (p. 525)
- Master of Arts in Education and Human Development in the field of educational leadership and administration (p. 526)
- Master of Arts in Education and Human Development in the field of educational technology leadership (p. 526)
- Master of Arts in Education and Human Development in the field of experiential education and Jewish cultural arts (p. 528)
- Master of Arts in Education and Human Development in the field of higher education administration (p. 528)
- Master of Arts in Education and Human Development in the field of international education (p. 530)
- Master of Arts in Education and Human Development individualized program (p. 529)
- Master of Arts in Teaching in the field of museum education (p. 530)

Post-master's program

- Education Specialist (p. 517)

Doctoral programs

- Doctor of Education in the field of educational administration and policy studies (p. 542)
- Doctor of Education in the field of higher education administration (p. 544)

FACULTY

Professors M.J. Feuer, M. H. Futrell, N.B. Paley, I.C. Rotberg (*Research*), R. Whitaker

Associate Professors R.A. Chernak, J. Choi, M.D. Corry, S.A. Dannels, J.L. Glazer, J. Gomez (*Chair*), M. Kim, L. Lemasters, N.B. Milman, Y. Nakib, C.B. Stapp, S. Swayze, A.A. Tekleselassie, R.R. Watkins, J.H. Williams

Assistant Professors A.A. Ali, J.K. Clayton, A.J. Collins, W.R. Dardick, L.C. Engel, S.A. Harris *(Research),* L.C. Howard, R.C. Jakeman, D. Klasik, L. Malcom-Piqueux, M.A. Robinson, K.A. Sherrill, B.T. Streitweiser,R.A. Thessin, B.A. Weiss

Lecturers B. Bowers, L. Lent, J.A. Washburn

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EDUC 0920. Continuing Research - Masters. 1 Credit.

EDUC 0940. Cont Research: Doctoral. 1 Credit.

EDUC 2701. Museums as Cultural and Educational Resources. 3 Credits.
A general introduction to museums as institutions, sources of information, and places for enjoyment. Classes take place on campus and at museums in the metropolitan area. Admission by permission of instructor.

EDUC 3002. Special Workshops. 3 Credits.

EDUC 6100. Experimental Courses. 1-12 Credits.
Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

EDUC 6101. Research and Independent Study. 1-3 Credits.
Individual research under guidance of a staff member. Program and conferences arranged with a program advisor.

EDUC 6112. Foundations of Assessment, Testing, and Measurement in Education. 3 Credits.
Foundations of assessment, testing, and measurement with a focus on basic statistical concepts for assessment data literacy, research design issues for assessments, a review of other educational assessments (IQ and psychological, personality and diagnostic), and other issues with assessment and testing including technology, ethical, and legal issues.

EDUC 6114. Introduction to Quantitative Research. 3 Credits.
Development of a conceptual understanding of research design and quantitative analysis options for the consumer of research. Appropriate use of vocabulary and interpretation of research findings. Critique of research articles and/or development of a small-scale proposal.

EDUC 6116. Introduction to Educational Statistics. 3 Credits.
Fundamentals of descriptive statistics and hypothesis testing; introduction to inferential statistics and research design, distinguishing between nonexperimental, quasi-experimental, and true experimental designs. Designed for those with little preparation in quantitative methods or who are not prepared for Educ 8120.

EDUC 6232. Supervision and Evaluation of Instruction. 3 Credits.
The roles and functions of educational leaders in the areas of curriculum, staff development, instructional supervision, and evaluation of personnel. Theory and practice to increase teacher effectiveness and improve student learning through supervisory strategies.

EDUC 6234. Site-Based Leadership: K-12. 3 Credits.
A general introduction to the principalship. Stresses leadership theory, roles, and management tasks in instruction, curriculum, budget, staff development, supervision, interagency services, student learning, and policy considerations. Site-based management and communication within a changing and diverse school environment.

EDUC 6236. School Law and Policy. 3 Credits.
The legal basis of education and public schools in the United States. Constitutional provisions and federal statutes that guide school law. Legal factors that influence school policy. Consideration of practical school situations for legal implications, development of skills to research legal issues affecting schools, and preventive law measures.

EDUC 6240. Fundamentals of Educational Leadership and the Change Process. 3 Credits.
Current leadership theory and systems behavior in the context of administrative practice in educational settings. Key elements of leadership and management. The impact of context, culture, power, politics, change, communications, and organizational learning on administration.

EDUC 6242. Administrative Issues in Education. 3 Credits.
The impact of major social, political, economic, and education issues on the role of school leaders and the delivery and quality of programs and services.

EDUC 6244. School-Community Relations. 3 Credits.
The purpose, scope, essential elements, and impact of a successful school–community relations program. Community power structures, the roles of policy and leadership, communication techniques for interacting with various audiences and the media, evaluation of public relations and marketing for educational institutions.

EDUC 6246. Seminar: Applied Educational Administration. 3-6 Credits.
Application of the theories and principles of administration to public and private schools. Field experience in a phase of administration and supervision. Admission by permission of instructor.

EDUC 6252. Human Relations Diversity. 3 Credits.
Application of current theory and research findings in human relations to staff motivation, change, conflict management, and communication techniques for working with individuals and groups within organizations.

EDUC 6256. School Business Management. 3 Credits.
Management and control of the business functions of school districts. Assessing, planning, developing, and presenting educational budgets; the legal contexts affecting school business management. Risk management and school-site budgeting.

EDUC 6258. School Finance. 3 Credits.
The financing of public elementary and secondary education in the United States; current revenue sources, distribution decisions, and trends in the fiscal operations of schools. Litigation, finance policies, and equitable investments of public monies.

EDUC 6260. Practicum in Supervision. 3-6 Credits.
Practical experience in supervision of instruction. Admission by permission of instructor.

EDUC 6262. Internship in Supervision and Instructional Leadership. 3-6 Credits.
Service in a school situation directed by the University's faculty and school systems; integration of theory and practice.

EDUC 6264. Problems and Practices in Staff. 3 Credits.
Application of principles and practices concerned with change and evaluation of educational administration.

EDUC 6287. Internship: Administration. 3-6 Credits.
Service in an educational institution or education-related program directed by the University's faculty.

EDUC 6314. History of American Education Reform. 3 Credits.
An examination of how evolving social, economic, and political forces have propelled and opposed American education reform efforts throughout history.

EDUC 6368. Leadership and Education. 3 Credits.
A general introduction to issues of leadership applicable to education settings and to key features of educational organizations; leadership as a process and a set of skills and how its styles interact with organizational contexts.

EDUC 6371. Education Policy. 3 Credits.
An introduction to the development, implementation, and assessment of education policies at national, state, and local levels.

EDUC 6381. Program Evaluation: Theory and Practice. 3 Credits.
Introduction to the theory of social program evaluation, alternative evaluation models and methodologies, and the political and social contexts of evaluation.

EDUC 6388. Analysis of Education Policy Issues. 3 Credits.
Covers a range of education policy options, assessing their advantages and disadvantages based on evidence, and drawing implications for policy formulation. A critical approach is applied to the assigned readings, questioning the sources of evidence, appropriateness of analysis, and validity of the findings. Prerequisite: EDUC 6371, EDUC 6114, or permission of instructor.

EDUC 6392. Practicum in Educational Policy Program Evaluation. 3-6 Credits.
Supervised practical experience in field placements. Admission by permission of instructor. Prerequisite: EDUC 6381.

EDUC 6401. Applying Educational Media and Technology. 3 Credits.
Theory and practice of educational technology. Key characteristics of different media, principles of application, and issues concerning their appropriate use.

EDUC 6402. Computers in Education and Human Development. 3 Credits.
The research and practice surrounding the use of computers in educational and training settings. Students will acquire the practical knowledge necessary to the development and evaluation of computer-related curricula through projects and case studies.

EDUC 6403. Educational Hardware Systems. 3 Credits.
Design and implementation of educational hardware systems, including computers and computer networks.

EDUC 6404. Managing Computer Applications. 3 Credits.
For managers and prospective managers in education and human services who are concerned with the automation of their operations. Basic principles needed to design, implement, and manage an information system. Admission by permission of instructor.

EDUC 6405. Developing Multimedia Materials. 3 Credits.
The design, development, integration, and use of multimedia resources in education and training settings. Students examine and critique multimedia technologies, develop instructional materials, and create a unit or module that applies instructional design theory.

EDUC 6406. Instructional Design. 3 Credits.
Designing, implementing, and evaluating instructional strategies for learners. Assessing needs, writing objectives, selecting curriculum/content, selecting and implementing methods and techniques, selecting appropriate devices and evaluating instruction.

EDUC 6407. Design and Implementation of Educational Software. 3 Credits.
Theory and practice of creating educational software; psychological basis of using software in learning; instructional programs; authoring tools; artificial intelligence applications; interactive media. Students design and evaluate an educational program. Prerequisite: EDUC 6401 or permission of instructor.

EDUC 6421. Critical Issues in Distance Education. 3 Credits.
Historical, conceptual, theoretical, and practical issues associated with distance education as a foundation for research and practice in the domain of distance education as well as adult learning, educational systems design, and school administration and policy.

EDUC 6422. Instructional Needs Analysis. 3 Credits.
An introduction to the role of instructional needs analysis and assessment. The design and development of instruction. Key elements of the instructional design cycle, including data analysis.

EDUC 6423. Technology and Disabilities. 3 Credits.
Assistive technology as it impacts the lives of people with disabilities, including the performance of tasks related to employment, education, and activities of daily living.

EDUC 6424. Learning Technologies and Organizations. 3 Credits.
The role of learning technology in organizations, learning in the workplace, and knowledge management in corporations, schools, and universities.

EDUC 6425. Developing Effective Training with Technology. 3 Credits.
Development of skills in planning and producing effective technology-rich training that meets institutional and organizational needs.

EDUC 6426. Computer Interface Design for Learning. 3 Credits.
Human-computer interaction, both in general and with emphasis on issues in education. General design aspects; theories, principles, and guidelines related to human-computer interaction.

EDUC 6427. Advanced Instructional Design. 3 Credits.
Development of a prototype instructional design project and documentation report requiring rapid design and development strategies. Prerequisites: EDUC 6406.

EDUC 6428. Developing Digital Professional Portfolios. 3 Credits.
Students create a digital professional portfolio, using advanced skills in the design, development, integration, and use of multimedia resources.

EDUC 6441. Internship in Educational Technology Leadership. 3 Credits.
Students are assigned to a cooperating agency and work in consultation under the guidance of the course instructor. Admission by permission of instructor.

EDUC 6442. Educational Technology Leadership Master's Project. 1-6 Credits.
Students design, develop, implement, and evaluate an individual project. Admission by permission of instructor.

EDUC 6500. Intro Stu Aff & Higher Ed. 3 Credits.
Introduction to the study of higher education and the student affairs profession, including the ways in which broader aspects of higher education research, theory and policy inform the work of student affairs practitioners. Historical and current contexts of American higher education, the academic community, and existing issues and emerging challenges surrounding the practice of student affairs in the current higher education landscape.

EDUC 6510. Administration of Higher Education. 3 Credits.
Government, organization, and administration of colleges and universities; duties of trustees and administrators.

EDUC 6520. Foundations of College Student Development. 3 Credits.
College student development theories, practices, and problems, including historical overview and human development theories related to college students.

EDUC 6525. Managing College Student Services Programs. 3 Credits.
An overview of student affairs administrative practices, including planning models, budgeting, policy development, program development, facility management, and team building. Admission by permission of instructor.

EDUC 6530. Intercultural Campus Ldrshp. 3 Credits.
This course is designed to explore intercultural leadership skills through the lens of understanding group identity differences, multicultural competence, and the foundations of effective advocacy for social justice. Lectures, readings, class discussions, written assignments, and experiential activities are used to promote an understanding of intercultural leadership skills to help create inclusive learning environments. The course will explore how oppression and privilege relate to differences based on gender, race and ethnicity, sexual orientation, and (dis)ability. Students will also study how these identities intersect with each other.

EDUC 6540. Group and Organizational Theories. 3 Credits.
Review of major organizational theories inside and outside higher education, including systems, institutional, cultural, cognitive, environmental, ecological, as well as power and influence.

EDUC 6550. Assessment in Higher Ed. 3 Credits.
Key concepts in the assessment of outcomes in higher education and in student affairs. History of the assessment movement in higher education, strategies and methods for measuring outcomes of the college experience, identifying the limitations of operational processes that can be improved, and current issues in measuring student success in higher education.

EDUC 6555. Higher Education Policy. 3 Credits.
Assessment of policies that impact higher education, including the relationship of K–12 policy to higher education. Policy networks and mechanisms of policymaking. Policy development and assessment.

EDUC 6560. Legal Problems in Higher Education. 3 Credits.
Investigation of legal problems in higher education related to the legal structure of higher education, religious concerns, students, faculty, and academic programs.

EDUC 6565. Financing Higher Education. 3 Credits.
Analysis of private, state, federal, and other revenue sources; strategic planning, program budgets, and financial methods and practices.

EDUC 6570. Educational Planning. 3 Credits.
An examination of the planning movement in education: its historical development and the recent shift in premises, context, and expectations. Different approaches to the planning process; its role in research; and overview of main analytical techniques currently in use.

EDUC 6572. Dynamics of Change. 3 Credits.
An analysis of the process of change, particularly as it relates to educational policy. Comparison of theories; analytical tools; historical precedents; examples of federal education policies.

EDUC 6575. Personnel Administration. 3 Credits.
Human resource management: planning, recruitment, selection, placement and induction, staff development, rewards, and negotiations. Issues and legislation that influence personnel functions and policy; communication skills for human resource leadership.

EDUC 6579. Managing Multicultural Environments. 3 Credits.
Application of multicultural research in identifying key elements for managing diverse environments, communicating with families, planning professional development activities, and increasing student learning.

EDUC 6585. Master's Internship in Higher Education Administration. 3-6 Credits.
Supervised field experience in higher education settings. Admission by permission of instructor.

EDUC 6601. International and Comparative Education. 3 Credits.
Theoretical foundations of comparative and international education; systematic investigation of the structure and practices of selected representative school systems in different parts of the world. Emphasis on development of methodologies for comparative study.

EDUC 6602. Regional Studies in International Education. 3 Credits.
In-depth study of education in a selected region of the world. Structures and issues facing education systems in social, political, economic, cultural, and historical context. Prospects of education for human national development. May be repeated for credit provided the region differs.

EDUC 6610. Programs and Policies in International Education. 3 Credits.
Overview of policies and programmatic responses to issues in international education. Topics include education and development, international higher education and student services, and education and marginalized people. May be repeated for credit provided the topic differs.

EDUC 6615. Internationalizing U.S. Schools. 3 Credits.

EDUC 6620. Strategies and Analysis in International Education. 3 Credits.
Strategies for improving education in international contexts. Topics include education and development, international higher education and student services, or education and marginalized people. May be repeated for credit provided the topic differs.

EDUC 6630. International Experiences. 1-6 Credits.
Study and research in a foreign country as part of a group program. Admission may require permission of the instructor.

EDUC 6631. Internship: International Education. 1-6 Credits.
Service in an international education institution or related individually designed program planned to enable the student to connect theory to practice. Admission may require permission of instructor. May be repeated for credit.

EDUC 6640. Selected Topics in International Education. 3 Credits.
Current trends, themes, and issues in international education. May be repeated for credit provided the topic differs.

EDUC 6650. Education and National Development. 3 Credits.
In terms of the basic assumption that education contributes to national development, the course examines the role education plays in the process of national development in advanced industrial societies and societies moving to industrialism.

EDUC 6660. Capstone in International Education. 3 Credits.
Review of core topics in international education and completion of major supervised project or paper. Taken near the end of the master's program in lieu of the Comprehensive Examination.

EDUC 6701. Museums as Institutions I: Fundamentals. 3 Credits.
An overview of the museum as an environment for learning, considering the influence of institutional history and organizational structure on the museum's mission of serving the public.

EDUC 6702. Facilitating Museum Learning I: Fundamentals. 3 Credits.
Theory of and practice in the development of communication skills in the museum. Educational concepts; teaching strategies and techniques; institutional liaison and group process.

EDUC 6703. Museum Audiences. 3 Credits.
A survey of the museum's diverse audience, emphasizing implications for effective programming, with attention to audience research.

EDUC 6704. Facilitating Museum Learning II: Field Placement and Seminar. 3-6 Credits.
Sixteen-hours per week placement in local educational institutions supervised by GW faculty. On-campus seminar focuses on human development and learning theory.

EDUC 6705. Museums as Institutions II: Field Placement and Seminar. 6 Credits.
Thirty-two hours-per-week supervised placement in education departments in area museums; students carry out projects in cooperation with the site. On-campus seminar includes presentations by leading practitioners.

EDUC 6706. Evaluating Museum Learning. 3 Credits.
Evaluation and research methods appropriate to the museum setting. Review of research on museum audiences; designing exhibition and program evaluations.

EDUC 6707. Museum Proposal Writing. 3 Credits.
Preparation of proposals for museums seeking support from public and private funders. Proposals are developed in cooperation with local museums.

EDUC 6709. Interpretation in the Historic House Museum. 3 Credits.
Seminar integrating advanced practices of museum education with current scholarship in architectural history, material culture, and social history. Extensive use of Washington museum resources. Same as AMST 6709. Admission by permission of instructor.

EDUC 6710. Museums and Technology. 3 Credits.
Applications of technology that link the public with the museum: Internet exhibitions, interactive computer programs, video conferencing, the electronic classroom. Guest lectures, field trips, and group projects.

EDUC 6711. Museum as a Learning Environment. 3 Credits.
Exploration of why visitors frequent museums and how they create personal meaning. Approaches to support the audience's engagement with the museum's resources.

EDUC 6998. Thesis Research. 3 Credits.
Thesis research.

EDUC 6999. Thesis Research. 3 Credits.

EDUC 8100. Experimental Courses. 1-12 Credits.
Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

EDUC 8101. Research and Independent Study. 1-3 Credits.
Review of literature. Preparation of a dissertation proposal and a manuscript of publishable quality.

EDUC 8110. Advanced Study: Ideas, Issues, and Practices in Education. 3 Credits.
For precandidates for the Ed.D. Alternative means of responding to the complexities of the educational process. Topics vary but concern education as an individual process and as sociocultural preservation and renewal. May be repeated for credit.

EDUC 8120. Group Comparison Designs and Analyses. 3 Credits.
Designs and analyses to assess differences for more than two groups when compared on one dependent variable. Fixed, random, and mixed effects ANOVA and ANCOVA models within factoral design, multiple comparison tests, and introduction to regression analysis. Prerequisites: EDUC 6116.

EDUC 8122. Qualitative Research Methods. 3 Credits.
A general introduction to several major qualitative research traditions (e.g., biography, grounded theory, ethnography, phenomenology, and case study). Application of qualitative research design and procedures, including preliminary data collection, analysis, and writing.

EDUC 8130. Survey Research Methods. 3 Credits.
Techniques used to collect an array of information from a large number of people through structured interviews and mailed, e-mailed, or web-based questionnaires. Defining the research question and design; sampling, survey development, data collection procedures, pretesting, and data handling. Prerequisite: EDUC 8120, EDUC 8122.

EDUC 8131. Case Study Research Methods. 3 Credits.
Techniques used to examine one or a few complex cases, collecting data from several types of sources and by several methods. The course covers design, data collection, and data analysis/integration. Prerequisite: EDUC 8122.

EDUC 8140. Ethnographic Research Methods. 3 Credits.
Techniques used to examine systematically the contemporary daily life of a given group in its natural setting, focusing on culture—the recurring patterns of thought and social relations. Issues of research design and data collection and analysis. Prerequisite: EDUC 8122.

EDUC 8142. Phenomenological Research Methods. 3 Credits.
Techniques used to elicit and recognize perceptions, interpretations, motives, expectations, and imaginations. The framing of appropriate research questions, data collection and analysis, and the statement of conclusions. Prerequisite: EDUC 8122.

EDUC 8144. Discourse Analysis. 3 Credits.
Techniques used to examine verbal and nonverbal communication to understand identity, beliefs, intentions, relationships, and culture. The framing of appropriate research questions; data collection and analysis. Prerequisite: EDUC 8122.

EDUC 8170. Educational Measurement. 3 Credits.
Classical and modern measurement theory, item response theory, and factor analysis. Educational and psychological instrument development and validation. Interpretation of scale scores and assessment of instrument adequacy. Prerequisites: EDUC 8120. Recommended background: EDUC 6112 or equivalent.

EDUC 8171. Predictive Designs and Analyses. 3 Credits.
Techniques used to assess how independent variables are related to one dependent variable. Multiple linear regression, logistic regression, ordinal regression, and non-linear regression. Appropriate research questions, data interpretation, and design within generalized linear modeling. Prerequisites: EDUC 8120.

EDUC 8172. Multivariate Analysis. 3 Credits.
Techniques for assessment of relationships among multiple independent variables and dependent variables. Multivariate analysis of variance (MANOVA), multivariate analysis of covariance (MANCOVA), discriminant analysis, and exploratory factor analysis. Prerequisite: EDUC 8171.

EDUC 8173. Structural Equation Modeling. 3 Credits.
Multivariate techniques used for assessment of structural (causal) relations among latent (unobserved) variables with multiple observed indicators: observed and latent variable path analysis and confirmatory factor analysis. Latent means analysis and latent growth modeling. Prerequisite: EDUC 8171.

EDUC 8174. Hierarchical Linear Modeling. 3 Credits.
Techniques appropriate for analyses of hierarchically structured data. Theoretical concepts of hierarchical linear models (HLM); social and behavioral research; popular HLM software such as HLMwin; and large scale datasets. Prerequisites: EDUC 8171.

EDUC 8175. Item Response Theory. 3 Credits.
Conceptual, mathematical, and applied issues in item response theory. Dichotomous models, item response theory software used for estimation and model fit, test construction, differential item functioning, and item response theory equating. Prerequisites: EDUC 8170.

EDUC 8177. Assessment Engineering. 3 Credits.
In-depth coverage of topics related to assessment engineering, including cognitive model development using cognitive diagnostic assessment and formative assessment modeling, item model development using auto item generation, and automated test assembly and psychometric model development using computer adaptive testing. Introduction to current assessment engineering and educational big-data analytic applications. Prerequisites: EDUC 8170.

EDUC 8179. Capstone Project in Assessment,Testing, and Measurement in Education. 3,6 Credits.
Multifaceted assessment that serves as a culminating academic and intellectual experience for students during the end of their academic program. The capstone project is similar to a thesis or dissertation but may take a variety of forms. Restricted to Permission of instructor. Prerequisites: EDUC 8170.

EDUC 8276. Seminar: Administration and Supervision. 1-12 Credits.

EDUC 8277. Advanced Instructional Leadership for School Improvement. 3 Credits.
Introduction to the role of the instructional leader from school and district perspectives. Students gain theoretical and practical skills and knowledge in areas including instructional improvement; education reform; accountability; conditions for improvement; and planning and sustaining change.

EDUC 8280. Critical Review of Educational Leadership Literature. 1,3 Credit.
The techniques, tools, and presentation of critical reviews and syntheses of educational literature used to inform forthcoming research. Systematic mapping of what is known and deriving research questions, conceptual frameworks, and applicable methods. Prerequisite: an approved dissertation topic or permission of instructor.

EDUC 8320. The Politics of Education. 3 Credits.
Examination of the contextual factors (political, economic, and historical) and the nature of political decision making on education issues, primarily at the state and local level. Prerequisite: EDUC 6371.

EDUC 8321. Economics of Education. 3 Credits.
Application of economic theory and analysis to education problems and policies. Contemporary education reforms that are adopted to improve educational outcomes are analyzed with emphasis on their complexities. Prerequisites: EDUC 6371, EDUC 8120.

EDUC 8322. Education Policy Implementation. 3 Credits.
The evolution and implementation of education policies. Analysis of policy implementation at varying governance levels and types of educational systems. Policy is analyzed as a process and as it interacts with organizational, social, economic, and political factors. Prerequisites: EDUC 6371.

EDUC 8323. Policies of Education Equity. 3 Credits.
Analysis of the development, implementation, and evaluation of education equity policies, with consideration of their context, formulation, and application. Prerequisite: EDUC 6371.

EDUC 8325. Policy Design: Accountability in Education. 3 Credits.
Issues of policy design that underlie the push for greater accountability in education. Students review research articles and conceptual argument, discuss evidence on actual practice, and identify strengths and weaknesses of a range of policy tools. Prerequisite: EDUC 6371.

EDUC 8329. Seminar in Program Evaluation. 3 Credits.
Contemporary problems and issues in evaluation of social programs: design, implementation, analysis, and utilization. Prerequisite: EDUC 6381 and approval of instructor.

EDUC 8334. Doctoral Internship in Educational Policy. 3-6 Credits.
Methods of analysis used in the study of educational policy issues. Case studies on a range of policy issues and trends, including testing and accountability, school finance, school choice, and the federal role. Prerequisite: EDUC 6371, EDUC 6114, or permission of instructor.

EDUC 8340. Methods of Policy Analysis in Education. 3 Credits.
Methods of analysis used in the study of educational policy issues. Case studies on a range of policy issues and trends, including testing and accountability, school finance, school choice, and the federal role. Prerequisite: EDUC 6371, EDUC 6114, or permission of instructor.

EDUC 8345. Advanced Studies in Educational Policy Analysis. 1-12 Credits.
The process by which education policies are designed, adopted, and implemented by education systems. Case studies of specific policies, examining their assumptions and objectives, the criteria for assessing their effectiveness, and their governance at federal, state, and local levels. Prerequisite: EDUC 6371, EDUC 8120, or permission of instructor.

EDUC 8505. Seminar: Higher Education Administration. 1-12 Credits.

EDUC 8525. College and University Curriculum. 3 Credits.
Development, patterns, creative design, issues, problems, evaluation, and trends in the higher education curriculum.

EDUC 8530. Leadership in Higher Education. 3 Credits.
Cognitive leadership theory as articulated in higher education: what leadership is, how it works, how it is practiced, how it is considered by scholars and practitioners, and how it is researched.

EDUC 8540. History of Higher Ed. 3 Credits.
History, philosophy, scope, purpose, present status, programs, and trends in higher education in the United States.

EDUC 8560. Case Studies in Higher Education Administration. 3 Credits.
An analysis of case studies related to administrative functions in colleges and universities.

EDUC 8565. College and University Governance. 3 Credits.
Organizational and administrative structures, patterns, and relationships in higher education.

EDUC 8580. The Community/Junior College. 3 Credits.
The two-year college as it relates to secondary education, four-year colleges, and universities. Objectives, curricula, students, faculty, legal concerns, and special problems of two-year colleges.

EDUC 8582. Administration and Governance of Two-Year Colleges. 3 Credits.
A study of the community/junior college, focusing on administrative and governance patterns and national, regional, state, and local influences, as well as the theory and structure of two-year college organization.

EDUC 8585. Doctoral Internship in Higher Education Administration. 3-6 Credits.
Service in a higher education situation directed by the University and the cooperating institution to integrate theory and practice. Admission by permission of instructor.

EDUC 8594. Current Issues in Higher Education. 3 Credits.
Analysis of contemporary issues in higher education practice and scholarship.

EDUC 8998. Pre-Dissertation Seminar. 3-6 Credits.
Required of all departmental Ed.D. degree candidates. Approval of the dissertation research proposal by the dissertation committee is necessary for successful completion of the seminar. Admission by permission of instructor.

EDUC 8999. Dissertation Research. 3,6 Credits.
Prerequisite: EDUC 8998.

HUMAN AND ORGANIZATIONAL LEARNING

GRADUATE

Master's programs

- Master of Arts in Education and Human Development in the field of organizational leadership and learning (p. 531)
- Master of Arts in Education and Human Development individualized program (p. 529)

Doctoral program

- Doctor of Education in the field of human and organizational learning (p. 545)

FACULTY

Professors D. Burley, S. Khilji, M. Marquardt, D.R. Schwandt

Associate Professors A.J. Casey, N.E. Chalofsky (Chair), M. Cseh, E. Goldman, R.B. Morgan, E.M. Scully-Russ, J. Storberg-Walker

Assistant Professors S.L. Campbell *(Teaching)*

COURSES

Explanation of Course Numbers

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- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HOL 0920. Continuing Research - Master's. 1 Credit.

HOL 0940. Cont. Res. - Doctoral. 1 Credit.

HOL 6100. Special Workshop. 1-12 Credits.
Topics to be announced in the Schedule of Classes. May be repeated for credit.

HOL 6101. Research and Independent Study. 1-3 Credits.
Preparation of an in-depth project under the guidance of a faculty member. The course is arranged individually with the program advisor.

HOL 6700. Human Behavior and Learning in Organizations. 3 Credits.
How individuals and groups learn and interact within organizations and how organizations function and learn. Motivation, group dynamics, leadership, systems theory, organizational culture, and change.

HOL 6701. Adult Learning. 3 Credits.
Premises and theories used to meet learning needs of adults. Overview of various learning theories and the impact of various stages of adult development on learners. Topics including self-directed learning, accommodating individual learning needs, and creation of effective learning techniques. Same as HDEV 6701.

HOL 6702. Organizational Change I. 3 Credits.
The assessment of organizational conditions, including collection and interpretation of information, operations, and problems (human, structural, and systemic). Course participants collect and analyze data to provide solutions to enhance organizational effectiveness.

HOL 6703. Organizational Change II. 3 Credits.
Introduction to the concepts, methods, and skills required for effective consultation in organizations, as either an internal or an external consultant. Meeting the human needs in organizations, while improving performance and productivity. Students undertake a consulting project in an organization.

HOL 6704. Leadership in Organizations. 3 Credits.
Developments in theory and research centered on organizational leadership. Emphasis on various types of leadership including transformational, responsible, authentic, and ethical.

HOL 6705. Strategic Change. 3 Credits.
Overview of best practices for organizing and managing people and organizations to compete successfully. Leading an organization through a process of self-examination, redesign, and change that results in sustained effectiveness, learning, and high performance.

HOL 6706. Current Issues in Organizational Leadership. 3 Credits.
Current issues and future trends in organizational leadership. Students gather data and analyze key topics associated with areas such as talent management, leading through demographic shifts, leadership in a globalized world, leading global change, and developing new forms of leadership, ethics, and sustainability.

HOL 6707. Organizational Learning. 3 Credits.
Learning in an organizational context. Processes through which the organization as a system learns, unlearns, changes, and disseminates information. Organizational learning theories address the processes and barriers of gathering, using, developing, and retaining knowledge in organizations.

HOL 6708. Global Leadership. 3 Credits.
The changes taking place in organizations due to the process of globalization and the requirements for leadership. The changing global environment, how those changes influence operational and strategic issues within global organizations, and how a leader can better understand the global environment to help organizations meet these new challenges.

HOL 6709. Leadership Development. 3 Credits.
The processes employed to develop leaders/leadership and how individuals change as a result of the process. Examination of the context within which leadership is developed. Prerequisites: HOL 6704.

HOL 6710. Globalization, Change, and Learning. 3 Credits.
With learning as the coping strategy, focus on how policymakers and global leaders can be helped to take advantage of the opportunities and address the challenges that globalization presents.

HOL 6720. Advanced Strategies for Adult Learning. 3 Credits.
Theoretical and practical strategies of adult learning in various settings, including corporate environments. Learning strategies, such as creative thinking and self-directed learning. Critical adult learning issues.

HOL 6721. Assessing the Impact of Organizational Change. 3 Credits.
Knowledge and skills needed to evaluate the impact and return on investment of change efforts. Focus on how to plan and conduct systematic evaluations of change efforts, including the choice, development, and use of various tools for measuring individual, group, and organizational change. Assessing the success of the planned change.

HOL 6724. Increasing the Capacity to Learn. 3 Credits.
Identification of actions that can help increase the capacity to learn. Emphasis on experimental learning and critical reflection.

HOL 6725. Internship in Human Resource Development. 3-6 Credits.
Supervised experience in selected areas of human resource development and adult education. Admission by permission of the program advisor.

HOL 6742. Design of Adult Learning Interventions. 3 Credits.
Designing and implementing adult learning programs. Topics include instructional design techniques, designing effective programs, program planning and marketing techniques, and conducting needs assessments and evaluations of adult learning programs.

HOL 6743. Action Learning. 3 Credits.
Processes, principles, and skills necessary to participate in and lead both single- and multiple-problem action learning sets. The six dimensions of action learning; educational psychological, political, sociological, and management theories underlying action learning.

HOL 6744. Meaningful Workplaces. 3 Credits.
Characteristics of the humane organization and of meaningful work. Intrinsic motivation, work–life balance, and the workplace community.

HOL 6745. Technology and Human Resource Development. 3 Credits.
How technology can best be utilized in the HRD environment. Discussion of CBT, use of the Internet for instruction, and distance learning techniques.

HOL 6746. Work Groups and Teams in Organizations. 3 Credits.
Exploration of the nature of work groups and teams as they are utilized in organizational settings. Group and team dynamics, facilitating and leading skills, and group roles and culture.

HOL 6747. International and Multicultural Issues in Organizations. 3 Credits.
The impact of culture and globalization on U.S. and international human and organizational learning programs and practices. Adult learning and organizational change approaches that develop and utilize the synergy of a global workforce.

HOL 6998. Thesis Research. 3 Credits.
Thesis research.

HOL 6999. Thesis Research. 3 Credits.
Thesis research.

HOL 8100. Special Topics in Human and Organizational Learning - Doctoral Studies. 3 Credits.
Topics to be announced in the Schedule of Classes. May be repeated for credit.

HOL 8101. Research and Independent Study. 1-3 Credits.

HOL 8700. Foundations of Human and Organizational Learning. 3 Credits.
The study of individuals and their interactions within an organizational context. Overview of key theories in leadership, systems theory, group dynamics, learning, organizational culture, and motivational theory. The use of research in human and organizational learning.

HOL 8701. Theory, Research, and Practice in Adult Learning and Development. 3 Credits.
Learning theories as applied to adults in individual and group learning transactions; effect of age on learning; psychological, physical, and social environments in adult education situations.

HOL 8702. Theory and Design of Organizational Diagnosis and Development. 3 Credits.
Focus on various paradigms through which organizations and their functions may be viewed; a variety of analytical models of organizations; techniques for assessing systems; application of analysis techniques.

HOL 8703. Human Systems Change. 3 Credits.
The classical and contemporary ideas related to social systems change; the relation of these ideas to current issues in organizations.

HOL 8704. Leadership Theory, Research, and Practice. 3 Credits.
Leadership in organizations with a focus on transformational leadership. Historical review of leadership theory and research; current developments in understanding leadership. Students examine their own leadership style and plan for continued development as a leader.

HOL 8705. Organizational Culture. 3 Credits.
Theory and research on organizational culture, from the multidisciplinary seminal works in anthropology, psychology, sociology, and management to current day theorizing and empirical research on culture. The rituals, values, and behaviors that differentiate cultural groups and the way cultural identities manifest themselves in organizational practices; and how organizational culture evolves and its relationship to other organizational phenomena such as innovation, strategy, sensemaking, and performance. Current trends in organizational culture theorizing.

HOL 8706. Interdisciplinary Readings in Human and Organizational Learning. 3 Credits.
Seminal works from various disciplines related to current research and practice.

HOL 8707. Advanced Organizational Learning. 3 Credits.
The psychological and sociological paradigms associated with the learning of a collective whole.

HOL 8708. Introduction to Doctoral Research. 3 Credits.
An introduction to scholarly inquiry for doctoral students. The role of the scholar-practitioner; types of scholarly inquiry and their components; diverse paradigms used to frame scholarly inquiry; and critical thinking skills for evaluating research in human and organizational learning.

HOL 8720. Seminar: Applied Research in Human and Organizational Learning. 3 Credits.
Identification of initial constructs and theories that support the identified research interest, with a problem statement and critical analysis of research reports and review of research literature.

HOL 8721. Practicum in Human and Organizational Learning. 3-6 Credits.

HOL 8722. Seminar: Advanced Issues in Human and Organizational Learning. 1-12 Credits.
Forum in which candidates critically examine relevant classic and contemporary literature, with analysis and synthesis to defend their research questions and conceptual frameworks.

HOL 8723. Organizations and Strategy in Human Resource Systems. 3 Credits.
Overview of paradigms, theories, models, and constructs of organizations and strategy to understand organizations and their environments.

HOL 8724. Creating and Planning Doctoral Research. 3 Credits.
This course helps to ensure that your research is translational, i.e that it leads to practical applications that enhance the wellbeing and productivity of humans and organizations. It helps you ensure that all of the components of your research study are aligned, e.g., your chosen paradigm and related theories and constructs, research question(s), and design elements such as data collection and analysis techniques. Finally, it will help you ensure that you complete your dissertation. You will develop a project plan that specifies your goals, deliverables, schedule and budget. In sum, this course makes certain that your research is applicable, properly designed, and well planned. Prerequisite: none. Recommended background: Students learn to develop an evidence-based problem statement, design a conceptual framework, craft a research question, and conduct a literature review. Fundamental principles of both qualitative and quantitative research and various research strategies and designs.

HOL 8741. Managerial and Organizational Cognition. 3 Credits.
The emerging field of collective cognition in organizations, including theoretical foundations and seminal and current literature on knowledge structures and their role in strategy formation, organizational change, and sensemaking.

HOL 8742. Work, Identity, and Adult Development. 3 Credits.
The influence of work on identity, intellectual and personality development, and other developmental attributes. Same as CNSL 8253/HDEV 8253.

HOL 8746. Work Groups and Teams in Organizations. 3 Credits.
Theoretical understanding and practical considerations of working with groups and teams. Group dynamics, facilitating and leading groups, and member roles. Group facilitation techniques across different group settings and environments.

HOL 8997. Preparation and Delivery of Doctoral Research. 3 Credits.
Students develop and present a mock dissertation proposal, receiving feedback from faculty and colleagues in order to refine their proposal. Prerequisites: none. Recommended background: Students are expected to have developed a literature review, conceptual framework, and research question for their dissertation research prior to enrolling in this class.

HOL 8998. Predissertation Seminar. 3-6 Credits.
Platform for further development of the dissertation proposal.

HOL 8999. Dissertation Research. 3,6 Credits.
Prerequisite: HOL 8998.

SPECIAL EDUCATION AND DISABILITY STUDIES

GRADUATE

Master's programs

- Master of Arts in Education and Human Development in the field of early childhood special education (p. 524)
- Master of Arts in Education and Human Development in the field of secondary special education and transition services (p. 535)
- Master of Arts in Education and Human Development in the field of special education for children with emotional and behavioral disabilities (p. 537)
- Master of Arts in Education and Human Development in the field of special education for culturally and linguistically diverse learners (p. 538)
- Master of Arts in Education and Human Development individualized program (p. 529)

Doctoral program

- Doctor of Education in the field of special education (p. 547)

FACULTY

Professors M.S. Castleberry, M.B. Freund, C.A. Kochhar-Bryant, J.M. Taymans

Associate Professor E.K. Rice (*Chair*)

Assistant Professors J.R. Frey, K. Ihrig, P. Peng, E. Tuckwiller

COURSES

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SPED 0920. Continuing Research - Masters. 1 Credit.

SPED 0940. Cont Research - Doctoral. 1 Credit.

SPED 6100. Selected Topics. 1-12 Credits.
Topics and fees announced in the Schedule of Classes.

SPED 6101. Research and Independent Study. 1-3 Credits.
Individual study or research under guidance of staff member. Admission by permission of advisor. May be repeated for credit.

SPED 6201. Introduction to Special Education. 3 Credits.
Survey course to acquaint prospective teachers with special education and to help them become aware of the various educational modifications necessary to accommodate children with special needs in a school program.

SPED 6210. Universal Design for Learning and Assessment. 3 Credits.
Overview and introduction to universal design for learning, including contemporary issues, applications of digital and assistive technologies, and tools for developing a comprehensive plan for implementation. Same as CPED 6110.

SPED 6221. Accessing Community Systems for Individuals with Disabilities. 3 Credits.
Overview of access to community systems and service delivery for individuals with special needs and their families. Material fee.

SPED 6222. Legal Issues and Public Policy for Individuals With Disabilities. 3 Credits.
Examination, interpretation, and analysis of legislation and policies affecting the education and career development of individuals with disabilities. Emphasis on federal legislation in the context of national policy reform in disability services. Material fee.

SPED 6223. Introduction to Brain Injury: Programs, Policies, and Resources. 3 Credits.
An overview of acquired brain injury and its effects; current trends in the field, related policy, research, and development of new resources.

SPED 6224. Brain Function and Impact of Brain Injury on Learning and Education. 3 Credits.
Provides an in-depth understanding of neuroanatomy related to the impact of brain injury on child and adolescent development and learning to prepare educators to participate in educational assessment and planning.

SPED 6227. Technology in Vocational Evaluation. 3 Credits.
Introduction to an array of assistive technology services and products facilitating professional interventions and vocational evaluation procedures; application to the assessment of persons with disabilities. Material fee.

SPED 6228. Community-Based Assessment and Work Sample Development. 3 Credits.
Introduction to community-based vocational appraisal methods; development of job training analysis skills, labor market surveys, work samples; requirements of The Americans with Disabilities Act; incorporation of assistive technology; classroom theory and field work. Material fee.

SPED 6229. Interpretation and Application of Academic and Vocational Assessment Information. 3 Credits.
Specific strategies and techniques to analyze, interpret, and synthesize assessment information for the development of comprehensive academic/vocational profiles for adolescents and adults with disabilities. Observation and recording procedures, report development, and postassessment conferencing are emphasized. Material fee.

SPED 6230. Vocational Assessment of Individuals with Disabilities. 3-6 Credits.
Investigation of vocational appraisal processes and techniques for individuals with disabilities. Includes assessment for transition using field-based assignments. Three credits of practicum experience for students specializing in vocational evaluation. Material fee. Same as CNSL 6130.

SPED 6231. Instructional Methods in Secondary Special Education and Transition. 3 Credits.
Techniques and processes used in programming for the needs of individuals with disabilities as they prepare for transition to postsecondary programs and employment. Emphasis on skills related to professional liaison and support roles in the design of instructional arrangements and cooperative training. Material fee.

SPED 6232. Foundations in Special Education, Career Development, and Transition. 3 Credits.
Overview of historical, theoretical, and philosophical foundations of career development and transition. Explores directions for career development/transition practices in the context of educational reform and social and political change. Material fee.

SPED 6233. Curriculum in Special Education. 3 Credits.
Theory and practice in planning, implementing, and evaluating curriculum for individuals with disabilities. Emphasis on techniques for modifying curriculum and materials for individualized programming. Requires field-site curriculum implementation. Materials fee.

SPED 6234. Seminar in Advanced Writing and Professional Presentation. 3-6 Credits.
Analysis and development of advanced professional writing skills, including literature synthesis, persuasive writing, and proposal writing. Material fee.

SPED 6235. Employment Models for Individuals with Disabilities. 3 Credits.
Rationale, occupational resources, and programming strategies for job placement and the development and coordination of employment programs for individuals with disabilities. Material fee.

SPED 6236. Introduction to Career and Career–Technical Education and Transition Services. 3-6 Credits.
Introduction to programs and services that provide career development and transition planning for individuals with disabilities. Material fee.

SPED 6237. Learning Strategies, Assessment, and Instruction for Individuals with Learning Disabilities. 3-6 Credits.
Theory and practice in evidence-based reading interventions. Learning strategies; content enhancement focused on literacy and self-determination. Material fee.

SPED 6238. Issues in Educating Individuals with Learning, Emotional, and Intellectual Disabilities. 3 Credits.
Introduction to the academic, cognitive, social, and emotional characteristics of individuals with learning disabilities; etiological theories; educational service delivery models, with particular emphasis on the adolescent with learning disabilities. Policy issues, continuum of services, and the transition from school to post-school environments. Material fee.

SPED 6239. Collaboration for Professionals Working with Students with Disabilities. 3 Credits.
Exploration of attitudes and beliefs about team teaching, collaboration and inclusionary environments. Development of knowledge and skills related to collaborative consultation and team teaching; interpersonal communication; the dynamics of collaborative teams; examination of the variety of environments in which special educators work. Material fee.

SPED 6240. Family Support and Guidance in Special Education. 3 Credits.
The developmental process of parenting and how that process is affected by having a child with developmental delay or disability. Family systems theory, stress and coping mechanisms, and communication and support strategies. Material fee.

SPED 6242. Neurodevelopmental Assessment and Programming for Infants and Toddlers with Disabilities. 3 Credits.
Application of the neurodevelopmental model to techniques for developing and implementing educational programs for infants and toddlers with disabilities. Prerequisite or concurrent registration: SPED 6263 or SPED 6268 or permission of instructor. Material fee.

SPED 6243. Developmental Assessment of Infants. 3 Credits.
Theory and current practice in the assessment of infants with or at risk for developmental disabilities. Material fee.

SPED 6244. Ethical Considerations in Neonatal and Infant Intervention. 3 Credits.
Overview of the major ethical issues involved in neonatal and infant intervention. The impact of recent and emerging technological innovations considered from medical, legal, ethical, and psychosocial perspectives. Material fee.

SPED 6245. Developmental Implications of Prematurity and Risk. 3 Credits.
Causes of prematurity. Conditions that place children at developmental and educational risk.

SPED 6253. Introduction to Autism Spectrum Disorders. 3 Credits.
Overview of autism spectrum disorders with a focus on etiology, characteristics, and evidence-based practices. Topics include defining, assessing, accommodating, and instructing students with autism spectrum disorders.

SPED 6254. Autism Spectrum Disorders and Transition to Employment and Post-Secondary Life. 3 Credits.
The policies, principles, models, and processes involved in job development, job accommodations and modifications, and employment and post-secondary placement services for individuals with autism and related disabilities. Legislation is reviewed in terms of its impact on placement of persons with autism who will transition into the workplace and/or post-secondary education.

SPED 6255. Collaboration with Systems and Families. 3 Credits.
Overview of models and strategies for coordinating services across disciplines and among school and community agencies for special populations. Emphasis on interdisciplinary team coordination, communication, decision making, planning, and follow-up for individuals with disabilities. Material fee.

SPED 6260. Developmental Assessment in Special Education. 3 Credits.
Examination of formal psychoeducational tests used with preschool and elementary-school-aged children. Development of formal and informal assessment techniques. Introduction to the skills necessary to write psychoeducational reports. Material fee.

SPED 6261. Practicum: Methods and Materials for Young Children with Disabilities. 3,6 Credits.
Implementation of educational strategies and materials, including designing and developing teaching materials, classroom teaching, feedback and evaluation with professor. A seminar accompanies this clinical experience.

SPED 6262. Formal Assessment of Young Children with Disabilities. 3 Credits.
Weekly seminar designed to prepare early childhood special educators to translate formal assessment data into instructional programming. Requires fieldwork with children. Material fee. Prerequisite: SPED 6260 .

SPED 6263. Development of the Infant with Special Needs. 3 Credits.
The processes of normal infant development and interrelationships among areas of development; relationship of these processes to the growth and development of infants with or at risk for developmental disabilities. Material fee.

SPED 6264. Medical and Genetic Conditions of Infants and Children with Developmental Disabilities. 3 Credits.
Introduction to medical and genetic conditions that affect the cognitive, language, and social development of infants and children with developmental disabilities.

SPED 6266. The Development of Language and Literacy. 3 Credits.
Within the context of typical and atypical development, the impact of various disabilities on language and literacy development. Material fee.

SPED 6267. Instructional and Assistive Technology in Early Childhood Special Education. 2,3 Credits.
Instructional strategies and assistive technology and their implications and uses for young children (0–5 yrs) in a wide variety of environments. Lectures, laboratory, and demonstrations. Material fee.

SPED 6268. Development of Children and Youth with Disabilities. 3 Credits.
Theories of human growth and development are considered as a framework for examination of typical and atypical development of children and youth. Material fee.

SPED 6269. Etiology, Symptomatology, and Approaches to Intervention with Children with Disabilities. 3 Credits.
An in-depth examination of the causes and characteristics of various disabilities. Current principles and approaches to intervention are examined. Material fee.

SPED 6272. Strategies for Inclusion: Addressing the Needs of Diverse Learners. 3 Credits.
Strategies by which teachers can more effectively assume the responsibility to serve all children in an inclusionary setting, including those who are second language learners and students with disabilities. Same as CPED 6172. Material fee.

SPED 6273. Impact of Culture on Education. 3 Credits.
The impact of culture and ethnicity on educational experiences. The relationship between school culture in the United States, one's own culture(s), and the cultures of diverse populations existing within our schools. Values, norms, rules, ethics, beliefs, attitudes, expectations, and assumptions of various cultures. Material fee.

SPED 6274. In-Service Planning/Programmng. 3 Credits.

SPED 6275. The Culturally and Linguistically Diverse Student with Disabilities: Policy, Research, and Trends. 3 Credits.
Educational service delivery for the culturally and linguistically diverse student. National, state, and local policies; current research in bilingual education, special education, and bilingual special education. Same as CPED 6175. Material fee.

SPED 6276. Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student. 3 Credits.
Issues in academic and psychosocial assessment of second language learners. The impact of second language acquisition and culture on the assessment process; differentiation between language difference and disability; IEP development; the use of interpreters and translators; the involvement of family and communities; standardized and alternative assessments; and legislative mandates. Same as CPED 6176. Material fee.

SPED 6277. Teaching Culturally and Linguistically Diverse Students with Disabilities. 3 Credits.
Methods and materials for teaching students with disabilities who are English language learners. Classroom management, instructional and assessment strategies, materials and curricula, and collaborating with families and communities to meet the cultural, linguistic, academic, social, and emotional needs of students in various settings. Material fee.

SPED 6280. Developmental Assessment of Adolescents. 3 Credits.
Formal and informal psychoeducational assessment; assessment instruments commonly used with upper-elementary, junior, and senior high school students; the writing of psychoeducational reports. Material fee.

SPED 6283. The Urban Impact on Children and Youth with Disabilities. 3 Credits.
Effects of the total environment in which inner-city children live on their ability to learn and their cognitive, social–behavioral, and physical/health development. Material fee.

SPED 6288. Characteristics of Individuals with Learning, Emotional, and Intellectual Disabilities. 3 Credits.
An in-depth examination of typical and atypical growth and development, psychiatric diagnosis and psychosocial development issues, and general and specific characteristics of the student with serious emotional disabilities. May be repeated for credit. Material fee.

SPED 6290. Affective Development and Behavior Management in Special Education. 3 Credits.
Theory, programming, and behavior management strategies from theoretical and practical points of view. Material fee.

SPED 6299. Federal Education Policy Institute. 3 Credits.
The federal role in education policymaking in the context of national, state, and local efforts to create school environments for effective learning and the promotion of social and emotional health in children and youth. Same as CPED 6199.

SPED 6990. Internship in Teaching Children with Emotional and Behavioral Disabilities: Assistant Teacher. 3-6 Credits.
The federal role in education policymaking in the context of national, state, and local efforts to create school environments for effective learning and the promotion of social and emotional health in children and youth. Same as CPED 6199.

SPED 6991. Internship in Teaching Children with Emotional and Behavioral Disabilities: Co-Teacher. 3-6 Credits.
Continuation of SPED 6990. Graduate students become the primary teaching team in the classroom with ongoing supervision. Graduate students plan and apply psychoeducational teaching strategies with children with emotional and behavioral disabilities. Refinement of instructional and behavior management strategies. Weekly seminar continues. Material fee.

SPED 6992. Behavior Management Practicum: Adolescents with Disabilities. 3 Credits.
Field-based examination of theory of behavior development and techniques for classroom management. Material fee.

SPED 6993. Internship: Teaching Young Children with Disabilities. 3,6 Credits.
Supervised internship in early childhood special education. Weekly seminar. Material fee.

SPED 6994. Internship: Early Intervention. 3-6 Credits.
Supervised internship in early intervention. Weekly seminar. Material fee.

SPED 6995. School- and Community-Based Internship in Special Education and Transition. 1-9 Credits.
A 50- to 450-hour supervised internship in school- and community-based settings involved in career, vocational, and transition services.

SPED 6996. Teaching Internship in Transition Special Education. 3-6 Credits.
Supervised teaching internship; seminar required. Permission by instructor. Material fee.

SPED 6997. Internship in Teaching Culturally and Linguistically Diverse Students with Disabilities. 3-6 Credits.
Supervised internship and weekly seminar. A full-time, field-based teaching experience working with students with disabilities who are English language learners. Writing an appropriate IEP, interacting with families and communities, and planning and implementing instructional approaches and strategies. Material fee.

SPED 8100. Selected Topics. 1-12 Credits.
Topics and fees announced in the Schedule of Classes.

SPED 8101. Research and Independent Study. 1-3 Credits.
Individual research under guidance of a staff member. Program and conferences arranged with program advisor.

SPED 8301. Research Seminar in Special Education. 1-12 Credits.
Participation in a small group with a selected faculty member; research on and discussion of an area of common interest. Admission by permission of instructor.

SPED 8303. Administration and Supervision of Special Education. 3 Credits.
Philosophy and nature of special education; program organization, administration, and development. Surveying local needs; program evaluation and supervision. Admission by permission of instructor. Material fee.

SPED 8304. Research and Trends in Special Education. 3 Credits.
Emphasis on topical research issues, problems of conducting research, and research syntheses. Material fee.

SPED 8305. Foundations of Neuroscience in Special Education. 3 Credits.
Develops understanding of the neurological bases of sensation and perception, object recognition, control of motor action, learning and memory, emotion and language, attention, consciousness and cognitive control, and social cognition.

SPED 8306. Advanced Study in Development Science and Variance I: The Early Years. 3 Credits.
Consideration of cognitive neuroscience research on developmental issues of infancy and early years; assessment, identification, and related prevention and intervention. Prerequisite: SPED 8305.

SPED 8308. Preparation for the Professoriate in Special Education. 3 Credits.
Philosophical, ethical, and methodological aspects of personnel preparation in university and field-based programs; opportunities for practice in pedagogical design and delivery. Material fee.

SPED 8310. Advanced Study in Development Science and Variance II: The Later Years. 3 Credits.
Consideration of cognitive neuroscience research on adolescent development, including executive functioning, self-regulation, atypicality in learning, social and emotional behavior, motivation, and attention. Prerequisite: SPED 8306.

SPED 8311. Proseminar in Special Education: The Interdisciplinary Foundations. 3 Credits.
A theoretical and research-based course that introduces students to strategies by which data from cognitive neuroscience research can be applied to conceptualizing research in special education. A doctoral student forum addresses interdisciplinary research knowledge. Prerequisite: SPED 8310.

SPED 8343. Psychoeducational Diagnosis in Special Education. 3 Credits.
The range of diagnostic and intervention strategies applicable to the student who presents psychosocial and related learning difficulties. Admission by permission of instructor. Material fee.

SPED 8345. Consultation and the Change Process. 3 Credits.
Consultation models from organizational development, organizational psychology, and mental health applied to professional practice in education and special education. Material fee.

SPED 8352. Disability and Public Policy. 3 Credits.
Overview of current legislation and public policy affecting education, employment, and civil rights of individuals with disabilities. The evolution of disability policies and their relationship to principles of social justice. Material fee.

SPED 8353. Post-Master's Internship in Special Education. 1-6 Credits.
Supervised professional internship in college teaching, administration, supervision, research, or policymaking. Internships are individually arranged. Admission by permission of instructor.

SPED 8354. Doctoral Internship: Special Education. 1-6 Credits.
Supervised professional internship in research college teaching, administration, policymaking, or private agency function. Admission by permission of advisor.

SPED 8360. Interdisciplinary Techniques in the Diagnostic Process in Special Education. 3 Credits.
Application of theoretical concepts of assessment; development of assessment programs; interpretation and application of interdisciplinary diagnostic evaluations. Prerequisite: SPED 6260, and permission of instructor. Material fee.

SPED 8998. Doctoral Seminar in Special Education. 3-6 Credits.
Review of literature in a topical area; preparation of a dissertation proposal and a manuscript of publishable quality. Admission by permission of instructor and approval of major advisor. Material fee.

SPED 8999. Dissertation Research. 3,6 Credits.
Prerequisite: SPED 8998.

SCHOOL OF ENGINEERING AND APPLIED SCIENCE

Dean D.S. Dolling
Associate Deans C.E. Korman, B. Narahari, R. Riffat

The School of Engineering and Applied Science (SEAS) was organized in 1884 as the Corcoran Scientific School of Columbian University, named in honor of William W. Corcoran, president of the University's Board of Trustees from 1869 to 1888. The School was among the first to accept women for degree candidacy in engineering. While the organization and offerings of the School have evolved over the years, throughout most of its history its programs have been characterized by an emphasis on principles guiding the advancement of technology.

The School offers the bachelor of arts, bachelor of science, master of engineering, master of science, doctor of engineering, doctor of philosophy, and the professional degrees of engineer and applied scientist through its six departments—Biomedical Engineering, Civil and Environmental Engineering, Computer Science, Electrical and Computer Engineering, Engineering Management and Systems Engineering, and Mechanical and Aerospace Engineering. In addition, the School offers several graduate certificate programs, as well as combined bachelor's/master's degree programs.

Research centers and institutes provide opportunities for students and faculty to strengthen ties with counterparts in government and industry and contribute to the development and harnessing of emerging technology. Extensive and varied laboratories and computing facilities support the academic programs. The School strongly supports co-curricular activities to broaden and deepen its students' overall educational programs, including an extensive array of internship opportunities at government laboratories and private companies in the Washington, D.C. area and elsewhere. Other co-curricular opportunities include engineering-type team competitions, research projects, and the SEAS student government organization, the Engineers' Council.

REGULATIONS

- **Undergraduate Programs (p. 585)**
  - University Regulations (p. 585)
  - Advising (p. 585)
  - Mathematics Placement (p. 585)
  - Makeup of Credit for Waived Courses (p. 585)
  - Scholarship Requirements (p. 585)
  - Technical GPA (p. 585)
  - Incompletes (p. 585)
  - Pass/No Pass Grading System (p. 585)
  - Academic Workload (p. 585)
  - Humanities and Social Science Requirement (p. 585)
  - Bachelor of Science Degree Programs (p. 586)
  - Bachelor of Arts Degree Programs (p. 586)
  - Special Programs (p. 586)
  - Double Major (p. 586)
  - Minors (p. 586)
- **Graduate Programs (p. 586)**
  - Degree Programs (p. 586)
  - Transfer of Credit (p. 587)
  - English Language Requirements for International Students (p. 587)
  - Grades (p. 587)
  - Incompletes (p. 587)
  - Credit/No Credit Grading System (p. 587)
  - Educational Planner (p. 587)
  - Residence and Continuous Enrollment (p. 588)
  - Examination Preparation (p. 588)
  - Master of Science (p. 588)
    - Entrance Requirements (p. 588)
    - Special Programs (p. 588)
    - Graduation and Scholarship Requirements (p. 588)
    - Time Limits (p. 588)
    - Master's Thesis (p. 589)
  - Master of Engineering (M.Eng) (p. 589)
    - Entrance Requirements (p. 589)
    - Graduation and Scholarship Requirements (p. 589)
    - Time Limits (p. 589)
- **Graduate Certificates (p. 590)**
  - Entrance Requirements (p. 590)
  - Graduation and Scholarship Requirements (p. 590)
- **Professional Degrees (p. 590)**
  - Entrance Requirements (p. 590)
  - Graduation and Scholarship Requirements (p. 590)
  - Time Limits (p. 590)
- **Doctoral Programs (p. 591)**
  - Doctor of Philosophy (p. 591)
    - Entrance Requirements (p. 591)
    - Graduation and Scholarship Requirements (p. 591)
    - Time Limits (p. 591)
    - Preliminary and Qualifying Examinations (p. 591)
    - The Dissertation and Final Examination (p. 592)
  - Doctor of Engineering (p. 592)
  - Doctor of Engineering in Engineering Management (p. 593)
    - Transfer Between Degree Programs (p. 593)

Undergraduate Programs

University Regulations

All SEAS students are required to review the University Regulations (http://bulletin.gwu.edu/university-regulations) as outlined in the Bulletin, as they are responsible for understanding and adhering to this document.

Advising

SEAS practices a hybrid advising system. Every entering undergraduate student is assigned a professional advisor to assist with the transition to the University. Faculty advisors are assigned at the end of the first year to counsel students on their programs of study, achievement and maintenance of satisfactory scholastic performance, professional development, and extracurricular activity as part of the educational process. Until all work required for the degree is completed, students must consult with their faculty advisors in all academic matters, including obtaining the advisor's approval of their program of study prior to registration for each academic semester and summer session. In addition, a student must consult their faculty advisor before they register for a course at another institution. The faculty advisor represents the student in all cases requiring faculty action. However, the faculty advisor may not deny entry into any course or activity to which the student is entitled under the regulations of the School. Students may consult other members of the faculty on an informal basis.

Mathematics Placement

All incoming first-year students are required to take a math proficiency examination, administered through the mathematics department, which places students in either MATH 1220 or MATH 1231. Visit the math placement exam webpage (https://math.columbian.gwu.edu/gw-mathematics-placement-test) for more information.

Makeup of Credit for Waived Courses

Waiver of a required course requires approval of the student's faculty advisor and department chair. If a course required by the SEAS curriculum is waived, the corresponding credits must be earned by satisfactory completion of a university-level academic course, either technical or nontechnical, approved by the student's faculty advisor. The grade earned will be used in determining the SEAS GPA only if the substituted course would normally be considered part of the student's curriculum.

Scholarship Requirements

To be eligible for graduation a student in SEAS must have:

- A minimum overall GPA of 2.0.
- A minimum overall GPA of 2.0 in their SEAS program.
- A minimum GPA of 2.2 for technical courses*
- Completed all degree and University General Education requirements.

*See section on Technical GPA for more information about technical courses.

Technical GPA

For applied science and technology, biomedical engineering, civil engineering, computer engineering, electrical engineering, mechanical engineering, and systems engineering majors, all technical courses taken during the fifth through eighth semesters as outlined by the 4-year curriculum sheet respective to each major and approved by the student's faculty advisor are counted towards the student's technical GPA.

As of Fall 2014, for Computer Science majors (BA and BS), all CSCI courses are counted towards the student's technical GPA. *See archived SEAS bulletin for prior curriculum year technical GPA requirements for Computer Science majors.*

Please note, if a student changes their major or curriculum year this may change the courses applied towards their technical GPA. Students should consult their faculty advisor before making any changes to their academic plans or curriculum.

Incompletes

For more information see Incompletes under University Regulations (http://bulletin.gwu.edu/university-regulations). In addition, SEAS students must get an incomplete agreement in writing by completing a Request for an Incomplete form (http://www.seas.gwu.edu/forms) with the instructor.

Pass/No Pass Grading System

SEAS students may not take required courses on the Pass/No Pass grading system. They may, however, take courses outside their required SEAS academic program on a P/NP basis.

Academic Workload

SEAS adheres to all academic workload regulations outlined under University Regulations (p. 21). In exceptional cases these limits may be exceeded with the faculty advisor's approval.

Humanities and Social Science Requirement

With the assistance of the advisor, each student in a SEAS B.S. program chooses a set of elective courses in the humanities and social sciences. For most B.S. curricula, these normally consist of a minimum of 18 credits, divided equally between the humanities and social sciences. At least one of the humanities and two of the social science electives must be selected from a list of approved general education courses.

Since the SEAS curricula are, by necessity, oriented toward technical subjects, the humanities and social sciences electives should be courses that broaden the student's outlook. This includes courses in areas such as anthropology, economics, foreign languages, geography, history, literature, philosophy, political science, psychology, and sociology. A full menu of courses is available on the SEAS website (http://www.seas.gwu.edu/forms).

In addition, when a foreign language is taken as part of the humanities requirement, the following rules apply:

- The foreign language studied may not be a native language of the student, unless the courses taken are literature courses.
- If the student has studied the language previously, he or she must first take a placement test given by the language department concerned and enroll in a course recommended by that department.
- The advisor must approve the program.

Bachelor of Science Degree Programs

Students should consult the department concerned for total credit requirements for the degree programs. The listed curricula assume that all elective courses are offered for at least 3 credits. Credits for Lifestyle, Sport, and Physical Activity (LSPA) courses cannot be counted toward the degree.

Bachelor of Arts Degree Programs

SEAS offers a Bachelor of Arts degree with majors in applied science and technology and in computer science. Each program provides a strong and level base for students who intend to make their careers in fields allied to science and technology or computer science. The curriculum requirements for these programs can be viewed under the Undergraduate tab in this section of the Bulletin. The listed curricula assume that all elective courses are offered for at least 3 credits. Credits for Lifestyle, Sport, and Physical Activity (LSPA) courses cannot be counted toward the degree.

Special Programs

A number of combined 5-year degree programs are available to select SEAS students. These include a B.S./M.S. in civil engineering, mechanical engineering, and systems engineering; B.A. or B.S. and M.S. in computer science or in cybersecurity in computer science; B.S/M.S. in biomedical engineering, computer engineering, or electrical engineering; and B.S. in computer engineering, computer science, electrical engineering, or systems engineering and M.S. in engineering management. In addition, students may complete a 5-year degree in the following cross disciplines: B.S. in biomedical engineering and M.S. in computer engineering, B.S. in electrical engineering and M.S. in computer engineering, and B.S. in computer engineering and M.S in electrical engineering.

Double Major

Information on declaring and graduating with a double major is outlined under University Regulations. Students who complete the requirements for two SEAS majors may graduate with a double major, provided the majors are in different departments. SEAS students may also pursue a second major in another school in the University but must adhere to any requirements outlined by that school or department. SEAS students must consult both their SEAS faculty advisor and an advisor in the department offering the second major.To officially declare a second major, students must complete a Declaration of Second Major (http://www.seas.gwu.edu/forms) form and have it signed by both their SEAS faculty advisor and the second major department advisor.

Students from other schools of the University may pursue a second major in one of the six SEAS departments. However, they must consult the department for both eligibility and curriculum requirements before planning to declare the second major. There is a limitation on how many courses may be double counted, which is outlined under University Regulations.

The degree is earned from the home school, and students must complete the major in their own school in order to graduate. In no case will a double major result in two degrees.

For more information see *Double Degrees* under University Regulations (http://bulletin.gwu.edu/university-regulations).

Minors

SEAS offers to all students a variety of minors, including biomedical engineering, computer engineering, computer science, electrical engineering, operations research, ands systems engineering. The School may require students to meet certain eligibility requirement to declare the minor. SEAS students may only declare a minor outside their department and must consult their faculty advisor before enrolling in a minor in another school of the University.

SEAS students who wish to declare a minor officially should complete a Declaration of Minor form (http://www.seas.gwu.edu/forms), which must be signed by both their SEAS faculty advisor and the minor department advisor. Depending on the student's major, additional credits beyond the minimum required for the minor may be required. Student from schools other than SEAS should email seasadvising@gwu.edu for more information about requirements and eligibility criteria before requesting to declare a minor through the department.

Graduate Programs

Degree Programs

Fields of graduate study offered by SEAS include biomedical engineering, civil and environmental engineering, computer engineering, computer science, electrical engineering, engineering management, mechanical and aerospace engineering, systems engineering, and (at the M.S. level only) cybersecurity in computer science, telecommunications engineering, and regulatory biomedical engineering (M.Eng.). Degree requirements and representative areas of focus within each field are listed in this section of the Bulletin. In some fields, students may choose to focus their course work in other specialties as well. For information on certificate, professional, and doctoral degree studies in a given field students should contact the relevant department.

Entrance requirements are outlined under individual degree programs. The following information pertains to all SEAS graduate and certificate programs.

Transfer of Credit

With the approval of the student's advisor and department chair, graduate credit earned at a level of study equivalent to that being pursued at GW may be transferred, when applicable, to meet degree requirements of the School. For a master's or professional degree candidate, or a doctoral candidate whose highest earned degree is a master's, up to 6 credits may be transferred. For a doctoral candidate whose highest earned degree is a bachelor's, up to 24 credits may be transferred. In all cases, credits must have been completed with a minimum GPA of 3.0 at another accredited and recognized institution. The professional and doctoral degree programs require that the credit be earned no more than five years prior to admission to the GW program, and some departments require that it be earned more recently. Credit applied toward a previously earned degree may not be transferred. Transfer of credit regulations apply to courses taken as a non-degree student through GW's Office of Non-Degree Students; that is, up to 6 credits may be taken in non-degree status before applying for admission to degree status. For purposes of transfer of credit, SEAS graduate certificate programs are not considered prior degrees. At the discretion of the department concerned, the credits earned in a SEAS certificate program may be applied to a subsequent master's degree program.

English Language Requirements for International Students

Applicants who are not citizens of countries where English is the official language or who do not hold a degree from a regionally accredited U.S. institution of higher learning are required to submit scores from the Test of English as a Foreign Language (TOEFL), the academic International English Language Testing System (IELTS), or the Pearson Test of English–Academic (PTE). Visit the SEAS Graduate Admissions website (http://graduate.seas.gwu.edu/admissions-requirements) for possible exemptions from this policy. The required minimum score for admission is 550 paper-based or 80 Internet-based on the TOEFL, an overall band score of 6.0 on the IELTS with no individual band score below 5.0, or a score of 53 on the PTE. The Department of Engineering Management and Systems Engineering requires a TOEFL score of 600 paper-based or 100 internet-based, or an overall band score of 7.0 on the IELTS with no individual band score below 6.0, or a score of 68 on the PTE. Applicants for graduate teaching assistantships must have a minimum score of 600 paper-based or 100 Internet-based on the TOEFL, an overall band score of 7.0 on the IELTS with no individual band score below 6.0, or a score of 68 on the PTE.

Undergraduate and graduate international students whose TOEFL, IELTS, or PTE scores fall below established cut-off points are required to take one or more courses in the English for Academic Purposes (EAP) Program. Both undergraduate and graduate students receive credit for EAP courses; however, in most cases graduate EAP credits cannot be applied to a degree. Graduate students placed in EAP courses should anticipate additional tuition expenses as well as possible extension of time needed to complete their degree programs. For detailed information concerning this requirement, consult the English for Academic Purposes Program website.

Grades

Information on grades and computing the grade-point average (GPA) is found under University Regulations (http://bulletin.gwu.edu/university-regulations).

Incompletes

At the option of the instructor, the symbol of *I* (Incomplete) may be recorded if a student, for reasons beyond his or her control, is unable to complete the work of the course and if the instructor is informed of and approves such reasons before the date when grades must be reported. The symbol *I* may be recorded only if the student's prior performance and class attendance in the course have been satisfactory. Any course in which a student fails to complete the work of the course and does not provide the instructor with a satisfactory explanation before the date when grades must be turned in will be graded *F*. If acceptable reasons are later presented, the instructor may initiate an appropriate grade change. Although the *I* may remain on the record for a maximum of one year, the instructor should normally set a much briefer period within which the uncompleted work must be made up. The *I* cannot be removed by the student's reregistering for the course at GW or taking its equivalent elsewhere. An Incomplete that is not removed within one calendar year or at the time of the student's graduation, whichever occurs first, is automatically changed to an *F*. As of fall 2014, when the *I* is changed to a letter grade the *I* will be replaced by the letter grade on the transcript.. As of fall 2014, when the *I* is changed to a letter grade the will by replaced by the letter grade on the transcript. Engineering Management and Systems Engineering students with two or more outstanding Incompletes are barred from further course enrollment; see Incompletes under University Regulations regarding continuous enrollment.

Credit/No Credit Grading System

SEAS students may take SEAS courses under the credit/no credit grading system, but credit for such courses cannot be applied toward any degree program in SEAS.

Educational Planner

In consultation with an academic advisor, each student must develop an Educational Planner through DegreeMAP that governs the student's degree requirements. The Educational Planner should be established soon after matriculation and must be completed before the end of the student's first semester. The Educational Planner must be approved by the advisor..

Residence and Continuous Enrollment

All work for the degree must be done in residence unless an exception is granted by the department chair. Students in a degree program are expected to be continuously enrolled in the School until the degree is conferred. To maintain continuous enrollment, students may register in one of the following categories. See Residence and Continuous Enrollment under University Regulations (http://bulletin.gwu.edu/university-regulations) for more information.

Leave of Absence

This status is available to students who, with special permission, are attending classes at another institution; who have temporarily transferred out of the area, e.g., for military TDY; or who are having temporary medical problems. A leave of absence is usually limited to two semesters. See Leave of Absence under University Regulations (http://bulletin.gwu.edu/university-regulations) for more information.

Continuing Research

Students who have completed their research credits, but are not yet ready to defend a thesis or dissertation, must register for 1 credit of SEAS 0920 (Continuing Research–Master's) or SEAS 0940 (Continuing Research—Doctoral) each semester as appropriate.

Examination Preparation

Students who are studying for a comprehensive or qualifying examination for the current or following semester, and are not taking any courses, must register for 1 credit of SEAS 0930 (Examination Preparation) as appropriate. A student who breaks his or her registration must apply for readmission to the degree program under whatever conditions and regulations are in force at that time.

Master of Science

The M.S. degree is offered in the fields of biomedical engineering, civil and environmental engineering, computer engineering, computer science, electrical engineering, engineering management, mechanical and aerospace engineering, systems engineering, cybersecurity in computer science, and telecommunications engineering. Each field in turn encompasses several areas of focus. The course of study responds to the unique interests of the student, who designs an individual program in close consultation with an assigned advisor. In most areas, students follow a prescribed core and approved elective courses from within SEAS and from other schools of the University. Because engineering expertise includes a broad foundation in technology, engineering students may profit from study in other academic areas to sharpen their focus in practice. Students must satisfy, through undergraduate studies or otherwise, either the prerequisites specified for the desired field or approved equivalents.

Entrance Requirements

Admission to the Master of Science degree program requires an appropriate bachelor's degree from a recognized institution and evidence of a strong academic background and capacity for productive work in the field selected. All applicants must submit scores from the Graduate Record Examination (GRE) general test, with the exception of applicants from SEAS undergraduate programs and those applying to special cohort and contract programs. In general, a minimum GPA of 3.0 (on a 4.0 scale) in the last 60 hours of undergraduate course work is recommended. Students must submit a statement of purpose and a minimum of two letters of recommendation, which may be from the student's advisor, faculty member(s) from the institution where the highest degree was earned, and/or workplace supervisor. Visit the Graduate Admissions website (http://www.gwu.edu/gradapply) for more information.

Special Programs

Admission to the 5 year B.S./M.S. combined degree program requires an appropriate bachelor's degree from SEAS undergraduate programs recognized in the Regulations section. In general, a minimum GPA of 3.4 (on a 4.0 scale) is required. Students must submit a statement of purpose and a minimum of two letters of recommendation, which may be from the student's advisor, faculty member(s) from the institution where the highest degree was earned, and/or workplace supervisor. Visit the Graduate Admissions website (http://www.gwu.edu/gradapply) for more information.

Completion of the program should occur within two semesters but can take up to four semesters after the conferral of their SEAS undergraduate degree.

Graduation and Scholarship Requirements

To meet graduation requirements, courses specified in a student's Educational Planner through DegreeMAP must be completed with a minimum GPA of 3.0. This is in addition to the requirements specified for graduation under University regulations. Courses specified upon admission as deficiency or prerequisite courses do not form part of the program of study. Students who receive two grades of *F* or three grades below *B*− are barred from further enrollment in graduate courses and will not be readmitted as a degree candidate. Students may not repeat for credit a course in which they have received a grade of *C*− or above, unless required to do so by the department chair. A written statement requiring a student to repeat such a course for credit must be submitted to the registrar by the department chair. See further graduation policies under University Regulations (http://bulletin.gwu.edu/university-regulations).

Time Limits

Full-time students in the master's program are allowed a maximum of three calendar years from the date of first registration as a degree candidate in prerequisite or graduate courses to complete all degree requirements; this time limit excludes any time spent taking English for Academic Purposes

courses only. Part-time students in the master's program are allowed a maximum of five calendar years. The time limit does not include any period of registration as an unclassified student before admission to degree candidate status or any period spent on approved leave of absence. Students on F1 or J1 visas and students with external funding may have different time limits. Students who do not complete degree requirements within the allowed time will have their degree candidate status terminated. They may be readmitted to degree candidate status under conditions specified by the department chair and approved by the dean.

Master's Thesis

The master's thesis must demonstrate a student's ability to make independent use of the knowledge and discipline of thought acquired through graduate study, to undertake constructive work in a given field, and to communicate the results of the work in writing. Suitable work for which the student has professional responsibility may be considered, whether done on or off campus, provided no significant amount of work is completed without faculty supervision. An accepted thesis is the property of the University.

To register for the thesis course sequence, students must submit their advisor-approved thesis area to the appropriate department chair. At the beginning of the semester of expected graduation, students must submit their thesis title to the dean. Both submissions must be made on the appropriate form available in the Graduate Student Services Center. While registered in the thesis course sequence, students are entitled to the advice of the faculty member under whom the thesis is to be written. Students may consult with their advisors, but they have primary responsibility for their own thesis. Students defend their theses orally before a committee of SEAS faculty members.

The thesis in final form must be submitted by the stated deadline. In the event a thesis is unfinished on the date specified, the student must register for SEAS 0920 (Continuing Research – Master's). The overall time limit for earning the degree (see Time Limits, above) may not be exceeded. All theses must be submitted electronically and meet the formatting and other requirements set forth on GW's Electronic Theses and Dissertations Submission website (http://library.gwu.edu/etds). Additional information regarding thesis requirements and dates may be found under University Regulations (http://bulletin.gwu.edu/university-regulations).

Master of Engineering (M.Eng.)

The M.Eng. degree is currently offered in the field of regulatory biomedical engineering (rBME). The Master of Engineering in Regulatory Biomedical Engineering (rBME) is an interdisciplinary program offered through the Department of Biomedical Engineering (http://bme.seas.gwu.edu) in partnership with GW's School of Medicine and Health Sciences (http://smhs.gwu.edu). The new program addresses a pressing need for a graduate program to train engineers in the specific set of skills of regulatory science, biomedical innovation, and entrepreneurship. Students with training in engineering or physics and/or relevant industry/government experience study the fundamentals of biomedical engineering, global regulatory affairs, regulatory strategy in the development of devices and diagnostics, regulatory compliance, engineering patent law, medical measurements, and instrument design. In addition to coursework, students gain experience in SBIR/STTR grant applications and/or FDA Premarket Notification (510(k)) submissions for medical devices.

Entrance Requirements

Admission to the Master of Engineering degree program requires an appropriate bachelor's degree from a recognized institution and evidence of a strong academic background and capacity for productive work in the field selected. All applicants must submit scores from the Graduate Record Examination (GRE) general test, with the exception of applicants from SEAS undergraduate programs and those applying to special cohort and contract programs. In general, a minimum GPA of 3.0 (on a 4.0 scale) in the last 60 hours of undergraduate course work is recommended. Students must submit a statement of purpose and a minimum of two letters of recommendation, which may be from the student's advisor, faculty member(s) from the institution where the highest degree was earned, and/or workplace supervisor. Visit the Graduate Admissions website (http://www.gwu.edu/gradapply) for more information.

Graduation and Scholarship Requirements

To meet graduation requirements, courses specified in a student's Educational Planner through DegreeMAP must be completed with a minimum GPA of 3.0. This is in addition to the requirements specified for graduation under University regulations. Courses specified upon admission as deficiency or prerequisite courses do not form part of the program of study. Students who receive two grades of F or three grades below B− are barred from further enrollment in graduate courses and will not be readmitted as a degree candidate. Students may not repeat for credit a course in which they have received a grade of C− or above, unless required to do so by the department chair. A written statement requiring a student to repeat such a course for credit must be submitted to the registrar by the department chair. See further graduation policies under University Regulations (http://bulletin.gwu.edu/university-regulations).

Time Limits

Full-time students in the M.Eng. program are allowed a maximum of three calendar years from the date of first registration as a degree candidate in prerequisite or graduate courses to complete all degree requirements; this time limit excludes any time spent taking English for Academic Purposes courses only. Part-time students in the master's program are allowed a maximum of five calendar years. The time limit does not include any period of registration as an unclassified student before admission to degree candidate status or any period

spent on approved leave of absence. Students on F1 or J1 visas and students with external funding may have different time limits. Students who do not complete degree requirements within the allowed time will have their degree candidate status terminated. They may be readmitted to degree candidate status under conditions specified by the department chair and approved by the dean.

Graduate Certificates

Entrance Requirements

Admission to SEAS certificate programs requires an appropriate bachelor's degree from a recognized institution and evidence of a strong academic background and capacity for productive work in the field selected. All applicants must provide an online application, statement of purpose, and resume and/or curriculum vitae. In general, a minimum GPA of 3.0 (on a 4.0 scale) in the last 60 hours credits of undergraduate course work is recommended. Certificate applicants are not required to submit letters of recommendation. Visit the Graduate Admissions website (http://www.gwu.edu/gradapply) for more information.

Graduation and Scholarship Requirements

In order to receive the graduate certificate students must have a minimum GPA in courses specified in their Educational Planner through DegreeMAP. Courses specified upon admission as deficiency or prerequisite courses do not form part of the program of study. Students who receives two grades of *F* or three grades below *B−* are barred from further enrollment in graduate courses, and will not be readmitted as a candidate. Students may not repeat for credit a course in which they have received a grade of *C−* or above, unless required to do so by the department chair. A written statement requiring a student to repeat such a course for credit must be submitted to the registrar by the department chair. Additional information regarding graduation requirements may be found under University Regulations (http://bulletin.gwu.edu/university-regulations).

Professional Degrees

The SEAS professional degree programs are designed for those students who wish to pursue course work beyond the master's degree with emphasis on applied subject material rather than on basic research. Successful completion of the professional degree program leads to the degree of Engineer or of Applied Scientist.

For admission to the degree of Engineer, an applicant must have earned both a bachelor's and master's degree in an area of engineering. For the degree of Applied Scientist, an applicant must possess a master's degree in engineering, computer science, natural science, or mathematics. Applicants who have an equivalent quantitative background may be considered as special cases by the respective departments.

Entrance Requirements

For admission to the degree of Engineer, an applicant must have earned both a bachelor's and master's degree in an area of engineering. For the degree of Applied Scientist, an applicant must possess a master's degree in engineering, computer science, natural science, or mathematics. Applicants who have an equivalent quantitative background may be considered as special cases by the respective departments.

Entrance requirements may vary by department within SEAS. A minimum GPA of 3.0 in graduate work is usually required, although individual departments often set higher admission standards. Some programs have specified prerequisites. An applicant who has significant deficiencies in preparation may be required to take prerequisite courses, which do not count toward any part of the requirements for the professional degree. The Departments of Computer Science and Electrical and Computer Engineering require applicants for the professional degree to have had two years of professional experience after receiving the master's degree. For specific entrance and application requirements see Master's Degree.

Graduation and Scholarship Requirements

The professional degree programs consist of a minimum of 30 credits in approved graduate-level courses beyond a master's degree. Programs of study are determined by established prerequisites and the requirements of the department in which the student wishes to enroll. The student's program must be approved by the faculty advisor and the department chair. Departments may require degree candidates to undertake and defend the results of a technical design project or development problem, or to prepare a comprehensive technical report to demonstrate the candidate's ability to make independent use of the knowledge and discipline of thought acquired through graduate study. When applicable, the student will be informed of this requirement by the faculty advisor at the time when the student's program is being formulated. The project may not account for more than 6 credits.

If a student studying for the professional degree receives two grades of *F* or three grades below *B−,* study is terminated and further enrollment prohibited. A student must have a minimum of GPA of 3.0 in order to receive the degree. The Department of Engineering Management and Systems Engineering requires a final GPA of at least 3.4.

Time Limits

A full-time student in the master's program is allowed a maximum of three calendar years from the date of first registration as a degree candidate in prerequisite or graduate courses to complete all degree requirements. A part-time student is allowed a maximum of five calendar years. The time limit does not include any period of registration as an unclassified student before admission to degree candidate

status or any period spent on approved leave of absence. Students who do not complete degree requirements within the allowed time will have their degree candidate status terminated. Such students may be readmitted to degree candidate status under conditions specified by the department chair.

Doctoral Programs
Doctor of Philosophy

The doctoral program is designed to prepare students for careers of creative scholarship by providing a broad but balanced background of knowledge and guidance in the performance of research. The program is divided into two stages: the first comprises a study of related fields of learning that support the general area of research concentration and culminates in a qualifying examination; the second, composed of original research and the presentation of findings in a written dissertation, culminates in a final examination.

Entrance Requirements

Admission to the Ph.D. program requires an appropriate bachelor's or master's degree from a recognized institution, evidence of a strong academic or relevant professional background, course work designated by the department as pertinent to the field to be studied, and capacity for research. With the exception of applicants from SEAS B.S. and M.S programs, applicants must submit scores from the Graduate Record Examination (GRE) general test. All applicants must submit a minimum of three letters of recommendation, at least one of which should be from the advisor and/or faculty members at the institution(s) from which a degree was earned. Students for whom the bachelor's is the highest earned degree must have a minimum GPA of 3.3 (on a 4.0 scale) in undergraduate work. Students for whom the master's is the highest earned degree, departmental requirements for the GPA in course work leading to that degree are as follows (on a 4.0 scale): Civil and Environmental Engineering, Electrical and Computer Engineering, and Mechanical and Aerospace Engineering—3.4; Computer Science, and Engineering Management and Systems Engineering—3.5. Consult the department concerned for field-specific admission requirements.

Graduation and Scholarship Requirements

Upon admission to the first stage of the program—study of related fields culminating in the qualifying examination—students are assigned a faculty advisor who directs his or her studies. In some departments, a faculty committee may be appointed instead of a single advisor. Programs of study are structured to include a major field and two minor or supporting fields. Consult the department concerned for requirements.

For students who enter the program with a master's degree, the formal program of study consists of a minimum of 30 graduate-level credits. For students who enter with a bachelor's degree only, the program of study consists of a minimum of 54 graduate-level credits. These credits include both course and dissertation research credit. Individual requirements may vary by department. In many cases, particularly when the student undertakes a doctoral program in a field other than that in which the earlier degree was earned, the program of study exceeds the minimum number of credits stated above. Departments may establish a tool requirement, such as an examination in a computer language. Consult the department concerned for specific curriculum requirements.

If a doctoral student receives two grades of *F* or three grades below *B−,* graduate study is terminated and further enrollment prohibited. Courses in which the student earned grades below *B−* are not included in the total credit requirement for the degree. Students who receive any grade below *B−* are required to review their programs of study with their advisors.

Time Limits

In general, one year of full-time study is the minimum amount of time needed to prepare for the qualifying examination. Students should consult the individual department for specific timelines and regulations. In general, the qualifying examination must be completed within five years of the date of admission, unless specified otherwise by the department. The entire degree program must be completed within seven years, unless the department grants an extension. Approval of an extension is conditional on satisfactory progress. The time period for completion of the degree may be adjusted by the department for an approved leave of absence. A minimum of two years of full-time study and research should be expected. All time periods indicated here are increased by two years for students entering the doctoral program without a master's degree.

Full-time doctoral students must register for a minimum of 9 credits per semester until the minimum number of credits are completed, and 1 credit of SEAS 0940 (Continuing Research – Doctoral) each semester thereafter until satisfactory completion of the final examination. Part-time doctoral students usually register for a minimum of 6 credits per semester until the minimum number of credits is completed, and 1 credit of Continuing Research each semester thereafter until satisfactory completion of the final examination. No minimum course load is required during the summer

Preliminary and Qualifying Examinations

The Department of Computer Science requires a preliminary examination that must be passed within four semesters of starting the program. It comprises material from the areas of algorithms and theory, and software and systems.

The Department of Electrical and Computer Engineering requires a preliminary examination that must be taken before completing 18 credits after initial registration. The examination is guided by, but not limited to, the core material of the GW

master's program. Specific details regarding the structure of the exam are available in the department.

To be admitted to the qualifying examination that is required of all doctoral students, students must have a minimum cumulative GPA of 3.2 in the Departments of Civil and Environmental Engineering and Computer Science, and of 3.4 in the Departments of Mechanical and Aerospace Engineering, Engineering Management and Systems Engineering, and Electrical and Computer Engineering.

The qualifying examination is the principal means of determining whether a student will qualify as a candidate for the doctoral degree and progress to the second stage of the program. Its purpose is to ascertain whether the student's background and intellectual development are adequate to support doctoral research in the central field.

Preliminary and qualifying examinations may be written or oral or both. Students should consult the departments for specific guidelines. The examinations are conducted on dates established by the departments and are administered by a faculty committee. Upon favorable report of the examiners following the qualifying examination, students are admitted to candidacy for the degree. Students then begin specialized study and research under the supervision of a designated member of the full-time faculty. At the discretion of the committee that prepared the examination, students who fail any part of the qualifying examination may be given a second opportunity to qualify for candidacy. Usually, the entire examination must be retaken. Students who fail to qualify for candidacy in a doctoral program of the School will be considered to have failed on a school-wide basis and will not be admitted to further doctoral study within the School.

The Dissertation and Final Examination

Students admitted to candidacy for the degree of Doctor of Philosophy choose the faculty member under whom they wish to conduct research. The faculty member may accept or reject the request to serve as the student's director of research. The research area must be approved by the director, under whom the candidate conducts dissertation research throughout the remainder of the doctoral program. Students may consult other members of the faculty on an informal basis. In the Departments of Engineering Management and Systems Engineering and Civil and Environmental Engineering, students are required to present a written dissertation proposal to a committee of three full-time faculty members and to successfully defend the proposal in an oral defense prior to performing the bulk of their dissertation research. Work on the dissertation encompasses a minimum of 12 to 24 credits, depending on the department.

The dissertation should embody the results of extended original study and include material deemed worthy of publication in recognized scientific and engineering journals. Students are expected to attempt to have the results of the research published as soon as possible after they receive the degree and to submit copies of the published material to the dean. The Department of Computer Science requires that at least one article be accepted for publication by a refereed conference or journal prior to completion of degree requirements. The Department of Engineering Management and Systems Engineering requires that an article be accepted for review by a refereed journal prior to completion of degree requirements. The Department of Electrical and Computer Engineering requires the submission of a paper to a refereed journal and its acceptance for publication prior to the completion of degree requirements. Credit must be given in the publication to the fact that the material is abstracted, summarized, or developed from a dissertation submitted to The George Washington University in partial fulfillment of the requirements for the Ph.D.

All dissertations must be submitted electronically and meet the formatting and other requirements set forth at GW's Electronic Theses and Dissertations Submission website (http://library.gwu.edu/etds). Regulations regarding the form of the dissertation and preparation of the abstract are available in department offices. The dissertation, with accompanying files, becomes the property of the University.

Upon acceptance of the dissertation by the research committee, the candidate is presented for the final examination. The final examination is oral and is open to the public. The candidate must demonstrate a mastery of the special field of study and of the materials and techniques used in the research. The committee of examiners may include qualified experts brought to the University especially to participate in the examination. The director of research usually serves as advocate for the candidate. Students should consult department regulations concerning the formation of the committee and scheduling of the examination. When the examining committee is convinced of the quality and originality of the candidate's contribution to knowledge as well as his or her mastery of the scholarship and research techniques of the field, the committee recommends the candidate for the degree of Doctor of Philosophy. Students completing their degree program should refer to the sections on Eligibility for Graduation and Participation in the Commencement Ceremony under University Regulations.

Doctor of Engineering

The School of Engineering and Applied Science offers an off-campus Doctor of Engineering (D.Eng.) degree program. The Doctor of Engineering program addresses the widespread need for practitioners who can apply the knowledge they gain in the program of study within a business or technical environment, wherein the constant challenge is to create useful applications of the latest engineering principles and lead organizations that are occupied in this work.

The Doctor of Engineering degree currently is offered only in Engineering Management (EM).

Doctor of Engineering in Engineering Management

The D.Eng. (EM) program demands that research be applied to the solution of a real-world problem using the latest engineering concepts and tools—in other words, research toward the D.Eng. program is applied, rather than basic. Its purpose is to empower students, who are likely to be practicing engineers, to create advanced, practice-based solutions.

Admission to the D.Eng.(EM) program requires: (1) bachelor's and master's degrees from accredited institutions in engineering, applied science, mathematics, computer science, business administration, or information technology; (2) a minimum of two college-level calculus courses passed with grades of C or better; and (3) a minimum graduate-level GPA of 3.5 (on a 4.0 scale).

The D.Eng. (EM) program consists of 45 credits divided into a classroom phase of 10 graduate-level, three-credit courses, and a research phase during which a practice-based case study is undertaken on a topic related to engineering management, chosen by the student and approved by the adviser. Research for the case study comprises 15 credits. Prospective students are advised to contact the Engineering Management and Systems Engineering Department for additional information.

Transfer Between Degree Programs

Candidates for the professional or Doctor of Philosophy degree who are in good academic standing may, with the approval of the faculty advisor and department chair, transfer from one degree program to the other within their department if they meet the qualifications and requirements specified by the department. In the Department of Engineering Management and Systems Engineering, only one such transfer is permitted.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in applied science and technology (p. 667)
- Bachelor of Arts with a major in computer science (p. 638)
- Bachelor of Science with a major in biomedical engineering (p. 598)
- Bachelor of Science with a major in civil engineering (p. 609)
- Bachelor of Science with a major in civil engineering, environmental engineering option (p. 611)
- Bachelor of Science with a major in civil engineering, medical preparation option (p. 613)
- Bachelor of Science with a major in civil engineering, sustainability engineering option (p. 615)
- Bachelor of Science with a major in civil engineering, transportation engineering option (p. 617)
- Bachelor of Science with a major in computer engineering (p. 655)
- Bachelor of Science with a major in computer science (p. 640)
- Bachelor of Science with a major in electrical engineering (p. 656)
- Bachelor of Science with a major in electrical engineering, energy option (p. 657)
- Bachelor of Science with a major in electrical engineering, medical preparation option (p. 659)
- Bachelor of Science with a major in mechanical engineering (p. 688)
- Bachelor of Science with a major in mechanical engineering, aerospace option (p. 689)
- Bachelor of Science with a major in mechanical engineering, biomechanical option (p. 691)
- Bachelor of Science with a major in mechanical engineering, medical preparation option (p. 692)
- Bachelor of Science with a major in mechanical engineering, patent law option (p. 693)
- Bachelor of Science with a major in mechanical engineering, robotics option (p. 695)
- Bachelor of Science with a major in systems engineering (p. 669)

Minors

- Minor in biomedical engineering (p. 599)
- Minor in computer engineering (p. 660)
- Minor in computer science (p. 642)
- Minor in electrical engineering (p. 660)
- Minor in mechanical engineering (p. 696)
- Minor in operations research (p. 671)
- Minor in systems engineering (p. 671)

Combined programs

- Combined Bachelor of Science with a major in biomedical engineering and Master of Engineering in the field of regulatory biomedical engineering (p.)
- Combined Bachelor of Science with a major in civil engineering and Master of Science in the field environmental engineering (p. 619)
- Combined Bachelor of Science with a major in civil engineering and Master of Science in the field structural engineering (p. 620)
- Combined Bachelor of Science with a major in civil engineering and Master of Science in the field transportation engineering (p. 622)
- Combined Bachelor of Science with a major in mechanical engineering and Master of Science in the field mechanical engineering (p. 696)

GRADUATE

Master's programs

- Master of Engineering in the field of regulatory biomedical engineering (p. 600)
- Master of Engineering in the field of cybersecurity policy and compliance (online) (p.)
- Master of Science in the field of biomedical engineering (p. 601)
- Master of Science in the field of civil and environmental engineering (p. 624)
- Master of Science in the field of computer science (p. 643)
- Master of Science in the field of computer engineering (p. 661)
- Master of Science in the field of cybersecurity in computer science (p. 643)
- Master of Science in the field of electrical engineering (p. 662)
- Master of Science in the field of engineering management (p. 673)
- Master of Science in the field of mechanical and aerospace engineering (p. 697)
- Master of Science in the field of systems engineering (p. 674)
- Master of Science in the field of telecommunications engineering (p. 664)

Doctoral programs

- Doctor of Engineering in the field of engineering management (p. 675)
- Doctor of Philosophy in the field of biomedical engineering (p. 601)
- Doctor of Philosophy in the field of civil and environmental engineering (p. 625)
- Doctor of Philosophy in the field of computer engineering (p. 665)
- Doctor of Philosophy in the field of computer science (p. 644)
- Doctor of Philosophy in the field of electrical engineering (p. 665)
- Doctor of Philosophy in the field of engineering management (p. 676)
- Doctor of Philosophy in the field of mechanical and aerospace engineering (p. 698)
- Doctor of Philosophy in the field of systems engineering (p. 676)

CERTIFICATES

At the discretion of the respective departments, credit earned in a certificate program may be applied to a subsequent master's degree program. Scholarship requirements are the same as those for the master's degree program. Details are available in the Office of the Dean.

- Graduate certificate in computer-integrated design in mechanical and aerospace engineering (p. 699)
- Graduate certificate in computer security and information assurance (p. 644)
- Graduate certificate in emergency management and public health (p. 677)
- Graduate certificate in energy engineering and management (p. 699)
- Graduate certificate in engineering and technology management (p. 677)
- Graduate certificate in enterprise information assurance (p. 678)
- Graduate certificate in environmental engineering (p. 625)
- Graduate certificate in e (p. 678)nvironmental and energy systems management
- Graduate certificate in geoenvironmental engineering (p. 626)
- Graduate certificate in greenhouse gas management (p. 678)
- Graduate certificate in high-performance computing (p. 665)
- Graduate certificate in homeland security emergency preparedness and response (p. 679)
- Graduate certificate in structural engineering (p. 627)
- Graduate certificate in systems engineering (p. 679)
- Graduate certificate in transportation engineering (p. 627)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

- Applied Sciences (APSC) (p. 1036)
- Biomedical Engineering (BME) (p. 1054)
- Civil Engineering (CE) (p. 1066)
- Computer Science (CSCI) (p. 1079)
- Electrical and Computer Engineering (ECE (p. 1186)) (p. 1186)
- Engineering Management and Systems Engineering ((p. 1196)EMSE (p. 1196))

- Mechanical and Aerospace Engineering ((p. 1341)MAE (p. 1341))
- School of Engineering and Applice Sciences ((p. 1448)SEAS (p. 1448))

BIOMEDICAL ENGINEERING

OVERVIEW

Mission

The mission of the Department of Biomedical Engineering is to motivate and inspire students by providing high-caliber, fully integrated programs to prepare them to lead and participate in advancing the state of the art in health care technologies. In addition, graduates earn advanced degrees and further knowledge in the discipline by actively pursuing scholarly research for publication and dissemination.

Biomedical Engineering Program Educational Objectives

The biomedical engineering program prepares graduates who achieve employment in biomedical and related industry, government, or organizational fields using skills and knowledge learned while an undergraduate student. This is evidenced by their:

- Employment history and/or career advancement.
- Professional visibility (e.g., patents, invention disclosures, honors or awards, refereed journal articles, conference papers and other publications, and involvement in professional associations).
- Entrepreneurial activities.

Student Outcomes

The Department of Biomedical Engineering aims to produce graduates who have the ability to:

- Apply knowledge of mathematics, science, and engineering.
- Design and conduct experiments, as well as to analyze and interpret data.
- Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;
- Function on multidisciplinary teams.
- Identify, formulate, and solve engineering problems.
- Understand professional and ethical responsibility.
- Communicate effectively.
- Understand the impact of engineering solutions in a global, economic environment.
- Engage in life-long learning necessary to thrive in the profession.
- Keep abreast of contemporary issues while maintaining breadth and depth of knowledge.
- Use the techniques, skills, and modern engineering tools necessary for engineering practice.

UNDERGRADUATE

Bachelor's program

- Bachelor of Science with a major in biomedical engineering (p. 598)

Minor

- Minor in biomedical engineering (p. 599)

Combined programs

- Combined Bachelor of Science with a Major in Biomedical Engineering and Master of Engineering in the Field of Regulatory Biomedical Engineering (p. 600)

GRADUATE

Master's programs

- Master of Engineering in the field of regulatory biomedical engineering (p. 600)
- Master of Science in the field of biomedical engineering (p. 601)

Doctoral program

- Doctor of Philosophy in the field of biomedical engineering (p. 601)

FACULTY

Professors I. Efimov (Chair), E. Entcheva, M. Kay, D. Lee, Z. Li, M. Loew, C. Park, J. Zara, V. Zderic

Assistant Professor C. Park

Associate Teaching Professor D.T. Lee

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BME 1010. Introduction to Biomedical Engineering. 1 Credit.
Basic and emerging concepts in electrical, computer, and biomedical engineering. Hands-on experiments and projects. Introduction to the professional literature and available resources and to technical writing, speaking, and presentation skills. (Fall).

BME 1020. Introduction to Biomedical Engineering. 2 Credits.
Continuation of BME 1010. Basic and emerging concepts in electrical, computer, and biomedical engineering. Hands-on experiments and projects. Introduction to the professional literature and available resources and to technical writing, speaking, and presentation skills. Prerequisite: BME 1010. (Same as ECE 1020) (Spring).

BME 2810. Biomedical Engineering Seminar I. 1 Credit.
BME 2810 and BME 2815 are taken in sequence by students in the biomedical engineering major. Overview of the field of biomedical engineering, including biomechanics, bioinformatics, telemedicine, instrumentation, and medical imaging. Prerequisite: BME 1020. (Fall).

BME 2815. Biomedical Engineering Seminar II. 1 Credit.
BME 2810 and BME 2815 are taken in sequence by students in the biomedical engineering major. Overview of the field of biomedical engineering, including biomechanics, bioinformatics, telemedicine, instrumentation, and medical imaging. (Fall and spring).

BME 2820. Biomedical Engineering Programming I. 3 Credits.
Introduction to Matlab Programming and fundamentals of programming in general with a focus on biomedical engineering problems. Functions, input/output, selection statements, loop statements, string manipulation, and debugging techniques will be covered; manipulation of vectors and matrices and the use of vectorized code. (Fall).

BME 2825. Biomedical Engineering Programming II. 3 Credits.
Introduction to C Programming and fundamentals of data structures with a focus on biomedical engineering problems; the use of data structures, pointers, and linked lists and discuss concepts such as binary trees and sorting algorithms. Students are expected to understand the basics of programming concepts such as the use of functions, input/output, selection statements, loop statements, string manipulation, and debugging techniques are understood, but no prior knowledge of C is required. Prerequisite: BME 2820; equivalent course may be substituted at instructor's discretion. (Fall).

BME 3820. Principles and Practice of Biomedical Engineering. 4 Credits.
Introduction to engineering principles applicable to medicine; medical measurements for clinical use and research; anatomy and physiology of the human body from system and cellular approaches. Principles of biomedical engineering are reinforced by determining and analyzing physiological measurements in laboratory exercises. Prerequisites: ECE 2110 and APSC 2113. (Fall).

BME 3907. Special Topics in Biomechanical Engineering. 3 Credits.
Topics vary by semester. May be repeated for credit if topic differs. See the Schedule of Classes for more details. (Fall, spring, and summer).

BME 3910. Capstone Design Preparation. 1 Credit.
Elements of project design; formulation of project ideas. Prerequisites: BME 2810, BME 2815. (Same as ECE 3910) (Fall).

BME 3915W. Biomedical Engineering Capstone Project Lab I. 1 Credit.
BME 3915, BME 4920, and BME 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. Prerequisite: BME 3910. (Same as ECE 3915W) (Spring).

BME 4820. Anatomy and Physiology for Engineers. 3 Credits.
Human anatomy and physiology from an engineering viewpoint. Analysis of functions of major physiological systems. Biopotentials, mechanics, gas exchange, chemical balance, electrical and chemical signaling, nervous control, voluntary and reflex factors. (Same as BME 6820) (Fall).

BME 4825. Biomedical Properties Laboratory. 1 Credit.
Introduction to biophysical concepts in a laboratory setting; emphasis on biomedical engineering. (Spring).

BME 4830. Introduction to Medical Imaging Methods. 3 Credits.
Common imaging modalities, including ultrasound, X-ray, MRI, CT, SPECT, and PET. Overview of linear systems, basic properties of an imaging system, the physics and instrumentation behind each modality, and their respective advantages, disadvantages, and applications. May be taken for graduate credit. Prerequisites: ECE 3220, BME 3820. (Spring).

BME 4920W. Biomedical Engineering Capstone Project Lab II. 3 Credits.
BME 3915, BME 4920, and BME 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. Prerequisite: BME 3915W. (Same as ECE 4920, ECE 4920W) (Fall, Every Year).

BME 4925W. Biomedical Engineering Capstone Project Lab III. 3 Credits.
BME 3915, BME 4920, and BME 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. (Same as ECE 4925) (Spring, Every Year).

BME 4990. Research. 1-3 Credits.
Applied research and experimentation projects, as arranged. Prerequisites: junior or senior status. (Fall and spring).

BME 6045. Special Topics. 1-3 Credits.
Topics to be announced in the Schedule of Classes. (Fall and spring).

BME 6050. Research. 1-12 Credits.
Applied research and experimentation projects, as arranged. May be repeated for credit.

BME 6065. Colloquium. 0 Credits.
Lectures by outstanding authorities in biomedical engineering. Topics to be announced each semester. (Fall and spring).

BME 6481. Regulatory Law for Medical Devices. 3 Credits.
An introduction to legal issues pertinent to medical device regulation; device classification, general and special controls, quality system regulation, 510(k) submissions, premarket approval applications (PMAs), clinical trials, investigational device exemptions (IDEs) and medical device reporting (MDR), recalls, labeling and advertising, enforcement, and emerging legal issues. Pharmaceutical regulation. (Fall).

BME 6482. Medical Measurements. 3 Credits.
Theory of measurements in biological areas and techniques for electronic measurements on biological specimens. Experiments in acquisition, processing, and measurement of physiological signals, ECG, EEG, and EMG. (Fall).

BME 6483. Medical Instrumentation Design. 3 Credits.
The medical device design process and many of its key aspects, including needs assessment, regulatory processes and concerns, intellectual property, patient safety, and market analysis. Prerequisites: BME 6482. (Spring).

BME 6484. Biomedical Signal Analysis. 3 Credits.
Origin, acquisition, and analysis of physiological signals. Deterministic and probabilistic modeling; fitting models; sequences and time series. Feature extraction from EEG and ECG; Fourier analysis and filtering; modeling. Noise and artifact removal and signal compensation. Prerequisites: BME 6482. (Spring).

BME 6485. Medical Imaging I. 3 Credits.
Principles of projection radiography, fluoroscopy, tomography, ultrasound and nuclear sources; biomagnetic imaging. Source and object; recorder resolution and noise; scatter and attenuation. Ultrasound techniques and instrumentation, including physics of ultrasound, transducers, ultrasound imaging, hemodynamics, Doppler techniques. Prerequisite: BME 4830. (Fall).

BME 6486. Clinical Medicine for Engineers. 3 Credits.
Overview of clinical medicine with emphasis on those areas most affected by engineering and technology. Prerequisites: BME 6482. (Spring, even years).

BME 6487. Rehabilitation Medicine Engineering. 3 Credits.
Cross-sectional view of those areas of medicine most involved with the treatment of handicapped individuals; application of engineering theory and techniques to the rehabilitation of handicapped individuals; solutions to major problem areas and specific problems. Prerequisite: BME 6482. (Spring, Every Year).

BME 6820. Anatomy and Physiology for Engineers. 3 Credits.
Human anatomy and physiology from an engineering perspective. Analysis of functions of major physiological systems. Biopotentials, mechanics, gas exchange, chemical balance, electrical and chemical signaling, nervous control, voluntary and reflex factors. (Same as BME 4820) (Fall).

BME 6840. Digital Image Processing. 3 Credits.
Properties of images and visual systems. Image acquisition, sampling, quantization. One- and two-dimensional image transform techniques; enhancement and restoration. Image coding and data compression. Segmentation, representation, boundary and shape, texture, matching. Image understanding. Prerequisites: ECE 6800. (Same as ECE 6840) (Spring, odd years).

BME 6842. Image Engineering. 3 Credits.
Sensor/camera design and analysis as a system. Detection and noise processes underlying the sensing of optical radiation; the engineering and physics of image formation. Topics covered include radiometry/photometry, optics and image formation, device and camera characterization, and image quality metrics and system design trades. Prerequisites: ECE 6010, ECE 6015. (Same as ECE 6842) (Fall, Every Year).

BME 6850. Pattern Recognition. 3 Credits.
Random vectors, transformations. Hypothesis testing, error probability: bias, variance, and sample size, resampling; sequential methods. Bayes, other linear classifiers. Discriminant functions, support vector machines, maximum-likelihood and parameter estimation, dimensionality reduction. Nonparametric methods; unsupervised learning and clustering; feature selection and ordering. Applications in industry and medicine. Student projects. Learning is reinforced by homework problems and in-class and at-home computer examples. Prerequisite: ECE 6015. (Same as ECE 6850) (Fall, Spring, and Summer, Every Year).

BME 6885. Computer Vision. 3 Credits.
Image processing; edge detection, segmentation, local features, shape and region description in 2D and 3D. Insights from human vision studies. Representation for vision: object models, synthetic images, matching, gaps, algorithms. Interference, production system, syntactic networks. Planning spatial reasoning for robot vision. Prerequisites: BME 6840 or ECE 6840 or equivalent. (Same as ECE 6885) (Fall, Spring, and Summer, Every Year).

BME 6994. Biomedical Engineering Regulatory Practicum I. 3 Credits.
First part of the BME 6994-BME 6995 practicum sequence. Students work with a practicum mentor to develop either an application for federal funding using the Small Business Innovation Research (SBIR) or Small Business Technology Transfer (STTR) mechanism or a 510(k) submission for U.S. Food and Drug Administration (FDA) medical device review. Independent research combined with the synthesis of technical and regulatory topics covered in the program. Restricted to students who have completed a minimum of 9 credits in the Master of Engineering in Regulatory Biomedical Engineering program. (Fall, spring, and summer).

BME 6995. Biomedical Engineering Regulatory Practicum II. 3 Credits.
Second part of the BME 6994-BME 6995 practicum sequence. Prerequisites: BME 6994. (Fall, spring, and summer).

BME 6998. Thesis Research. 3 Credits.
Thesis research. (Fall and spring).

BME 6999. Thesis Research. 3 Credits.
Thesis research. (Fall and spring).

BME 8484. Medical Imaging II: Image Analysis. 3 Credits.
Review of medical imaging modalities; review of image formation and characteristics, both static and dynamic; methods for and evaluation of: medical image reconstruction, enhancement, segmentation, registration, and description; feature extraction and classification; error analysis and the receiver operating characteristic; imaging applications in diagnosis and treatment, including surgery; metrics of truth and quality, with implications for image compression. Prerequisites: BME 6484. (Fall).

BME 8999. Dissertation Research. 0-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall, spring, and summer).

BACHELOR OF SCIENCE WITH A MAJOR IN BIOMEDICAL ENGINEERING

The Department of Biomedical Engineering offers an Accreditation Board for Engineering and Technology (ABET) accredited bachelor's degree in biomedical engineering. The curriculum provides students the opportunity to select a subset of courses to suit their interests and needs through a variety of technical electives. These electives include courses in leading-edge biomedical engineering topics, as well as advanced courses in computer science, electrical engineering, mechanical engineering, cell biology, physiology, and the physical sciences and mathematics.

Visit the program website (http://www.bme.seas.gwu.edu/programs-degrees) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
First semester		
BISC 1111	Introductory Biology: Cells and Molecules [1]	
BME 1010	Introduction to Biomedical Engineering	
CHEM 1111	General Chemistry I [1]	
MATH 1231	Single-Variable Calculus I [1]	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing [1]	
Second semester		
BISC 1112	Introductory Biology: The Biology of Organisms [1]	
BME 1020	Introduction to Biomedical Engineering	
CHEM 1112	General Chemistry II [1]	
MATH 1232	Single-Variable Calculus II [1]	
PHYS 1025	University Physics I with Biological Applications [1]	
Third semester		
APSC 2113	Engineering Analysis I	
BME 2810	Biomedical Engineering Seminar I	
ECE 2110	Circuit Theory	
MATH 2233	Multivariable Calculus [1]	
PHYS 1026	University Physics II with Biological Applications [1]	
Fourth semester		
BME 2815	Biomedical Engineering Seminar II	
ECE 2210	Circuits, Signals, and Systems	
Programming Elective I [2]		

Restricted Engineering Elective [3]	
Restricted Engineering Elective [3]	
Humanities or social sciences elective [4]	
Fifth semester	
BME 3820	Principles and Practice of Biomedical Engineering
BME 4820	Anatomy and Physiology for Engineers
ECE 3220	Intro to Digital Signal Proces
Programming Elective II [2]	
Technical elective [5]	
BME 3910	Capstone Design Preparation
Sixth semester	
APSC 3115	Engineering Analysis III
BME 3915W	Biomedical Engineering Capstone Project Lab I
Two humanities or social sciences electives [4]	
Two technical electives [5]	
Seventh semester	
BME 4920W	Biomedical Engineering Capstone Project Lab II
MAE 4168	Intro. to Biomaterials
Humanities or social sciences elective [4]	
PHYS 3127	Biophysics: Macroscopic Physics in the Life Sciences
Technical elective [5]	
Eighth semester	
BME 4925W	Biomedical Engineering Capstone Project Lab III
PHIL 2135	Ethics in Business and the Professions
Humanities or social sciences elective [4]	
Technical elective [5]	
Science Elective [6]	

[1] Course satisfies the university general education requirement in math, science, and writing.

[2] Programming elective pairs (take one pair)

a) BME 3907 Special Topics in Biomechanical Engineering.10 Matlab Programming and BME 3907 Special Topics in Biomechanical Engineering.11 C Programming for BME

b) CSCI 1111 Introduction to Software Development and CSCI 1112 Algorithms and Data Structures

c) CSCI 1121 Introduction to C Programming and CSCI 1132 Data Structures and Software Design

d) ECE 1120 C Programming for ECE and ECE 1125 Data Structures&Algorithms ECE

[3] Potential restricted engineering electives (take 2)

MAE 2131 Thermodynamics

APSC 2057 Analytical Mechanics I

APSC 2058 Analytical Mechanics II

CE 2220 Introduction to the Mechanics of Solids

ECE 2115 Engineering Electronics

ECE 2140 Design of Logic Systems I

ECE 3310 Introduction to Electromagnetics

[4] At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 38); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list; the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list.

[5] All technical electives must be approved by the academic advisor and must include at least three engineering courses.

[6] Science electives (take one)

PHYS 2128 Biophysics: Microscopic Physics in the Life Sciences

CHEM 3165 Biochemistry I

MINOR IN BIOMEDICAL ENGINEERING

REQUIREMENTS

Code	Title	Credits
Prerequisites		

The following courses must be completed before beginning the minor program:	
PHYS 1022	University Physics II
APSC 2113	Engineering Analysis I
Required	
BME 3820	Principles and Practice of Biomedical Engineering
ECE 2110	Circuit Theory
ECE 2210	Circuits, Signals, and Systems
Electives	
Two of the following:	
BME 4830	Introduction to Medical Imaging Methods
ECE 3225	Signal and Image Analysis
MAE 3128	Biomechanics I
MAE 4168	Intro. to Biomaterials
PHYS 3127	Biophysics: Macroscopic Physics in the Life Sciences
PHYS 3128	Biophysics: Microscopic Physics in the Life Sciences

COMBINED BACHELOR OF SCIENCE WITH A MAJOR IN BIOMEDICAL ENGINEERING AND MASTER OF ENGINEERING IN THE FIELD OF REGULATORY BIOMEDICAL ENGINEERING

REQUIREMENTS

The School of Engineering and Applied Science (SEAS) offers a combined bachelor of science with a major in biomedical engineering (p. 598) and master of engineering in the field of regulatory biomedical engineering (p. 600) degree program. The program allows students to take a specified number of graduate credits as part of their undergraduate degree, thereby decreasing the number of credits normally required for the master's degree.

Students interested in the combined program should visit the SEAS Department of Biomedical Engineering website (https://www.bme.seas.gwu.edu) for additional information.

MASTER OF ENGINEERING IN THE FIELD OF REGULATORY BIOMEDICAL ENGINEERING

The master of engineering in the field of regulatory biomedical engineering (rBME) is an interdisciplinary program offered through the Department of Biomedical Engineering (http://www.bme.seas.gwu.edu) in partnership with the School of Medicine and Health Sciences (http://smhs.gwu.edu). The program is designed to train engineers in the specific set of skills of regulatory science, biomedical innovation, and entrepreneurship. Students with training in engineering or physics, and/or relevant experience in government and industry, learn the fundamentals of biomedical engineering, global regulatory affairs, regulatory strategy in the development of devices and diagnostics, regulatory compliance, engineering patent law, medical measurements, and instrument design. In addition to course work, students gain experience in SBIR/STTR grant applications and/or FDA Premarket Notification (510(k)) submissions for medical devices.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 24 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
BME 6482	Medical Measurements	
BME 6483	Medical Instrumentation Design	
BME 6994	Biomedical Engineering Regulatory Practicum I	
BME 6995	Biomedical Engineering Regulatory Practicum II	
MAE 3171	Patent Law for Engineers	
RAFF 6201	Introduction to Global Regulatory Affairs	
RAFF 6203	Regulatory Device Diagnostics	
RAFF 6205	Regulatory Affairs Compliance	
Elective		
6 credits from the following:		
BME 4820	Anatomy and Physiology for Engineers	
BME 4830	Introduction to Medical Imaging Methods	

BME 6486	Clinical Medicine for Engineers
BME 6487	Rehabilitation Medicine Engineering
CSCI 4531	Computer Security
CSCI 4532	Information Policy
ECE 6565	Telecommunications Security
EMSE 6020	Decision Making with Uncertainty
EMSE 6765	Data Analysis for Engineers and Scientists
EMSE 6770	Techniques of Risk Analysis and Management
MAE 6204	Tissue Engineering
MAE 6238	Biomaterials

MASTER OF SCIENCE IN THE FIELD OF BIOMEDICAL ENGINEERING

The degree of master of science in the field of biomedical engineering degree program is designed to prepare students to apply engineering principles to problems in medicine and biology, to understand and model multiple attributes of living systems, and to synthesize biomedical systems and devices. Students choose between two areas of focus: medical imaging or medical instrumentation. Thesis and non-thesis options are available. The program is offered on GW's main campus in Foggy Bottom, where the School of Engineering and Applied Science (http://www.seas.gwu.edu), the School of Medicine and Health Sciences (http://smhs.gwu.edu), and GW Hospital (http://www.gwhospital.com) are separated by one city block.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (http://www.bme.seas.gwu.edu/master-science-biomedical-engineering) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits including a zero-credit colloquium.

Code	Title	Credits
Required		
BME 6065	Colloquium	
BME 6482	Medical Measurements	
BME 6484	Biomedical Signal Analysis	
Three of the following:		
BME 4830	Introduction to Medical Imaging Methods	
BME 6842	Image Engineering	
BME 6483	Medical Instrumentation Design	
BME 6485	Medical Imaging I	
BME 6486	Clinical Medicine for Engineers	
BME 6487	Rehabilitation Medicine Engineering	
BME 8484	Medical Imaging II: Image Analysis	
Electives		
5 additional courses approved by the academic advisor, which may include additional courses from above.		

DOCTOR OF PHILOSOPHY IN THE FIELD OF BIOMEDICAL ENGINEERING

Program Overview

The doctoral program in biomedical engineering is designed to prepare students for a career of creative scholarship by providing a broad but balanced background of knowledge and guidance in the performance of research. This interdisciplinary program provides course work and research that draw on resources from across the School of Engineering and Applied Science. Existing research partnerships with the University's School of Medicine and Health Sciences and GW Hospital, as well as the National Institutes of Health and U.S Food and Drug Administration, offer unique research opportunities and laboratory facilities.

Areas of Focus

There are a number of areas in which program students focus their dissertation research. These include cardiac electrophysiology, therapeutic ultrasound and drug delivery, image analysis and image processing, medical imaging and computer-aided diagnosis, assistive robotics, optogenetics, and microfluidics and lab-on-a-chip technology.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (https://www.bme.seas.gwu.edu/phd-biomedical-engineering) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under School of Engineering, Doctoral Program Regulations (p. 584)

Students with an MS degree must take a minimum of 30 credits, of which at least 18 must be from graduate courses, and at least 12 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor. In some cases, particularly when the student undertakes a doctoral program in a field other than that in which the earlier degree was earned, the program of study exceeds the minimum number of credits.

No specific courses are required; the student and advisor design the curriculum to meet the student's needs and goals.

Student should contact the department for additional information and requirements

CIVIL AND ENVIRONMENTAL ENGINEERING

Mission Statement

The mission of the Department of Civil and Environmental Engineering is to provide an academic environment where professional education can be pursued, scholarly research in science and technology can be conducted, and the interest of the public can be served through the advancement of knowledge.

In pursuit of this mission the administration, faculty, and staff join to provide a broad-based, rigorous professional education in civil engineering at the undergraduate level; a graduate education at the master's level in major areas of civil engineering; and doctoral programs in selective areas of excellence within civil engineering.

Educational Objectives of the Bachelor of Science Program

The civil engineering undergraduate program of study prepares its graduates with the following capabilities necessary to attain career and professional accomplishments:

- Technical knowledge: students are able to use their technical knowledge and expertise in mathematics, science, and engineering to identify, formulate, and solve problems involving design, experimentation, and analysis of a wide variety of civil engineering applications;
- Team skills: students develop leadership skills, demonstrate proficiency in all forms of communication, and perform well in a multidisciplinary team environment;
- Continuous education: students recognize the need for continuing their education through graduate studies, continuous education opportunities, and/or self-education;
- Professionalism: students are prepared to exercise the highest standards of personal and professional integrity, demonstrate an understanding of the ethical and professional issues related to the procurement of work, and provide coordination between the design and construction aspects of the civil engineering profession.

These objectives are accomplished through a rigorous curriculum that emphasizes fundamentals in basic sciences, mathematics, humanities, and engineering in five major areas of civil engineering: environmental engineering, geotechnical engineering, structural engineering, water resources engineering, and transportation engineering. The curriculum enables students to use modern engineering tools to work individually and in teams. The curriculum contains a well-structured set of courses that enable students to develop the required analytical, experimental, and design skills.

Educational Outcomes of the Bachelor of Science Program

The civil engineering undergraduate program of study prepares its graduates to have the following capabilities for career and professional advancement:

- Apply knowledge of mathematics, science, and engineering; design and conduct experiments; and analyze and interpret data;
- Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, health and safety, manufacturability, and sustainability constraints;
- Identify, formulate, and solve engineering problems;
- Use the techniques, skills, and modern engineering tools necessary for engineering practice;
- Function on multidisciplinary teams; and
- Communicate effectively.

Students are provided with the broad education necessary to understand the impact of engineering solutions in a global economic, environmental, and social context; a knowledge of contemporary issues; an understanding of professional and ethical responsibility; and a recognition of the need for and ability to engage in lifelong learning.

The civil engineering undergraduate program curriculum includes coverage of proficiency in mathematics through differential equations, probability and statistics, calculus-based physics, and general chemistry; proficiency in a minimum of four recognized major civil engineering areas; the ability to conduct laboratory experiments and to critically analyze and interpret data in more than one of the recognized major civil engineering areas; the ability to perform civil engineering design by means of design experiences integrated throughout the professional component of the curriculum; and an understanding of professional practice issues such as procurement of work, bidding versus quality-based selection processes, how the design professionals and the construction professions interact to construct a project, the importance of professional licensure and continuing education, and/or other professional practice issues.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science with a major in civil engineering (p. 609)
- Bachelor of Science with a major in civil engineering, environmental engineering option (p. 611)
- Bachelor of Science with a major in civil engineering, medical preparation option (p. 613)
- Bachelor of Science with a major in civil engineering, sustainability option (p. 615)
- Bachelor of Science with a major in civil engineering, transportation engineering option (p. 617)

Combined programs

- Combined Bachelor of Science with a major in civil engineering and Master of Science in the field environmental engineering (p. 619)
- Combined Bachelor of Science with a major in civil engineering and Master of Science in the field structural engineering (p. 620)
- Combined Bachelor of Science with a major in civil engineering and Master of Science in the field transportation engineering (p. 622)

GRADUATE

Master's program

- Master of Science in the field of civil and environmental engineering (p. 624)

Doctoral program

- Doctor of Philosophy in the field of civil and environmental engineering (p. 625)

CERTIFICATE

- Graduate certificate in environmental engineering
- Graduate certificate in geoenvironmental engineering
- Graduate certificate in structural engineering (p. 627)
- Graduate certificate in transportation engineering (p. 627)

FACULTY

Professors S.S. Badie, K.H. Digges (*Research*), M.I. Haque, S. Lerman, M.T. Manzari (*Chair*), R. Riffat, K. Roddis, S.S. Badie

Associate Professors P.F. Silva

Assistant Professors L. Farhadi, S.H. Hamdar, T. Li, D. Shuai

Research Professor K.H. Digges

Professorial Lecturers M.O. Critchfield, G.C. Everstine, K. Garrahan, F. Sadek

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CE 1010. Introduction to Civil and Environmental Engineering. 1 Credit.
An introduction to the profession of civil and environmental engineering. Field visits and laboratory exercises complement classroom instruction. (Fall).

CE 1020. Introduction to a Sustainable World. 1 Credit.
The science underlying the basic processes that gave rise to the world we live in and that maintain its viability for human life. Ecosystem-functioning environmental issues, such as greenhouse gas emission and ozone, with current efforts to resolve them. Technological innovations in the context of sustainability.

CE 1098. Variable Topics. 1-36 Credits.

CE 2210. Engineering Computations. 3 Credits.
Numerical methods for engineering applications. Methods for solving systems of linear equations, root finding, curve fitting, and data approximation. Numerical differentiation and integration and numerical solution of differential equations. Computer applications. Prerequisites: CSCI 1121, APSC 2113. (Spring).

CE 2220. Introduction to the Mechanics of Solids. 3 Credits.
Stress and strain, axial load problems, torsion, shear force and bending moment, pure bending of beams, shearing stresses in beams, compound stresses, analysis of plane stress and plane strain, combined stresses, deflection of beams, statically indeterminate problems, columns, energy methods. Prerequisite: APSC 2057, APSC 2113.

CE 2510. Environmental Sustainability. 3 Credits.
An introduction to environmental sustainability with focus on the nexus of water, energy, and climate; energy demands of water systems, water footprints of energy generation, and how the two valuable resources are limiting each other; technologies and research frontiers toward a sustainable water and energy supply.

CE 2710. Introduction to Transportation Engineering. 3 Credits.
Transportation system components; roadway traffic capacity and network performance measures; signalized and un-signalized intersections; monitoring techniques, instruments and data processing. Sustainability issues and environmental impact of transportation systems with focus on urban design, planning and regulation. Prerequisites: Math 2233. (Spring).

CE 3110W. Civil Engineering Materials. 2 Credits.
Mechanical properties and behavior of civil engineering materials such as metals, concrete, and fiber-reinforced polymer composites. Properties range from plastic deformations of metallic materials to crushing of confined and unconfined concrete. Basis of the strength of materials. Concepts of creep, fatigue, fracture, and crack propagation. Prerequisite: CE 2220. (Fall).

CE 3111W. Civil Engineering Materials Lab. 1 Credit.
Measurement of stress–strain characteristics and study of failure modes in ductile steel, brittle concrete, and anisotropic composite materials. Experiments include data collection, data analysis, and interpretation and presentation of results regarding tension, compression, bending, impact, and shear properties. Prerequisite or corequisite: CE 3110W. Prerequisites: CE 3110W. (Fall).

CE 3140. Sustainability in Engineering Materials. 2 Credits.
Sustainable engineering: overall materials energy needs/properties and impacts; load resistance and aging, thermodynamics, water conservation, heat transfer, use of energy-efficient materials in construction, life-cycle assessment. Prerequisite: CE 3110, CE 3111.

CE 3230. Structural Theory I. 3 Credits.
Theory of statically determinate structures; stability and determinacy; influence lines and moving loads. Analysis of beams, frames, trusses, and arches. Calculation of deflections. Prerequisites: CE 2210, CE 2220. (Fall).

CE 3240. Structural Theory 2. 3 Credits.
Theory of statically indeterminate structures using matrix methods and classical approaches such as moment distribution and slope-deflection; influence lines; energy methods. Prerequisite: CE 3230.

CE 3310. Reinforced Concrete Structures. 3 Credits.
Properties of concrete and reinforcement; design of flexural reinforcement, shear reinforcement; development of reinforcement; design of columns, floor slabs; ethics and professionalism in design. A design project, including the use of computer software and a detailed report, is required. Prerequisite or corequisite: CE 3240.

CE 3520. Environmental Engineering I: Water Resources and Water Quality. 3 Credits.
Physical and chemical analyses of water quality and characteristics. Microbiology of water and pathogens. Introduction to water treatment processes involving coagulation, flocculation, filtration, and disinfection. Prerequisite or corequisite: CE 3610.

CE 3521. Environmental Engineering Laboratory. 1 Credit.
Laboratory experiments for physical and chemical analyses of water and wastewater. Measurement of turbidity, alkalinity, dissolved oxygen, BOD, COD, suspended solids, and optimum coagulant dose using jar tests. Corequisite: CE 3520.

CE 3610. Hydraulics. 3 Credits.
Fluid statics: pressure forces, buoyancy, and flotation. Application of kinematic principles; flow fields, stream tubes, and flow nets. Fluid dynamics: applications to pipe flow, hydraulic models, measurement of pressure, and velocity. Open channel flow: applications to water resources engineering. Prerequisite: MAE 3126.

CE 3611. Hydraulics Laboratory. 1 Credit.
Laboratory experiments and demonstrations of hydraulics in pipe and open-channel flow. Topics include center of pressure, floating bodies, Bernoulli's theorem, discharge coefficients, velocity profile, and head losses. Prerequisite or corequisite: CE 3610.

CE 3720. Highway Engineering and Design. 3 Credits.
Road vehicle performance. Principles of highway design: horizontal and vertical alignments, roadside design; drainage and drainage structures, earthwork, intersections, interchanges, parking facilities; basic traffic models; highway materials. Application of safety standards. Prerequisite: MATH 2233; prerequisite or corequisite: APSC 3115 and CE 2220.

CE 3730. Sustainable Urban Planning Dynamics. 3 Credits.
Human and physical processes shaping urban environments; human–environment interactions in the context of an urban region; urban design, materials, transport, planning, and regulation. Prerequisite: CE 2710.

CE 4320. Metal Structures. 3 Credits.
Principles of the design of metal structures, structural elements, connections, specific problems of analysis including the use of computer software, methods of construction, professionalism in design. Prerequisite: CE 3240.

CE 4330W. Contracts and Specifications. 3 Credits.
Law of contracts, construction contracts, specifications, bidding, insurance and bonds, professional liability, arbitration of disputes, litigation. Restricted to juniors and seniors. (Spring, Every Year).

CE 4340. Design and Cost Analysis of Civil Engineering Structures. 0-3 Credits.
Total structural systems concepts. Design of civil engineering structures such as piers, wharves, bulkheads, offshore platforms, dams, and other special structures. Principles of cost analysis for timber, steel, and reinforced concrete structures. Project and report are required. Prerequisites: CE 3310, CE 4320, CE 4410. (Spring).

CE 4410. Introduction to Geotechnical Engineering. 3 Credits.
Soils and rock formation, soil composition, permeability, seepage and flow netanalysis, stresses in soil medium, consolidation and settlement, shear strength of soil, analysis of lateral earth pressures, soil compaction. Prerequisite: CE 2220, MAE 3126.

CE 4411. Geotechnical Engineering Laboratory. 1 Credit.
Laboratory experiments to evaluate liquid and plastic limits, grain-size distribution, shear strength, compressibility, permeability, and moisture–density relationship of soils. Prerequisite or corequisite: CE 4410.

CE 4450. Introduction to Geo-environmental Engineering. 3 Credits.
Characterization of soils and wastes, engineering properties of soils and geo-synthetics, fundamental concepts of fate and transport of contaminants, common practice in design and construction of waste containment systems, current methods for remediation of contaminated groundwater and soils. Prerequisites: CE 3520, CE 4410. (Spring, Every Year).

CE 4530. Environmental Engineering II: Water Supply and Pollution Control. 3 Credits.
Introduction to wastewater treatment systems including clarification, suspended and attached growth processes. Use of dissolved oxygen models. Water supply and wastewater collection systems, applied hydraulics of pipelines and pumps. Planning to meet quality needs and regulatory requirements. Prerequisite: CE 3520.

CE 4620. Hydrology and Hydraulic Design. 3 Credits.
Descriptive hydrology: hydrologic cycle, precipitation, stream flow, evaporation, and transpiration. Quantitative hydrology: hydrograph analysis, hydrographs of basin outflow, storage routing. Probability concepts in hydrology: flood frequency, rainfall frequency, stochastic hydrology. Culverts and stilling basins. Prerequisite or corequisite: APSC 3115, CE 3610.

CE 4810. Research. 1-3 Credits.
Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status.

CE 4820. Special Topics. 1-6 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

CE 6101. Numerical Methods in Engineering. 3 Credits.
Eigenvalue problems. Numerical solution of systems of equations and ordinary differential equations. Solution techniques for elliptic, parabolic, and hyperbolic partial differential equations. Numerical methods for solving finite element equations. Introduction to solution of fluid-flow problems. Prerequisite: CE 2210.

CE 6102. Application of Probability Methods in Civil Engineering. 3 Credits.
Uncertainty in real-world information; basic probability concepts and models; random variables; useful probability distributions, statistical estimation of distribution parameters from observed data; empirical determination of distribution models; testing hypothesis; regression and correlation analyses; decision theory. Prerequisite: APSC 3115.

CE 6201. Advanced Strength of Materials. 3 Credits.
Deflection of beams using singular functions, unsymmetrical bending of beams, beams on elastic foundation. Beam-column problems, shear center for thin-walled beam cross sections, curved beams. Applications of energy methods, torsion, basic equations for theory of elasticity, thin- and thick-walled cylinders, stress concentration, and failure criteria. Prerequisites: CE 2220, CE 3240. (Spring).

CE 6202. Methods of Structural Analysis. 3 Credits.
Modern methods of analysis of statically indeterminate structures, matrix analysis based on flexibility, stiffness, energy and variational methods, substructuring techniques; consideration of plastic collapse of structures; introduction to the finite element method. Prerequisites: CE 2220, CE 3240. (Fall).

CE 6203. Reliability Analysis of Engineering Structures. 3 Credits.
Probability theory, theory of structural reliability, probabilistic analysis of strength and loads, risk and reliability function, empirical distribution, probability plot. The design service life, method of perturbation, Monte Carlo simulation. Fatigue and fracture, proof testing, inspection and repair–replacement maintenance. Prerequisite: APSC 3115.

CE 6204. Analysis of Plates & Shells. 3 Credits.
Bending and stretching of thin elastic plates under loading with various boundary conditions, continuous plates and plates on elastic foundations, theory of folded-plate structures. Theory of curved surfaces; general linear bending theory and its simplification to membrane theory; bending stresses in shells of revolution, shallow-shell theory. Prerequisites: CE 2220, CE 3240. (Spring, odd years).

CE 6205. Theory of Structural Stability. 3 Credits.
General criteria for stability, buckling of elastic and inelastic columns and frames, torsional and lateral buckling, variational methods. Buckling of plates and shells under static loads, stability of stiffened structures, effect of imperfections and boundary conditions. Prerequisites: CE 2220, CE 3240. (Fall).

CE 6206. Continuum Mechanics. 3 Credits.
Introduction to the mechanics of continuous media. Tensor calculus; kinematics; stress and stress rate, conservation of mass, conservation of linear and angular momentum, energy balance, second law of thermodynamics; constitutive theory; linear and nonlinear elasticity, newtonian fluids, micropolar elasticity. Prerequisites: CE 2220. (Fall, spring, and summer, even years).

CE 6207. Theory of Elasticity I. 3 Credits.
Introduction to Cartesian tensors; deformation, stress, constitutive relations for linear elasticity; formulation of boundary value problems, variational principles, torsion and bending of prismatial rods, plane problems. Prerequisites: CE 2220. (Same as MAE 6207) (Spring).

CE 6208. Plasticity. 3 Credits.
Introduction to the continuum theory of plastic deformation. Physical basis of rate-independent plasticity. Concepts of yield, strain hardening and softening, reverse yield, and cyclic plasticity. Constitutive equations describing plastic deformation. Prerequisite: CE 6201 or CE 6206.

CE 6209. Mechanics of Composite Materials. 3 Credits.
Stress–strain relationship for orthotropic materials, invariant properties of an orthotropic lamina, biaxial strength theory for an orthotropic lamina. Mechanics of materials approach to stiffness, elasticity approach to stiffness. Classical lamination theory, strength of laminates. Statistical theory of fatigue damage. Same as MAE 6233. Prerequisite: CE 3240.

CE 6210. Introduction to Finite Element Analysis. 3 Credits.
Calculus of variations. Variational formulation of the finite element method. Weighted residual techniques. Computer implementation of the finite element method. Application to problems in heat transfer, stress analysis, fluid flow, and structural analysis. Prerequisites: proficiency in one computer language, CE 2220, CE 3240. (Fall).

CE 6301. Design of Reinforced Concrete Structures. 3 Credits.
Structural behavior of reinforced concrete structures, ultimate strength and deformation characteristics; design of structural components including beams, columns, floor slabs, deep beams, corbels, and composite slab/beam systems. Prerequisite: CE 3310.

CE 6302. Prestressed Concrete Structures. 3 Credits.
Structural behavior and failure modes of prestressed concrete structures; design in prestressed concrete, including long-span structures, bridges, and precast systems. Prerequisite: CE 3310.

CE 6310. Advanced Reinforced Concrete Structures. 3 Credits.
Conception, analysis, and design of low-rise and high-rise buildings by ultimate-strength methods, precast systems, progressive collapse, earthquake considerations, domes, folded plates, shell-type structures, and special topics. Prerequisite: CE 6301.

CE 6311. Bridge Design. 3 Credits.
Application of basic design procedures for reinforced and prestressed concrete bridges, according to AASHTO bridge specifications. Various types of concrete bridges, design superstructure bridge elements (deck slab, girders, bearing pads), and development of superstructure/substructure details. Prerequisite: CE 6302.

CE 6320. Design of Metal Structures. 3 Credits.
Structural behavior of metal structures and composite girders. Conception, analysis, and design of low-rise and high-rise buildings by elastic and inelastic methods. Earthquake considerations and special topics. Prerequisite: CE 4320.

CE 6321. Advanced Metal Structures. 3 Credits.
Conception and design of advanced structural components and systems, hysteretic behavior, plastic design principles, box-type girders, cable systems, and unique structural systems. Prerequisite: CE 6320. (As arranged).

CE 6340. Structural Dynamics. 3 Credits.
Vibration of continuous systems: membranes, beam plates, and shells; approximate methods of vibration analysis; methods of integral transform; analysis of nonlinear systems; wave propagation. Prerequisites: APSC 2058, CE 3240. (Fall, odd years).

CE 6341. Random Vibration of Structures. 3 Credits.
Introduction to random processes, responses of linear structures to stationary and nonstationary random inputs. Structural responses to earthquakes, waves, boundary-layer turbulences, wind loads, etc. Failure analysis of structures under random loads. Prerequisites: APSC 3115, CE 6340. (Spring, even years).

CE 6342. Structural Design to Resist Natural Hazards. 3 Credits.
Prediction of forces due to earthquakes and strong winds; generalized codes; pseudostatic methods for preliminary design; codes based on spectra, energy absorption and ductility; influence of foundations; ground failures; static and aeroelastic effects of strong winds. Design project. Prerequisites: CE 3240, CE 4340, either CE 6340 or CE 6701. (Spring).

CE 6350. Intro to Biomechanics. 3 Credits.
Fundamentals of continuum mechanics as they apply to biological materials: concepts of stress, strain, and equilibrium; elastic and viscoelastic properties of solids; physiological fluid mechanics and bioheat and mass transfer. Fundamentals of solid mechanics of soft tissues and bone structures. Development of computer models and applications. Prerequisite: CE 2220.

CE 6401. Fundamentals of Soil Behavior. 3 Credits.
Soil mineralogy, clay–water–electrolyte systems, soil composition, fabric, structure, volume change behavior, permeability, coupled phenomena, in-situ evaluation of soil behavior. Prerequisite: CE 4410.

CE 6402. Theoretical Soil Mechanics. 3 Credits.
Porous media, stress–strain behavior of soil skeleton, elastic and elastoplastic models for soil behavior, critical state concept, cam clay, strength of soils, stress–dilatancy, stress paths. (Fall, odd years).

CE 6403. Geotechnical Engineering. 3 Credits.
Principles of soil mechanics applied to the analysis and design of mat foundations, pile foundations, retaining structures including sheeting and bracing systems, and waterfront structures. Foundations on difficult soils and reinforced earth structures. Prerequisite: CE 4410.

CE 6404. Geotechnical Earthquake Engineering. 3 Credits.
Ground motion, wave propagation, foundation isolation, site response analysis, seismic stability of retaining structures, soil structure interaction. Prerequisite: graduate standing.

CE 6405. Rock Engineering. 3 Credits.
Classification and properties of rock; nature of rock masses and rock discontinuities; field exploration; methods of excavation; design and applications to foundation slopes, tunnels, and chambers in rock. Prerequisite: CE 4410.

CE 6501. Environmental Chemistry. 3 Credits.
Principles of chemistry of natural waters, water supplies, wastewaters, hazardous wastes. Stoichiometry, equilibrium, solubility, kinetics, organic chemistry, biochemistry, analytical techniques. Examples from water/wastewater practice to illustrate applications. Prerequisites: CHEM 1111, CHEM 1112. (Fall).

CE 6502. Advanced Sanitary Engineering Design. 3 Credits.
Elements of design including basic parameters and hydraulic requirements. Layout and design of water supply and wastewater systems, pumping stations, and treatment plants. Plant expansions and modifications. Prerequisite: CE 4530.

CE 6503. Principles of Environmental Engineering. 3 Credits.
Basic concepts of water, air, and terrestrial environments and interrelationships among them. Principles of environmental chemistry and microbiology. Assessment of environmental quality and impacts. Environment and health. Water and wastewater systems. Legal and regulatory controls. Prerequisites: CE 3520. (Fall).

CE 6504. Water and Wastewater Treatment Processes. 3 Credits.
Theory and application of commonly used processes. Sedimentation, coagulation, filtration, disinfection, gas transfer, activated sludge, trickling filters, oxidation ponds, sorption, and sludge stabilization and disposal. Process combinations to produce treatment systems. Prerequisite: CE 6503.

CE 6505. Environmental Impact Assessment. 3 Credits.
Public policy and legislation on environmental quality. Methods for assessing impacts of engineering projects. Technology for assessing impacts on air, water, and land environments, applied to transportation facilities, water and wastewater facilities, industrial and community development. Prerequisites: CE 3520. (Fall).

CE 6506. Microbiology for Environmental Engineers. 3 Credits.
Principles and applications of advanced treatment systems for water, wastewater, and hazardous wastes, including: biological nutrient removal, oxidation-reduction processes, stripping, sorption, membrane processes, chemical precipitation, others. Prerequisites: CE 3520. (Spring, even years).

CE 6507. Advanced Treatment Processes. 3 Credits.
Principles and applications of advanced treatment systems for water, waste-water, and hazardous wastes, including: biological nutrient removal, oxidation-reduction processes, stripping, sorption, membrane processes, chemical precipitation, others. Prerequisite: CE 6504.

CE 6508. Industrial Waste Treatment. 3 Credits.
Types of industries, waste sources. Characteristics, measurements, and evaluation. Minimization and reuse. Treatment process selection, development, and design. Regulations, permits, standards, monitoring, and pretreatment. (Fall).

CE 6509. Introduction to Hazardous Wastes. 3 Credits.
Regulations, including RCRA and Superfund. Transport and fate of hazardous substances. Elements of environmental toxicology, risk assessment, and hazard ranking. Monitoring, data collection, and evaluation. Waste minimization. Case histories. Prerequisites: CE 3520. (Spring).

CE 6601. Open Channel Flow. 3 Credits.
Types and regimes of flow; energy and momentum principles, uniform flow, gradually varied flow, spatially and rapidly varied flow. Flow in nonprismatic channels. Unsteady flow; dam break problem, flood routing. Prerequisite: CE 3610 .

CE 6602. Hydraulic Engineering. 3 Credits.
Hydraulic design of conveyance, regulating, and measurement structures. Design for spillways, energy dissipators, inlet and outlet works related to dams. Forces on hydraulic structure and stability analysis. Hydraulic turbines and pumps. Design considerations for flow through pipes. Transients and cavitation. Prerequisite: CE 3610.

CE 6603. Design of Dams. 3 Credits.
Project planning and investigations. Types of dams; design of earth–rock fill dams; stability analysis, foundation treatment, wind–wave protection. Construction methods for dams. Reservoir sedimentation. Safety inspection of dams. Prerequisite: CE 3610.

CE 6604. Advanced Hydrology. 3 Credits.
Precipitation, evaporation, and transpiration. Soil physics; stream flow, drainage basins, hydrograph analysis, and stream-flow routing. Design criteria, flood frequency statistics and analysis, flood forecasting and control, water supply forecasting. Prerequisite: CE 4620.

CE 6605. Ground Water and Seepage. 3 Credits.
Permeability theory of groundwater flow, flow nets, analogs, computer solutions; applications to engineering problems such as excavation dewatering, flow through dams, stabilization of earth slopes. Prerequisites: CE 4410. (Spring).

CE 6606. Mechanics of Water Waves. 3 Credits.
Irrotational theory for deep- and shallow-water waves, reflexion, refraction, diffraction, attenuation. Water waves of finite amplitude: shallow-water theory, tides, bores, long-waves theory, conoidal and solitary waves. Wave generation by wind. Wave breaking and reflexion. Prerequisite: APSC 6213 and permission of instructor.

CE 6607. Water Resources Planning and Control. 3 Credits.
The parameters of water resources planning and control, economics of water resources and related natural resources, economics of water-quality control, physical parameters of water resource development, water resources law. Prerequisite: approval of department.

CE 6608. Hydraulic Modeling. 3 Credits.
Dimensional analysis and similitude. Types of models—physical, mathematical. Distortions in physical models. Erodible bed models. Prerequisite: CE 3610.

CE 6609. Numerical Methods in Environmental and Water Resources. 3 Credits.
Use of microcomputers in water resources. Elements of finite difference schemes, basic operations, convergence, stability, and consistency. Nonuniform flow and error analysis; unsteady laminar flow; diffusion problems; unsteady flow in open channels; water hammer, seepage flow, and diffusion–dispersion problems. Prerequisites: CE 2210, MAE 3126. (Spring).

CE 6610. Pollution Transport Systems. 3 Credits.
Distribution of pollutants in natural waters and atmosphere, diffusive and advective transport, mathematics for stream pollutant deoxygenation rates, groundwater pollution transport, sediment transport, thermal transport, numerical simulation of pollutant transports in streams and estuaries. Prerequisite: CE 3610, MAE 2131.

CE 6701. Analytical Mechanics. 3 Credits.
Fundamental principles, particle and rigid-body dynamics, generalized coordinates, variational principles and Lagrange's equations, nonholonomic systems, Hamilton's equations, theory of small oscillations. Prerequisites: APSC 2058, APSC 2113. (Fall).

CE 6702. Vehicle Dynamics. 3 Credits.
Engineering principles and analytical methods explaining the performance of an automotive vehicle. Basic mechanics governing vehicle dynamic performance in longitudinal, ride, and handling modes. Engineering analysis techniques applied to basic systems and subsystems to derive the governing equations. Prerequisite or corequisite: CE 6701. Prerequisites: CE 6701 (either prerequisite or corequisite). (Spring, even years).

CE 6705. Nonlinear Finite Element Modeling and Simulation. 3 Credits.
Rigid and flexible body methods for modeling crashes. Application of dynamic nonlinear finite element methods with contact algorithms for modeling crash phenomena. Modeling and simulation of vehicles, airbags, safety restraining systems, and highway barriers. (Spring).

CE 6706. Pavement & Runway Design. 3 Credits.
Pavement types, wheel-load characteristics; stresses in pavements and subgrades; empirical methods of design of flexible and rigid highway and airfield pavements; general principles of runway design. (Spring, odd years).

CE 6707. Systems Dynamics Modeling and Control. 3 Credits.
Introduction of concepts in control theory and applications to solve problems in civil and transportation engineering dealing with single-input/single-output and multi-input/multi-output systems. Review of classical control theory in the frequency and time domain, state–space analysis, system optimization, and non-linear control. (Fall).

CE 6721. Traffic Engineering and Highway Safety. 3 Credits.
Roadway traffic capacity and network performance measures; steady and unsteady traffic flow phenomena; traffic control signalization theory and practical implementation; monitoring techniques, instruments, and data processing for highway safety. Traffic related highway safety design concepts. (Fall).

CE 6722. Intelligent Transportation Systems. 3 Credits.
Commands, controls, and communications in modern multimodal transportation; infrastructure/highway and vehicle automation, advanced traffic management, vehicle control and safety systems; information, data, and sensory requirements; practical applications and projects. Prerequisite: CE 2710 or CE 3720. Recommended background: basic knowledge of transportation engineering. (Spring, Every Year).

CE 6800. Special Topics. 1-6 Credits.
Topic to be announced in the Schedule of Classes.

CE 6801. Civil and Environmental Engineering Graduate Internship. 1 Credit.
For graduate students in the department. May be repeated once for credit. Prerequisite: required courses in the area of focus and department approval. Additional prerequisites may be required for a specific internship as determined by the research supervisor.

CE 6808. Research. 1-12 Credits.
Basic research projects, as arranged. May be repeated for credit.

CE 6998. Thesis Research. 3 Credits.

CE 6999. Thesis Research. 3 Credits.

CE 8320. Theory of Elasticity II. 3 Credits.
Application of integral transform and analytic function theory to solution of plane problems; elastic wave propagation. Three-dimensional elasto-statics. Prerequisite: APSC 6211; CE 6207.

CE 8321. Nonlinear Mechanics of Continua. 3 Credits.
Polar decomposition, invariance, isotropy, representation theorems for invariants and isotropic tensor functions. Deformation, kinematics, stress, balance principles. Principles for constitutive relations. Applications to nonlinear elasticity and non-Newtonian fluids. Prerequisite: CE 6206.

CE 8330. Advanced Finite Element Analysis. 3 Credits.
Review of variational formulation of the finite element method. Formulation of various continuum and structural elements. Application to static and dynamic problems in elasticity, plasticity, large deflection, and instability in plates and shells. Recent developments in finite element methods. Same as MAE 6288. Prerequisite: CE 6206, 6210; or MAE 6210, MAE 6286.

CE 8350. Sedimentation Engineering. 3 Credits.
Problems of erosion and sedimentation. Properties of sediment. Initiation of motion. Suspension of sediment and sediment discharge theories. Sedimentation measurements. Economic and legal aspects. Prerequisite: CE 6601 or approval of department.

CE 8351. Mechanics of Alluvial Channels. 3 Credits.
Physical processes in drainage basins and channels. Channel forms and bed forms. Hydraulics and sediment transport in alluvial channels. Design of stable channels. Qualitative and quantitative response of rivers. Channel stabilization, navigation channels. Case studies including environmental impacts. Prerequisite: CE 6601 or approval of department.

CE 8352. Advanced Hydraulics. 3 Credits.
Theory of unsteady flow. Diffusion and dispersion through pipes and open channels. Numerical solutions using finite element and finite difference methods. Prerequisite: CE 6601 or approval of department.

CE 8370. Intelligent Systems Theory and Applications. 3 Credits.
Overview of artificial intelligence, neural networks, genetic algorithms, fuzzy systems, and hybrid intelligent systems and their integration with other information processing methods. Intelligent systems applications; examples are drawn from ITS and traffic engineering, vehicle safety, remote sensing, and structural design optimization. Prerequisite: CE 6707.

CE 8380. Advanced Biomechanics. 3 Credits.
Historical overview of biomechanics and biomaterials. Fundamental concepts in mechanics as applied to the treatment of biological systems. Approaches to the mechanical analysis of the human structure under physiological and non-physiological loading conditions. Constitutive laws for biological materials. Finite element applications. Prerequisite: CE 6206 or 6350. (As arranged).

CE 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy qualifying examination. May be repeated for credit.

CE 8999. Dissertation Research. 1-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

BACHELOR OF SCIENCE WITH A MAJOR IN CIVIL ENGINEERING

Civil engineering encompasses those branches of engineering most closely related to the control and improvement of our environment and of the physical conditions of life. Civil engineers apply many technical specialties in order to plan, design, and construct projects that range from buildings and transportation systems to space stations and space habitats.

Visit the program website (http://www.cee.seas.gwu.edu/programs-degrees) for additional information.

REQUIREMENTS

Recommended program of study

First semester	
CE 1010	Introduction to Civil and Environmental Engineering
UW 1020	University Writing *
SEAS 1001	Engineering Orientation
MATH 1231	Single-Variable Calculus I *
CHEM 1111	General Chemistry I *
One humanities or social sciences elective **	
Second semester	
PHYS 1021	University Physics I *
MATH 1232	Single-Variable Calculus II *
MAE 1004	Engineering Drawing and Computer Graphics
CSCI 1121	Introduction to C Programming
One humanities or social sciences elective **	
Third semester	
APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I
MATH 2233	Multivariable Calculus
PHYS 1022	University Physics II *
One humanities or social sciences elective **	
Fourth semester	
APSC 2058	Analytical Mechanics II
CE 2210	Engineering Computations

CE 2220	Introduction to the Mechanics of Solids
CE 2710	Introduction to Transportation Engineering
GEOL 1001	Physical Geology *
One humanities or social sciences elective **	
Fifth semester	
APSC 3115	Engineering Analysis III
CE 3110W	Civil Engineering Materials
CE 3111W	Civil Engineering Materials Lab
CE 3230	Structural Theory I
CE 3720	Highway Engineering and Design
MAE 3126	Fluid Mechanics I
One humanities or social sciences elective **	
Sixth semester	
CE 3240	Structural Theory 2
CE 3310	Reinforced Concrete Structures
CE 3611	Hydraulics Laboratory
CE 3520	Environmental Engineering I: Water Resources and Water Quality
CE 3610	Hydraulics
CE 3521	Environmental Engineering Laboratory
One humanities or social sciences elective **	
Seventh semester	
CE 4410	Introduction to Geotechnical Engineering
CE 4411	Geotechnical Engineering Laboratory
CE 4320	Metal Structures
CE 4620	Hydrology and Hydraulic Design
CE 4530	Environmental Engineering II: Water Supply and Pollution Control
One engineering elective selected from list below	
Eighth semester	
CE 4330	Contracts and Specifications
CE 4340	Design and Cost Analysis of Civil Engineering Structures
CE 6403	Geotechnical Engineering
Two engineering electives from the list below	

Engineering electives

CE 4810	Research
CE 4820	Special Topics
CE 6102	Application of Probability Methods in Civil Engineering
CE 6201	Advanced Strength of Materials
CE 6202	Methods of Structural Analysis
CE 6203	Reliability Analysis of Engineering Structures
CE 6204	Analysis of Plates & Shells
CE 6205	Theory of Structural Stability
CE 6206	Continuum Mechanics
CE 6207	Theory of Elasticity I
CE 6208	Plasticity
CE 6209	Mechanics of Composite Materials
CE 6301	Design of Reinforced Concrete Structures
CE 6302	Prestressed Concrete Structures
CE 6320	Design of Metal Structures
CE 6321	Advanced Metal Structures
CE 6401	Fundamentals of Soil Behavior
CE 6402	Theoretical Soil Mechanics
CE 6403	Geotechnical Engineering
CE 6404	Geotechnical Earthquake Engineering
CE 6405	Rock Engineering
CE 6501	Environmental Chemistry
CE 6502	Advanced Sanitary Engineering Design
CE 6503	Principles of Environmental Engineering
CE 6504	Water and Wastewater Treatment Processes

CE 6505	Environmental Impact Assessment
CE 6506	Microbiology for Environmental Engineers
CE 6507	Advanced Treatment Processes
CE 6508	Industrial Waste Treatment
CE 6509	Introduction to Hazardous Wastes
CE 6601	Open Channel Flow
CE 6602	Hydraulic Engineering
CE 6603	Design of Dams
CE 6604	Advanced Hydrology
CE 6605	Ground Water and Seepage
CE 6606	Mechanics of Water Waves
CE 6607	Water Resources Planning and Control
CE 6608	Hydraulic Modeling
CE 6609	Numerical Methods in Environmental and Water Resources
CE 6610	Pollution Transport Systems
CE 6701	Analytical Mechanics
CE 6702	Vehicle Dynamics
CE 6703	Vehicle Standards and Crash Test Analysis
CE 6704	Crash Investigation and Analysis
CE 6705	Nonlinear Finite Element Modeling and Simulation
CE 6706	Pavement & Runway Design
CE 6707	Systems Dynamics Modeling and Control
CE 6721	Traffic Engineering and Highway Safety
CE 6722	Intelligent Transportation Systems
CE 6800	Special Topics
EMSE 6410	Survey of Finance and Engineering Economics

*Course satisfies the university general education requirement in math, science, and writing.
**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list; (p. 38) the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list; (p. 38) the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list. (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf)

BACHELOR OF SCIENCE WITH A MAJOR IN CIVIL ENGINEERING, ENVIRONMENTAL ENGINEERING OPTION

Graduates with the degree of bachelor of science in civil engineering, environmental engineering option, can identify, formulate, and solve problems involving design, experimentation, and analysis of a wide variety of civil engineering applications. The program of study prepares students to understand the impact of engineering solutions in a global economic, environmental, and social context. The well-structured curriculum enables students to design systems, components, or processes to meet desired needs within realistic constraints such as economic, environmental, social, political, health and safety, manufacturability, and sustainability.

Visit the program website (http://www.cee.seas.gwu.edu/programs-degrees) for additional information.

REQUIREMENTS

Recommended program of study

First semester	
CE 1010	Introduction to Civil and Environmental Engineering
UW 1020	University Writing *
SEAS 1001	Engineering Orientation
MATH 1231	Single-Variable Calculus I *
CHEM 1111	General Chemistry I *
One humanities or social sciences elective **	
Second semester	
PHYS 1021	University Physics I *
MATH 1232	Single-Variable Calculus II *
MAE 1004	Engineering Drawing and Computer Graphics

CSCI 1121	Introduction to C Programming
CHEM 1112	General Chemistry II *
Third semester	
APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I
MATH 2233	Multivariable Calculus *
PHYS 1022	University Physics II *
One humanities or social sciences elective **	
Fourth semester	
APSC 2058	Analytical Mechanics II
CE 2210	Engineering Computations
CE 2220	Introduction to the Mechanics of Solids
CE 2710	Introduction to Transportation Engineering
GEOL 1001	Physical Geology *
One humanities or social sciences elective **	
Fifth semester	
APSC 3115	Engineering Analysis III
CE 3110W	Civil Engineering Materials
CE 3111W	Civil Engineering Materials Lab
CE 3230	Structural Theory I
MAE 3126	Fluid Mechanics I
Two humanities or social sciences electives **	
Sixth semester	
CE 3240	Structural Theory 2
CE 3310	Reinforced Concrete Structures
CE 3611	Hydraulics Laboratory
CE 3520	Environmental Engineering I: Water Resources and Water Quality
CE 3610	Hydraulics
CE 3521	Environmental Engineering Laboratory
One humanities or social sciences elective **	
Seventh semester	
CE 4410	Introduction to Geotechnical Engineering
CE 4411	Geotechnical Engineering Laboratory
CE 4320	Metal Structures
CE 4620	Hydrology and Hydraulic Design
CE 4530	Environmental Engineering II: Water Supply and Pollution Control
One engineering elective selected from list below	
Eighth semester	
CE 4330	Contracts and Specifications
CE 4340	Design and Cost Analysis of Civil Engineering Structures
CE 6502	Advanced Sanitary Engineering Design
Two engineering electives	

Engineering electives

CE 4810	Research
CE 4820	Special Topics
CE 6102	Application of Probability Methods in Civil Engineering
CE 6201	Advanced Strength of Materials
CE 6202	Methods of Structural Analysis
CE 6203	Reliability Analysis of Engineering Structures
CE 6204	Analysis of Plates & Shells
CE 6205	Theory of Structural Stability
CE 6206	Continuum Mechanics
CE 6207	Theory of Elasticity I
CE 6208	Plasticity
CE 6209	Mechanics of Composite Materials
CE 6301	Design of Reinforced Concrete Structures
CE 6302	Prestressed Concrete Structures
CE 6320	Design of Metal Structures
CE 6321	Advanced Metal Structures
CE 6401	Fundamentals of Soil Behavior

CE 6402	Theoretical Soil Mechanics
CE 6403	Geotechnical Engineering
CE 6404	Geotechnical Earthquake Engineering
CE 6405	Rock Engineering
CE 6501	Environmental Chemistry
CE 6502	Advanced Sanitary Engineering Design
CE 6503	Principles of Environmental Engineering
CE 6504	Water and Wastewater Treatment Processes
CE 6505	Environmental Impact Assessment
CE 6506	Microbiology for Environmental Engineers
CE 6507	Advanced Treatment Processes
CE 6508	Industrial Waste Treatment
CE 6509	Introduction to Hazardous Wastes
CE 6601	Open Channel Flow
CE 6602	Hydraulic Engineering
CE 6603	Design of Dams
CE 6604	Advanced Hydrology
CE 6605	Ground Water and Seepage
CE 6606	Mechanics of Water Waves
CE 6607	Water Resources Planning and Control
CE 6608	Hydraulic Modeling
CE 6609	Numerical Methods in Environmental and Water Resources
CE 6610	Pollution Transport Systems
CE 6701	Analytical Mechanics
CE 6702	Vehicle Dynamics
CE 6703	Vehicle Standards and Crash Test Analysis
CE 6704	Crash Investigation and Analysis
CE 6705	Nonlinear Finite Element Modeling and Simulation
CE 6706	Pavement & Runway Design
CE 6707	Systems Dynamics Modeling and Control
CE 6721	Traffic Engineering and Highway Safety
CE 6722	Intelligent Transportation Systems
CE 6800	Special Topics
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*Course satisfies the university general education requirement in math, science, and writing.
**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 38); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list (p. 38); the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list. (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf)

BACHELOR OF SCIENCE WITH A MAJOR IN CIVIL ENGINEERING, MEDICAL PREPARATION OPTION

The degree program for the bachelor of science in civil engineering, medical preparation option, focuses on proficiency in mathematics through differential equations, probability and statistics, calculus-based physics, and general chemistry; and the ability to conduct laboratory experiments and to critically analyze and interpret data. The curriculum prepares students to use their technical knowledge and expertise in mathematics, science, and engineering to identify, formulate, and solve problems involving design, experimentation, and analysis of a wide variety of civil engineering applications with special emphasis on the medical field.

Visit the program website (http://www.cee.seas.gwu.edu/programs-degrees) for additional information.

REQUIREMENTS

Recommended program of study

First semester

CE 1010	Introduction to Civil and Environmental Engineering

CHEM 1111	General Chemistry I *
MATH 1231	Single-Variable Calculus I *
SEAS 1001	Engineering Orientation
UW 1020	University Writing *
One humanities or social sciences elective **	
Second semester	
CHEM 1112	General Chemistry II *
CSCI 1121	Introduction to C Programming
MAE 1004	Engineering Drawing and Computer Graphics
MATH 1232	Single-Variable Calculus II *
PHYS 1021	University Physics I *
Third semester	
APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I
BISC 1111	Introductory Biology: Cells and Molecules *
MATH 2233	Multivariable Calculus *
PHYS 1022	University Physics II *
One humanities or social sciences elective **	
Fourth semester	
APSC 2058	Analytical Mechanics II
BISC 1112	Introductory Biology: The Biology of Organisms *
CE 2210	Engineering Computations
CE 2220	Introduction to the Mechanics of Solids
CE 2710	Introduction to Transportation Engineering
GEOL 1001	Physical Geology *
Fifth semester	
CE 3110W	Civil Engineering Materials
CE 3111W	Civil Engineering Materials Lab
CE 3230	Structural Theory I
CHEM 2151	Organic Chemstry I *
CHEM 2153	Organic Chemistry Laboratory I *
ECE 2110	Circuit Theory
MAE 3126	Fluid Mechanics I
Sixth semester	
CE 3240	Structural Theory 2
CE 3310	Reinforced Concrete Structures
CE 3520	Environmental Engineering I: Water Resources and Water Quality
CE 3521	Environmental Engineering Laboratory
CE 3611	Hydraulics Laboratory
CE 3610	Hydraulics
CHEM 2152	Organic Chemistry II *
CHEM 2154	Organic Chemistry Laboratory II *
Seventh semester	
CE 4320	Metal Structures
CE 4410	Introduction to Geotechnical Engineering
CE 4411	Geotechnical Engineering Laboratory
CE 4530	Environmental Engineering II: Water Supply and Pollution Control
One humanities or social sciences elective **	
Eighth semester	
APSC 3115	Engineering Analysis III
CE 4340	Design and Cost Analysis of Civil Engineering Structures
CE 6403	Geotechnical Engineering
One humanities or social sciences elective *	

*Course satisfies the university general education requirement in math, science, and writing.
**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 38); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list (p. 38); the remaining courses must be selected from either the University General Education

Requirement list or the SEAS General Education Requirement list. (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf)

A complete list of engineering electives can be found on the department's website (http://www.cee.seas.gwu.edu/programs-degrees).

BACHELOR OF SCIENCE WITH A MAJOR IN CIVIL ENGINEERING, SUSTAINABILITY OPTION

Civil engineering encompasses those branches of engineering most closely related to the control and improvement of our environment and the physical conditions of life. The Bachelor of Science in Civil Engineering prepares graduates to design systems, components, or processes to meet desired needs within realistic constraints such as sustainability. The University defines sustainability as the balance of environmental resources, social equity, and economic prosperity across the globe and across generations. The curriculum for the bachelor of science in civil engineering, sustainability option, enables students to develop the required analytical, experimental, and design skills to apply interdisciplinary methods and approaches to sustainability and analyze challenges, and develop and implement solutions.

Visit the program website (http://www.cee.seas.gwu.edu/programs-degrees) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
First semester		
CE 1010	Introduction to Civil and Environmental Engineering	
CHEM 1111	General Chemistry I *	
MATH 1231	Single-Variable Calculus I *	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing *	
One humanities or social sciences elective **		
Second semester		
CE 1020	Introduction to a Sustainable World	
CSCI 1121	Introduction to C Programming	
MAE 1004	Engineering Drawing and Computer Graphics	
MATH 1232	Single-Variable Calculus II *	
PHYS 1021	University Physics I *	
One humanities or social sciences elective **		
Third semester		
APSC 2057	Analytical Mechanics I	
APSC 2113	Engineering Analysis I	
CE 2510	Environmental Sustainability	
MATH 2233	Multivariable Calculus *	
PHYS 1022	University Physics II *	
One humanities or social sciences elective **		
Fourth semester		
APSC 2058	Analytical Mechanics II	
CE 2210	Engineering Computations	
CE 2220	Introduction to the Mechanics of Solids	
CE 2710	Introduction to Transportation Engineering	
GEOL 1001	Physical Geology	
One humanities or social sciences elective **		
Fifth semester		
APSC 3115	Engineering Analysis III	
CE 3110W	Civil Engineering Materials	
CE 3111W	Civil Engineering Materials Lab	
CE 3230	Structural Theory I	
CE 3720	Highway Engineering and Design	
MAE 3126	Fluid Mechanics I	
One humanities or social sciences elective **		
Sixth semester		
CE 3140	Sustainability in Engineering Materials	
CE 3240	Structural Theory 2	
CE 3310	Reinforced Concrete Structures	
CE 3520	Environmental Engineering I: Water Resources and Water Quality	
CE 3521	Environmental Engineering Laboratory	

CE 3610	Hydraulics
CE 3611	Hydraulics Laboratory
Seventh semester	
CE 4410	Introduction to Geotechnical Engineering
CE 4411	Geotechnical Engineering Laboratory
CE 4320	Metal Structures
CE 4620	Hydrology and Hydraulic Design
CE 4530	Environmental Engineering II: Water Supply and Pollution Control
Civil engineering elective from the list below	
Eighth semester	
CE 4330	Contracts and Specifications
CE 4340	Design and Cost Analysis of Civil Engineering Structures
CE 4450	Introduction to Geo-environmental Engineering
Two engineering electives from the list below	

Code	Title	Credits
Engineering electives		
CE 4810	Research	
CE 4820	Special Topics	
CE 6102	Application of Probability Methods in Civil Engineering	
CE 6201	Advanced Strength of Materials	
CE 6202	Methods of Structural Analysis	
CE 6203	Reliability Analysis of Engineering Structures	
CE 6204	Analysis of Plates & Shells	
CE 6205	Theory of Structural Stability	
CE 6206	Continuum Mechanics	
CE 6207	Theory of Elasticity I	
CE 6208	Plasticity	
CE 6209	Mechanics of Composite Materials	
CE 6301	Design of Reinforced Concrete Structures	
CE 6302	Prestressed Concrete Structures	
CE 6320	Design of Metal Structures	
CE 6321	Advanced Metal Structures	
CE 6401	Fundamentals of Soil Behavior	
CE 6402	Theoretical Soil Mechanics	
CE 6403	Geotechnical Engineering	
CE 6404	Geotechnical Earthquake Engineering	
CE 6405	Rock Engineering	
CE 6501	Environmental Chemistry	
CE 6502	Advanced Sanitary Engineering Design	
CE 6503	Principles of Environmental Engineering	
CE 6504	Water and Wastewater Treatment Processes	
CE 6505	Environmental Impact Assessment	
CE 6506	Microbiology for Environmental Engineers	
CE 6507	Advanced Treatment Processes	
CE 6508	Industrial Waste Treatment	
CE 6509	Introduction to Hazardous Wastes	
CE 6601	Open Channel Flow	
CE 6602	Hydraulic Engineering	
CE 6603	Design of Dams	
CE 6604	Advanced Hydrology	
CE 6605	Ground Water and Seepage	
CE 6606	Mechanics of Water Waves	
CE 6607	Water Resources Planning and Control	
CE 6608	Hydraulic Modeling	
CE 6609	Numerical Methods in Environmental and Water Resources	
CE 6610	Pollution Transport Systems	
CE 6701	Analytical Mechanics	
CE 6702	Vehicle Dynamics	

CE 6703	
CE 6704	
CE 6705	Nonlinear Finite Element Modeling and Simulation
CE 6706	Pavement & Runway Design
CE 6707	Systems Dynamics Modeling and Control
CE 6721	Traffic Engineering and Highway Safety
CE 6722	Intelligent Transportation Systems
CE 6800	Special Topics
EMSE 6410	Survey of Finance and Engineering Economics

*Course satisfies the university general education requirement in math, science, and writing.
**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 38); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list; the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list.

BACHELOR OF SCIENCE WITH A MAJOR IN CIVIL ENGINEERING, TRANSPORTATION ENGINEERING OPTION

Civil engineering encompasses those branches of engineering most closely related to the control and improvement of our environment and the physical conditions of life. The bachelor of science in civil engineering, transportation option, prepares students to design systems, components, or processes to achieve desired outcomes within realistic constraints such as economic, environmental, social, political, health and safety, manufacturability, and sustainability. Students are able to use their experience with interdisciplinary methods and approaches to transportation engineering and design to develop the analytical, experimental, and design skills they will need. Graduates of the program understand issues involving professional practice such as procurement of work, bidding versus quality-based selection processes, and how construction professionals and civil engineers interact to design and construct a project.

Visit the program website (http://www.cee.seas.gwu.edu/programs-degrees) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
First semester		
CE 1010	Introduction to Civil and Environmental Engineering	
CHEM 1111	General Chemistry I *	
SEAS 1001	Engineering Orientation	
MATH 1231	Single-Variable Calculus I *	
UW 1020	University Writing *	
One humanities or social sciences elective **		
Second semester		
CSCI 1121	Introduction to C Programming	
MAE 1004	Engineering Drawing and Computer Graphics	
MATH 1232	Single-Variable Calculus II *	
PHYS 1021	University Physics I *	
One humanities or social sciences elective **		
Third semester		
APSC 2057	Analytical Mechanics I	
APSC 2113	Engineering Analysis I	
MATH 2233	Multivariable Calculus *	
PHYS 1022	University Physics II *	
One humanities or social sciences elective **		
Fourth semester		
APSC 2058	Analytical Mechanics II	
CE 2210	Engineering Computations	
CE 2220	Introduction to the Mechanics of Solids	
CE 2710	Introduction to Transportation Engineering	
GEOL 1001	Physical Geology	
One humanities or social sciences elective **		

Fifth semester	
APSC 3115	Engineering Analysis III
CE 3110W	Civil Engineering Materials
CE 3111W	Civil Engineering Materials Lab
CE 3230	Structural Theory I
CE 3720	Highway Engineering and Design
MAE 3126	Fluid Mechanics I
One humanities or social sciences elective **	
Sixth semester	
CE 3240	Structural Theory 2
CE 3310	Reinforced Concrete Structures
CE 3520	Environmental Engineering I: Water Resources and Water Quality
CE 3521	Environmental Engineering Laboratory
CE 3611	Hydraulics Laboratory
CE 3610	Hydraulics
One humanities or social sciences elective **	
Seventh semester	
CE 4410	Introduction to Geotechnical Engineering
CE 4411	Geotechnical Engineering Laboratory
CE 4320	Metal Structures
CE 4620	Hydrology and Hydraulic Design
CE 4530	Environmental Engineering II: Water Supply and Pollution Control
One engineering elective from the list below	
Eighth semester	
CE 4330	Contracts and Specifications
CE 4340	Design and Cost Analysis of Civil Engineering Structures
CE 6403	Geotechnical Engineering
Two engineering electives from the list below	

Code	Title	Credits
Engineering electives		
CE 4810	Research	
CE 4820	Special Topics	
CE 6102	Application of Probability Methods in Civil Engineering	
CE 6201	Advanced Strength of Materials	
CE 6202	Methods of Structural Analysis	
CE 6203	Reliability Analysis of Engineering Structures	
CE 6204	Analysis of Plates & Shells	
CE 6205	Theory of Structural Stability	
CE 6206	Continuum Mechanics	
CE 6207	Theory of Elasticity I	
CE 6208	Plasticity	
CE 6209	Mechanics of Composite Materials	
CE 6301	Design of Reinforced Concrete Structures	
CE 6302	Prestressed Concrete Structures	
CE 6320	Design of Metal Structures	
CE 6321	Advanced Metal Structures	
CE 6401	Fundamentals of Soil Behavior	
CE 6402	Theoretical Soil Mechanics	
CE 6403	Geotechnical Engineering	
CE 6404	Geotechnical Earthquake Engineering	
CE 6405	Rock Engineering	
CE 6501	Environmental Chemistry	
CE 6502	Advanced Sanitary Engineering Design	
CE 6503	Principles of Environmental Engineering	
CE 6504	Water and Wastewater Treatment Processes	
CE 6505	Environmental Impact Assessment	
CE 6506	Microbiology for Environmental Engineers	
CE 6507	Advanced Treatment Processes	
CE 6508	Industrial Waste Treatment	

CE 6509	Introduction to Hazardous Wastes
CE 6601	Open Channel Flow
CE 6602	Hydraulic Engineering
CE 6603	Design of Dams
CE 6604	Advanced Hydrology
CE 6605	Ground Water and Seepage
CE 6606	Mechanics of Water Waves
CE 6607	Water Resources Planning and Control
CE 6608	Hydraulic Modeling
CE 6609	Numerical Methods in Environmental and Water Resources
CE 6610	Pollution Transport Systems
CE 6701	Analytical Mechanics
CE 6702	Vehicle Dynamics
CE 6703	
CE 6704	
CE 6705	Nonlinear Finite Element Modeling and Simulation
CE 6706	Pavement & Runway Design
CE 6707	Systems Dynamics Modeling and Control
CE 6721	Traffic Engineering and Highway Safety
CE 6722	Intelligent Transportation Systems
CE 6800	Special Topics
EMSE 6410	Survey of Finance and Engineering Economics

*Course satisfies the university general education requirement in math, science, and writing.
**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 38); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list; the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list.

COMBINED BACHELOR OF SCIENCE WITH A MAJOR IN CIVIL ENGINEERING AND MASTER OF SCIENCE IN THE FIELD OF ENVIRONMENTAL ENGINEERING

The School of Engineering and Applied Science offers the combined bachelor of science with a major in civil engineering and master of science in the field of environmental engineering (B.S./M.S.) for undergraduate students who are interested in careers in civil engineering with a focus in the field of environmental engineering. The program allows students to take a specified number of graduate credits as part of their undergraduate degree, thereby allowing both degrees to be earned more quickly and at a lower cost. To meet the requirements of the dual program, students take 6 credits in graduate-level courses as part of their B.S. program of study.

Visit the program website (http://www.cee.seas.gwu.edu/five-year-dual-degree-program-bs-and-ms-civil-engineering-0) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
First semester		
CE 1010	Introduction to Civil and Environmental Engineering	
CHEM 1111	General Chemistry I *	
MATH 1231	Single-Variable Calculus I *	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing *	
One humanities or social sciences elective **		
Second semester		
CHEM 1112	General Chemistry II *	
CSCI 1121	Introduction to C Programming	
MAE 1004	Engineering Drawing and Computer Graphics	
MATH 1232	Single-Variable Calculus II *	
PHYS 1021	University Physics I *	
Third semester		
APSC 2057	Analytical Mechanics I	

APSC 2113	Engineering Analysis I
MATH 2233	Multivariable Calculus *
PHYS 1022	University Physics II *
One humanities or social sciences elective **	
Fourth semester	
APSC 2058	Analytical Mechanics II
CE 2210	Engineering Computations
CE 2220	Introduction to the Mechanics of Solids
CE 2710	Introduction to Transportation Engineering
GEOL 1001	Physical Geology *
One humanities or social sciences elective **	
Fifth semester	
APSC 3115	Engineering Analysis III
CE 3110W	Civil Engineering Materials
CE 3111W	Civil Engineering Materials Lab
CE 3230	Structural Theory I
MAE 3126	Fluid Mechanics I
Two humanities or social sciences electives **	
Sixth semester	
CE 3240	Structural Theory 2
CE 3310	Reinforced Concrete Structures
CE 3520	Environmental Engineering I: Water Resources and Water Quality
CE 3521	Environmental Engineering Laboratory
CE 3610	Hydraulics
CE 3611	Hydraulics Laboratory
One humanities or social sciences elective **	
Seventh semester	
CE 4320	Metal Structures
CE 4410	Introduction to Geotechnical Engineering
CE 4411	Geotechnical Engineering Laboratory
CE 4530	Environmental Engineering II: Water Supply and Pollution Control
CE 4620	Hydrology and Hydraulic Design
One engineering elective	
Eighth semester	
CE 4330W	Contracts and Specifications
CE 4340	Design and Cost Analysis of Civil Engineering Structures
CE 6502	Advanced Sanitary Engineering Design
Two engineering electives	
One CE master of science program course	
Ninth semester	
Four CE master of science program courses	
Tenth semester	
Four CE master of science program courses	

*Course satisfies the university general education requirement in math, science, and writing.
**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 38); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list (p. 38); the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list. (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf)

A complete list of engineering electives can be found on the department's website (http://www.cee.seas.gwu.edu/programs-degrees).

COMBINED BACHELOR OF SCIENCE WITH A MAJOR IN CIVIL ENGINEERING AND MASTER OF SCIENCE IN THE FIELD OF STRUCTURAL ENGINEERING

Offered by the School of Engineering and Applied Science, the bachelor of science with a major in civil engineering and master of science in the field of structural engineering (B.S./M.S.)

degree program allows civil engineering students to specialize in the field of structural engineering. Civil engineering encompasses those branches of engineering most closely related to the control and improvement of the environment and the physical conditions of life. Civil engineers apply many technical specialties in order to plan, design, and construct projects that range from buildings and transportation systems to space stations and space habitats.

Visit the Department of Civil and Environmental Engineering website (http://www.cee.seas.gwu.edu/about) for additional information

REQUIREMENTS

Recommended program of study

First semester	
CE 1010	Introduction to Civil and Environmental Engineering
CHEM 1111	General Chemistry I *
MATH 1231	Single-Variable Calculus I *
SEAS 1001	Engineering Orientation
UW 1020	University Writing *
One humanities or social sciences elective **	
Second semester	
CSCI 1121	Introduction to C Programming
MAE 1004	Engineering Drawing and Computer Graphics
MATH 1232	Single-Variable Calculus II *
PHYS 1021	University Physics I *
One humanities or social sciences elective **	
Third semester	
APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I
MATH 2233	Multivariable Calculus *
PHYS 1022	University Physics II *
One humanities or social sciences elective **	
Fourth semester	
APSC 2058	Analytical Mechanics II
CE 2210	Engineering Computations
CE 2220	Introduction to the Mechanics of Solids
CE 2710	Introduction to Transportation Engineering
GEOL 1001	Physical Geology
One humanities or social sciences elective **	
Fifth semester	
APSC 3115	Engineering Analysis III
CE 3110W	Civil Engineering Materials
CE 3111W	Civil Engineering Materials Lab
CE 3230	Structural Theory I
CE 3720	Highway Engineering and Design
MAE 3126	Fluid Mechanics I
One humanities or social sciences course **	
Sixth semester	
CE 3240	Structural Theory 2
CE 3310	Reinforced Concrete Structures
Civil engineering elective	
CE 3520	Environmental Engineering I: Water Resources and Water Quality
CE 3521	Environmental Engineering Laboratory
CE 3610	Hydraulics
CE 3611	Hydraulics Laboratory (One humanities or social sciences elective)
One humanities or social sciences elective **	
Seventh semester	
CE 4320	Metal Structures
CE 4410	Introduction to Geotechnical Engineering
CE 4411	Geotechnical Engineering Laboratory
CE 4530	Environmental Engineering II: Water Supply and Pollution Control
CE 4620	Hydrology and Hydraulic Design
One engineering elective	
Eighth semester	

CE 4330W	Contracts and Specifications
CE 4340	Design and Cost Analysis of Civil Engineering Structures
CE 6403	Geotechnical Engineering
Two engineering electives	
One CE master of science course	
Ninth semester	
Four CE master of science courses	
Tenth semester	
Four CE master of science courses	

*Course satisfies the university general education requirement in math, science, and writing.
**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list; (p. 38)the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list; (p. 38) the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list. (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf)

A complete list of engineering electives can be found on the department's website (http://www.cee.seas.gwu.edu/programs-degrees).

COMBINED BACHELOR OF SCIENCE WITH A MAJOR IN CIVIL ENGINEERING AND MASTER OF SCIENCE IN THE FIELD OF TRANSPORTATION ENGINEERING

Offered by the School of Engineering and Applied Science, the combined bachelor of science with a major in civil engineering and master of science in the field of transportation engineering (B.S./M.S.) program allows civil engineering students to specialize in the field of transportation engineering. Civil engineering encompasses those branches of engineering most closely related to the control and improvement of our environment and the physical conditions of life. Civil engineers apply many technical specialties in order to plan, design, and construct projects that range from buildings and transportation systems to space stations and space habitats.

Visit the Department of Civil and Environmental Engineering website (https://www.cee.seas.gwu.edu) for additional information.

REQUIREMENTS

Recommended program of study

First semester	
CE 1010	Introduction to Civil and Environmental Engineering
CHEM 1111	General Chemistry I *
MATH 1231	Single-Variable Calculus I *
SEAS 1001	Engineering Orientation
UW 1020	University Writing *
One humanities or social sciences elective **	
Second semester	
CSCI 1121	Introduction to C Programming
MAE 1004	Engineering Drawing and Computer Graphics
MATH 1232	Single-Variable Calculus II *
PHYS 1021	University Physics I *
One humanities or social sciences elective **	
Third semester	
APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I
MATH 2233	Multivariable Calculus *
PHYS 1022	University Physics II *
One humanities or social sciences elective **	
Fourth semester	
APSC 2058	Analytical Mechanics II
CE 2210	Engineering Computations
CE 2220	Introduction to the Mechanics of Solids
CE 2710	Introduction to Transportation Engineering
GEOL 1001	Physical Geology *

One humanities or social sciences elective **	
Fifth semester	
APSC 3115	Engineering Analysis III
CE 3110W	Civil Engineering Materials
CE 3111W	Civil Engineering Materials Lab
CE 3230	Structural Theory I
CE 3720	Highway Engineering and Design
MAE 3126	Fluid Mechanics I
One humanities or social sciences elective **	
Sixth semester	
CE 3240	Structural Theory 2
CE 3310	Reinforced Concrete Structures
CE 3520	Environmental Engineering I: Water Resources and Water Quality
CE 3521	Environmental Engineering Laboratory
CE 3610	Hydraulics
CE 3611	Hydraulics Laboratory
STAT 2183	Intermediate Stat Lab/Packages
Seventh semester	
CE 4320	Metal Structures
CE 4410	Introduction to Geotechnical Engineering
CE 4411	Geotechnical Engineering Laboratory
CE 4530	Environmental Engineering II: Water Supply and Pollution Control
CE 4620	Hydrology and Hydraulic Design
One humanities or social sciences course **	
Eighth semester	
CE 4330W	Contracts and Specifications
CE 4340	Design and Cost Analysis of Civil Engineering Structures
CE 6403	Geotechnical Engineering
Two engineering electives	
One CE master of science course	
Ninth semester	
Four CE master of science courses	
Tenth semester	
Four CE master of science courses	

Engineering electives

CE 4810	Research
CE 4820	Special Topics
CE 6102	Application of Probability Methods in Civil Engineering
CE 6201	Advanced Strength of Materials
CE 6202	Methods of Structural Analysis
CE 6203	Reliability Analysis of Engineering Structures
CE 6204	Analysis of Plates & Shells
CE 6205	Theory of Structural Stability
CE 6206	Continuum Mechanics
CE 6207	Theory of Elasticity I
CE 6208	Plasticity
CE 6209	Mechanics of Composite Materials
CE 6301	Design of Reinforced Concrete Structures
CE 6302	Prestressed Concrete Structures
CE 6320	Design of Metal Structures
CE 6321	Advanced Metal Structures
CE 6401	Fundamentals of Soil Behavior
CE 6402	Theoretical Soil Mechanics
CE 6403	Geotechnical Engineering
CE 6404	Geotechnical Earthquake Engineering
CE 6405	Rock Engineering
CE 6501	Environmental Chemistry
CE 6502	Advanced Sanitary Engineering Design
CE 6503	Principles of Environmental Engineering
CE 6504	Water and Wastewater Treatment Processes

CE 6505	Environmental Impact Assessment
CE 6506	Microbiology for Environmental Engineers
CE 6507	Advanced Treatment Processes
CE 6508	Industrial Waste Treatment
CE 6509	Introduction to Hazardous Wastes
CE 6601	Open Channel Flow
CE 6602	Hydraulic Engineering
CE 6603	Design of Dams
CE 6604	Advanced Hydrology
CE 6605	Ground Water and Seepage
CE 6606	Mechanics of Water Waves
CE 6607	Water Resources Planning and Control
CE 6608	Hydraulic Modeling
CE 6609	Numerical Methods in Environmental and Water Resources
CE 6610	Pollution Transport Systems
CE 6701	Analytical Mechanics
CE 6702	Vehicle Dynamics
CE 6703	Vehicle Standards and Crash Test Analysis
CE 6704	Crash Investigation and Analysis
CE 6705	Nonlinear Finite Element Modeling and Simulation
CE 6706	Pavement & Runway Design
CE 6707	Systems Dynamics Modeling and Control
CE 6721	Traffic Engineering and Highway Safety
CE 6722	Intelligent Transportation Systems
CE 6800	Special Topics
EMSE 6410	Survey of Finance and Engineering Economics

*Course satisfies the university general education requirement in math, science, and writing.
**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list; (p. 38) the remaining course must be selected from either the University General Education Requirement list (p. 38) or the SEAS General Education Requirement list. (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf) At least one humanities course must be selected from the University General Education Requirement list; (p. 38) the remaining courses must be selected from either the University General Education Requirement list (p. 38) or the SEAS General Education Requirement list. (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf)

MASTER OF SCIENCE IN THE FIELD OF CIVIL AND ENVIRONMENTAL ENGINEERING

The master of science in the field of civil and environmental engineering degree program is designed to provide students with the fundamentals and knowledge about the various specializations within environmental engineering. These include water, wastewater, hazardous wastes, industrial wastes, and pertinent regulatory requirements. Environmental engineering students use one of the world's largest wastewater treatment plants as a real-world laboratory to improve the water quality of the Potomac River and the Chesapeake Bay watershed. Structural engineering students study earthquake engineering, extreme event design of structures, and bridge design on a state-of-the-art, six-degrees-of-freedom earthquake simulator. Transportation engineering students learn from faculty and experts at GW's National Crash Analysis Center (https://virginia.gwu.edu/centers-institutes-labs) and the Federal Outdoor Impact Laboratory.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

More information can be found on the departmental website (http://www.cee.seas.gwu.edu/master-science-program).

REQUIREMENTS

The following requirements must be fulfilled: Non-thesis option –33 credits; thesis option–30 credits, including 6 credits of thesis. In either option, the student must select one area of concentration from below and complete the required 9 credits of courses in that area. The remaining credits are selected by the student in consultation with a faculty advisor.

Code	Title	Credits
Required		
All courses in one concentration		
Engineering Mechanics:		
APSC 6213	Analytical Methods in Engineering III	

CE 6206	Continuum Mechanics
CE 6210	Introduction to Finite Element Analysis
Environmental engineering:	
CE 6501	Environmental Chemistry
CE 6503	Principles of Environmental Engineering
CE 6609	Numerical Methods in Environmental and Water Resources
Geotechnical engineering:	
CE 6210	Introduction to Finite Element Analysis
CE 6402	Theoretical Soil Mechanics
CE 6605	Ground Water and Seepage
Structural engineering:	
CE 6201	Advanced Strength of Materials
CE 6202	Methods of Structural Analysis
CE 6210	Introduction to Finite Element Analysis
Transportation safety engineering:	
CE 6102	Application of Probability Methods in Civil Engineering
CE 6721	Traffic Engineering and Highway Safety
CE 6722	Intelligent Transportation Systems
Water resources engineering:	
CE 6601	Open Channel Flow
CE 6604	Advanced Hydrology
CE 6609	Numerical Methods in Environmental and Water Resources
Required of students who have selected the thesis option	
CE 6998	Thesis Research
CE 6999	Thesis Research

Students should consult with the advisor concerning their program of study.

DOCTOR OF PHILOSOPHY IN THE FIELD OF CIVIL AND ENVIRONMENTAL ENGINEERING

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under School of Engineering, Doctoral Program Regulations (http://bulletin.gwu.edu/engineering-applied-science/#Doctor_of_Philosophy).

Students with an MS degree must take a minimum of 30 credits, of which at least 18 must be from graduate courses, and at least 12 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor. Students with a BS degree must take a minimum of 54 credits, of which at least 42 must be graduate course credits, and at least 12 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor. In some cases, particularly when the student undertakes a doctoral program in a field other than that in which the earlier degree was earned, the program of study exceeds the minimum number of credits.

No specific courses are required; the student and advisor design the curriculum to meet the student's needs and goals.

Other requirements

- Qualifying examination—Administered twice a year, the examination covers subject matters at both the master's and doctoral levels. Students should prepare for comprehensive questioning on all subject matters regardless of any particular course included in the actual doctoral coursework load.

Student should contact the department for additional information and requirements

GRADUATE CERTIFICATE IN ENVIRONMENTAL ENGINEERING

The graduate certificate in environmental engineering program is particularly appropriate for individuals interested in the areas of hazardous waste remediation and water/wastewater treatment. Students who complete the graduate certificate may opt to continue towards a master's degree in the civil and environmental engineering department. All courses completed by the student in the graduate certificate program with a grade of B or better can be transferred to the master's degree program.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in one selected track, including 9 credits in required courses and a 3-credit elective course.

Hazardous Waste Remediation

Code	Title	Credits
Required		
CE 6503	Principles of Environmental Engineering	
CE 6504	Water and Wastewater Treatment Processes	
CE 6509	Introduction to Hazardous Wastes	
Elective		
One of the following:		
CE 6501	Environmental Chemistry	
CE 6502	Advanced Sanitary Engineering Design	
CE 6503	Principles of Environmental Engineering	
CE 6504	Water and Wastewater Treatment Processes	

Advanced Technologies in Environmental Engineering

Code	Title	Credits
Required		
CE 6503	Principles of Environmental Engineering	
CE 6504	Water and Wastewater Treatment Processes	
CE 6800	Special Topics (Environmental Application and Implications of Nanotechnology)	
Elective		
One of the following:		
CE 6501	Environmental Chemistry	
CE 6502	Advanced Sanitary Engineering Design	
CE 6503	Principles of Environmental Engineering	
CE 6504	Water and Wastewater Treatment Processes	

Engineering Design and Impact Assessment

Code	Title	Credits
Required		
CE 6503	Principles of Environmental Engineering	
CE 6504	Water and Wastewater Treatment Processes	
CE 6505	Environmental Impact Assessment	
Elective		
One of the following:		
CE 6501	Environmental Chemistry	
CE 6502	Advanced Sanitary Engineering Design	
CE 6503	Principles of Environmental Engineering	
CE 6504	Water and Wastewater Treatment Processes	

GRADUATE CERTIFICATE IN GEOENVIRONMENTAL ENGINEERING

The graduate certificate in geoenvironmental engineering program is designed to provide the necessary background for civil engineers to practice in the field. The program offers an in-depth understanding of the issues that a geo-environmental engineer may encounter in practice. Students who successfully complete the certificate program may opt to continue towards a master's degree in the Civil and Environmental Engineering department. All courses completed by the student in the graduate certificate program with a grade of B or better can be transferred to the master's degree program.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
CE 6401	Fundamentals of Soil Behavior	
CE 6509	Introduction to Hazardous Wastes	

CE 6800	Special Topics (Containment Systems for Waste Disposal and Remediation Systems for Subsurface Contamination)
Elective	
One of the following:	
CE 6501	Environmental Chemistry
CE 6504	Water and Wastewater Treatment Processes
CE 6507	Advanced Treatment Processes
CE 6605	Ground Water and Seepage
CE 6610	Pollution Transport Systems

GRADUATE CERTIFICATE IN STRUCTURAL ENGINEERING

The graduate certificate in structural engineering program is appropriate for those who wish to gain specialized knowledge in one of the following tracks: earthquake engineering design of bridges and buildings, extreme event design of structures to resist the effects of accidental explosions and vehicular collision, concrete bridge design using the LRFD approach, or building design using the LRFD approach.

Students who successfully complete the certificate program may opt to continue towards a master's degree in the Civil and Environmental Engineering department. All courses completed by the student in the graduate certificate program with a grade of B or better can be transferred to the master's degree program.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses in one selected track.

Earthquake Engineering Design

Code	Title	Credits
Required		
CE 6202	Methods of Structural Analysis	
CE 6342	Structural Design to Resist Natural Hazards	
CE 6404	Geotechnical Earthquake Engineering	
CE 6800	Special Topics (Advanced Earthquake Engineering Topics)	

Concrete Bridge Design

Code	Title	Credits
Required		
CE 6301	Design of Reinforced Concrete Structures	
CE 6302	Prestressed Concrete Structures	
CE 6310	Advanced Reinforced Concrete Structures	
CE 6800	Special Topics (Advanced Bridge Design Topics)	

Extreme Event Design of Structures

Code	Title	Credits
Required		
CE 6202	Methods of Structural Analysis	
CE 6342	Structural Design to Resist Natural Hazards	
CE 8330	Advanced Finite Element Analysis	
CE 6800	Special Topics ((Advanced Blast Resistant Topics)	

Building Design

Code	Title	Credits
Required		
CE 6310	Advanced Reinforced Concrete Structures	
CE 6342	Structural Design to Resist Natural Hazards	
CE 6320	Design of Metal Structures	
CE 6800	Special Topics (Advanced Building Design Topics)	

GRADUATE CERTIFICATE IN TRANSPORTATION ENGINEERING

The graduate certificate in the field of transportation engineering is particularly appropriate for those who wish to gain specialized knowledge in either intelligent transportation systems and congestion mitigation or transportation safety.

Students who successfully complete the graduate certificate in structural engineering may opt to continue towards a master's degree in the Civil and Environmental Engineering department. All courses completed by the student in the graduate certificate

program with a grade of B or better can be transferred to the master's degree program.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 15 credits, including 9 credits in required courses and 6 credits in elective courses in one selected track.

Intelligent Transportation Systems and Congestion Mitigation Track

Code	Title	Credits
Required		
Three of the following:		
CE 6707	Systems Dynamics Modeling and Control	
CE 6721	Traffic Engineering and Highway Safety	
CE 6722	Intelligent Transportation Systems	
CE 6800	Special Topics (Advanced Theory in Traffic Flow)	
CE 6800	Special Topics (Advanced Demand Modeling)	
Electives		
Two of the following:		
CE 6101	Numerical Methods in Engineering	
CE 6102	Application of Probability Methods in Civil Engineering	
CE 6210	Introduction to Finite Element Analysis	
CE 6701	Analytical Mechanics	
CE 8330	Advanced Finite Element Analysis	
CE 8380	Advanced Biomechanics	

Transportation Safety Track

Code	Title	Credits
Required		
Three of the following:		
CE 6350	Intro to Biomechanics	
CE 6702	Vehicle Dynamics	
CE 6703	Vehicle Standards and Crash Test Analysis	
CE 6704	Crash Investigation and Analysis	
CE 6705	Nonlinear Finite Element Modeling and Simulation	
CE 6707	Systems Dynamics Modeling and Control	
CE 6721	Traffic Engineering and Highway Safety	
CE 6722	Intelligent Transportation Systems	
Electives		
Two of the following:		
CE 6101	Numerical Methods in Engineering	
CE 6102	Application of Probability Methods in Civil Engineering	
CE 6210	Introduction to Finite Element Analysis	
CE 6701	Analytical Mechanics	
CE 8330	Advanced Finite Element Analysis	
CE 8380	Advanced Biomechanics	

COMPUTER SCIENCE

Mission Statement

The mission of the Department of Computer Science is to serve the global community by providing high-quality computer science education, research, and professional services and to advance computer technology in selective areas while upholding standards of excellence.

Educational Objectives

The undergraduate program of study is designed to prepare graduates to earn an advanced degree in computer science or related disciplines; for a professional degree such as law, business, or medicine; or for employment in the computer or IT industry, where they will apply the skills and knowledge learned in the program. Graduates will conduct themselves professionally and ethically, work effectively in teams, and communicate effectively with both technical and non-technical audiences.

Educational Outcomes

A graduate in computer science will have the ability to do the following:

- Apply knowledge of computing and mathematics appropriate to the discipline;

- Analyze a problem and identify and define the computing requirements appropriate to its solution;
- Design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs;
- Function effectively on teams to accomplish a common goal;
- Understand professional, ethical, legal, security, and social issues and responsibilities;
- Communicate effectively with a range of audiences;
- Analyze the local and global impact of computing on individuals, organizations, and society;
- Recognize the need to engage in continuing professional development;
- Use current techniques, skills, and tools necessary for computing practice;
- Apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the trade-offs involved in design choices; and
- Apply design and development principles in the construction of software systems of varying complexity.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in computer science (p. 638)
- Bachelor of Science with a major in computer science (p. 640)

Minor

- Minor in computer science (p. 642)

GRADUATE

Master's programs

- Master of Science in the field of computer science (p. 643)
- Master of Science in the field of cybersecurity in computer science (p. 643)

Doctoral program

- Doctor of Philosophy in the field of computer science (p. 644)

CERTIFICATES

- Graduate certificate in computer security and information assurance (p. 644)

FACULTY

Professors X. Cheng, H.A. Choi, J.K. Hahn, R.S. Heller, B. Narahari, R. Simha, P. Vora, and A. Youssef

Associate Professors M. Diab, G. Parmer, N. Zhang

Assistant Professors E. Drumwright, C. Monteleoni, T. Wood

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses; computer science courses in this numerical range may only be taken for graduate credit with permission of the course instructor, permission of the student's academic advisor, and by completing additional work in the course
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: With the exception of CSCI 1010, CSCI courses numbered CSCI 1041 and below normally may not be counted toward degree requirements for computer science majors, unless approved by a departmental advisor.

CSCI 1010. Computer Science Orientation. 1 Credit.
Introduction to the field of computer science. Basic and emerging concepts and applications of computer science. Hands-on experiments and team projects. Technical resources, professional ethics, writing, and presentation.

CSCI 1011. Introduction to Programming with Java. 3 Credits.
An introductory course in programming a computer, using the Java language. Object-oriented programming, classes, applets, methods, control structures, inheritance, overriding, GUI widgets, containers, and exceptions.

CSCI 1020. Applications Software. 3 Credits.
Introduction to the use of microcomputer hardware and software for word processing (e.g., Word), spreadsheets (e.g., Excel), and database management (e.g., Access), with emphasis on the use of computers to solve typical problems in academia and business.

CSCI 1021. Introduction to Computers and the Internet. 3 Credits.
Survey of computers and languages. Introduction to computer programming. History of computing and networking. The effects of computing and the Internet on our lives. E-commerce and new technologies. Concepts of web page design. (Fall and spring).

CSCI 1022. Introduction to Internet Technology. 3 Credits.
An introductory course for non-technical students who wish to obtain a better understanding of the hardware and software that comprise the Internet. Information transfer over fiber, routing and switching of packets, methods of information transfer, protocols, software, ISP, web pages and multimedia.

CSCI 1023. Introduction to Web Software Development. 3 Credits.
Introduction to the Internet. Topics include address and URL to find your way, linking to a URL, HTML and web programming, building a web page, building a home page, client-server techniques. (Fall and spring).

CSCI 1030. Technology and Society. 3 Credits.
Historical, social, and ethical issues of the technological age. Ethical principles and skills and social analysis skills needed to evaluate the design and implementation of complex computer systems. Privacy, computer crime, equity, intellectual property, professional ethics. Data collection, analysis, and presentation; technical writing and oral communication skills.

CSCI 1030W. Technology and Society. 3 Credits.
Historical, social, and ethical issues of the technological age. Ethical principles and skills and social analysis skills needed to evaluate the design and implementation of complex computer systems. Privacy, computer crime, equity, intellectual property, professional ethics. Data collection, analysis, and presentation; technical writing and oral communication skills.

CSCI 1041. Introduction to FORTRAN Programming. 3 Credits.
Structured programming with high-level language using FORTRAN. Control structures. Different data types with emphasis on real and complex number computations. Arrays used with vector and matrix manipulation to solve simultaneous equations. External subroutines for mathematical and graphical applications. Prerequisite or corequisite: Math 1220 or MATH 1231.

CSCI 1111. Introduction to Software Development. 3 Credits.
Introduction to the solution of problems on a digital computer using the Java language. Object-oriented programming concepts; documentation techniques; design of test data. Writing, debugging, and running programs in an interactive computing environment.

CSCI 1112. Algorithms and Data Structures. 3 Credits.
Object-oriented software. Inheritance, exceptions, development of classes, event-driven programming. Data structures such as trees, lists, stacks, queues, and strings. Sorting and searching. Introduction to algorithm performance prediction. May be taken for graduate credit by students in fields other than computer science. Prerequisites: CSCI 1111 with a grade of C or higher; and MATH 1220 or MATH 1231. (Spring).

CSCI 1121. Introduction to C Programming. 3 Credits.
Structured programming with the C language. Control structures. Data types. Use of pointers. Matrix manipulation to solve simultaneous equations. External subroutines for mathematical and graphical applications. Introduction to C> Complex number representation. Corequisite: MATH 1220 or MATH 1231.

CSCI 1131. Introduction to Programming with C. 3 Credits.
Intensive introductory course for students with a science, mathematics, or other quantitative background. Solution of numerical and nonnumerical problems on a digital computer using C programming language in a Unix environment. Recommended for graduate and advanced undergraduate students in other departments. Prerequisite: MATH 1232 .

CSCI 1132. Data Structures and Software Design. 3 Credits.
Data structures such as trees, lists, stacks, queues, and strings. Big-O notation and introduction to algorithm performance analysis. Solutions of numerical and non-numerical problems. Use of I/O libraries. Application development and software testing. Prerequisite: CSCI 1121.

CSCI 1311. Discrete Structures I. 3 Credits.
Mathematics for computer science. Sets, functions, sequences. Propositional and predicate calculus, formal proofs, mathematical induction. Matrices, semigroups, groups, isomorphism. Relations, partitions, equivalence relations, trees, graphs. May be taken for graduate credit by students in fields other than computer science. Prerequisites: MATH 1220 or MATH 1231. (Fall).

CSCI 2113. Software Engineering. 3 Credits.
Programming techniques and software development in one or more programming languages. Application development with GUIs, database access, threads, Web programming. Prerequisites: CSCI 1112 with a grade of C or higher; MATH 1231. (Fall).

CSCI 2312. Discrete Structures II. 3 Credits.
Basic discrete techniques in computer science. Proofs, algebraic structures, number theory, graph theory, (coloring and planar graphs, communication networks), advanced recurrences, advanced sums, approximations and asymptotics. Prerequisites: CSCI 1311 with a grade of C or higher; MATH 1231. (Fall).

CSCI 2441. Database Systems and Team Projects. 3 Credits.
Design of relational database systems, relational query languages, normal forms, design of database applications. Team software development, integration, and testing. Professional code of ethics, intellectual property, privacy, software copyrights. Corequisite: CSCI 2113.

CSCI 2441W. Database Systems and Team Projects. 3 Credits.
Design of relational database systems, relational query languages, normal forms, and design of database applications. Team software development, integration, and testing. Professional code of ethics, intellectual property, privacy, and software copyrights. Corequisite: CSCI 2113. (Spring).

CSCI 2461. Computer Architecture I. 3 Credits.
Number representation, computer arithmetic, digital logic and circuit design. Computer organization, micro-architecture and processor datapath, assembly and machine language programming. Introduction to memory organization and the hardware–software interface. Implementation of high-level language constructs. Prerequisites: CSCI 1112, CSCI 1311. (Fall, Every Year).

CSCI 3212. Algorithms. 4 Credits.
Core concepts in design and analysis of algorithms, data structures, and problem-solving techniques. Hashing, heaps, trees. Graph algorithms, searching, sorting, graph algorithms, dynamic programming, greedy algorithms, divide and conquer, backtracking. Combinatorial optimization techniques. NP-completeness. Prerequisite: CSCI 1311, CSCI 2113.

CSCI 3221. Programming Languages. 3 Credits.
Programming language and software design fundamentals. Writing programs in a non-procedural programming language. Closures; procedure and data abstraction; object-oriented, procedural, and declarative programming; continuation compilation and interpretation, and syntactic extension. Advanced control structures appropriate for parallel programming. Prerequisite: CSCI 2113.

CSCI 3240. Pre-Senior Design with Research. 3 Credits.
For students who wish to combine a research project with their Senior Design project. The goal is to complete the research, under a faculty mentor, within three semesters. Prerequisite: CSCI 3212, CSCI 3313, CSCI 3411, and permission of instructor.

CSCI 3313. Foundations of Computing. 4 Credits.
Theoretical foundations. Formal languages and automata; regular expressions, context-free languages; finite state automata and pushdown automata; Turing machines and computability, recursive function theory, undecidability. Compiler construction. Lexical and syntax analysis; parsing and parsing techniques; lexical and parsing tools. Prerequisite: CSCI 2461, CSCI 2113.

CSCI 3362. Probability for Computer Science. 3 Credits.
Introduction to probability and statistics for computer scientists. Random variables. Conditional probability, independence, correlation. Applications to computer science, including information theory, data compression, coding, inference, Markov chains, introduction to randomized algorithms. Prerequisite: Math 1232, CSCI 1311; or permission of instructor.

CSCI 3410. Systems Programming. 3 Credits.
Concepts underlying all computer systems. Processor operation, hierarchical memory systems, embedded boards, data acquisition, actuation, and systems software such as compilers, linkers, and operating systems from the programmer's perspective. Use of embedded platforms to examine how programs interact with and are constrained by hardware. Prerequisite: CSCI 2461, CSCI 2113.

CSCI 3411. Operating Systems. 4 Credits.
Process management, process state, concurrent processing, synchronization, events. Operating system structure, the kernel approach, processor scheduling, task switching, monitors, threads. System management, memory management, process loading, communication with peripherals. File systems. Socket programming, packets, Internet protocols. Prerequisite: CSCI 2461, CSCI 2113.

CSCI 3462. Computer Architecture II. 3 Credits.
Computer organization; design of computer components and of a simple computer. Instruction set and assembly language of a pipelined RISC processor; introduction to high-performance processors; design of cache, main memory, and virtual memory systems; program performance models and system performance; I/O structure and peripherals. Prerequisites: CSCI 2113, CSCI 2461. (Same as ECE 3515) (Spring, Every Year).

CSCI 3571. Introduction to Bioinformatics. 3 Credits.
An introduction to the use of computational techniques in molecular biology, genetics, and evolution. Techniques and software for database searching, sequence alignment, gene finding, phylogenetics, genomics, and proteomics. May be taken for graduate credit. Prerequisites: BISC 1111 and BISC 1112 or permission of the instructor. (Same as BISC 2584) (Spring, Every Year).

CSCI 3907. Special Topics. 1-3 Credits.
Topic to be announced in the Schedule of Classes. (Fall and spring).

CSCI 3908. Research. 1-3 Credits.
Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status.

CSCI 4222. Theory of Computer Translators. 3 Credits.
Lexical and syntax analysis, regular expressions, context-free grammars, parsing techniques, top-down parsing, efficient parsing, syntax-directed translation, intermediate formats, flow of control, block structures, procedure calls, symbol tables, run-time storage, error-detection and recovery, code optimization, code generation. Prerequisite: CSCI 3462, CSCI 3313.

CSCI 4223. Principles of Programming Languages. 3 Credits.
Fundamental concepts underlying design of programming languages. Detailed study of functional and object-oriented computational models. Types, evaluation, abstraction, control flow, modules, mutation, laziness, polymorphism, subtyping, inheritance. Practice learning new languages. Prerequisites: CSCI 1311, CSCI 2113. (Same as CSCI 6223) (Spring, Odd Years).

CSCI 4235. Development of Open-Source Software. 3 Credits.
Design, process, tools, and culture of open-source software development. Cross-platform development and testing. Geographic dispersal, social and team dynamics, licenses (GPL, BSD, other); code reuse (modular code, shared libraries); very-large-scale distributed development techniques (CVS, Bugzilla, release-management, mailing-lists). May be taken for graduate credit. Prerequisite: CSCI 2113 or CSCI 6221.

CSCI 4237. Software Design for Handheld Devices. 3 Credits.
Design of interactive software for handheld devices. Event driven programming, user interface design practices, memory management, handheld debugging techniques. May be taken for graduate credit. Prerequisite: CSCI 2113 or CSCI 6221.

CSCI 4243. Capstone Design Project I. 3 Credits.
Planning, design, and construction of the capstone project. Economic analysis of the project. Application of software engineering principles, including software requirements, specification, requirements engineering, reuse, documentation, verification/validation, testing, configuration management. Report writing and presentations. Prerequisite: senior status.

CSCI 4243W. Capstone Design Project I. 4 Credits.
Planning, design, and construction of the capstone project. Economic analysis of the project. Application of software engineering principles, including software requirements, specification, requirements engineering, reuse, documentation, verification/validation, testing, configuration management. Report writing and presentations. Prerequisite: senior status.

CSCI 4244. Capstone Design Project II. 4 Credits.
Continuation of CSCI 4243. Planning, design, and construction of the capstone project. Economic analysis of the project. Application of software engineering principles, including software requirements, specification, requirements engineering, reuse, documentation, verification/validation, testing, configuration management. Report writing and presentations. Prerequisite: senior status.

CSCI 4314. Discrete Analysis-Computer Sci. 3 Credits.
Combinatorial theory: permutations and combinations, generating functions, recurrence relations, the principle of inclusion and exclusion. Block designs. Applications to the analysis of algorithms, computer organization, VLSI placement, coding theory, simulation, and other problems. May be taken for graduate credit. Prerequisite: CSCI 1311 or permission of the instructor. (Fall, Every Year).

CSCI 4331. Cryptography. 3 Credits.
Algorithmic principles of cryptography from Julius Caesar to public key cryptography. Key management problems and solutions. Cryptographic systems and applications. Prerequisite: CSCI 2312, CSCI 3313, CSCI 3212.

CSCI 4341. Continuous Algorithms. 3 Credits.
Overview of structures in continuous mathematics from a computational viewpoint. Main topics include continuous system simulation, computational modeling, probability, statistical techniques, next-event simulation, algorithms for continuous optimization, machine learning, neural networks, statistical language processing, robot control algorithms. Prerequisite: CSCI 1311, CSCI 2113.

CSCI 4342. Computational Linear Algebra and Applications. 3 Credits.
Application of linear algebra to computer science and engineering, with a computational perspective. Topics include points, vectors, matrices, and their programming representations; algorithms for 3D transformations, pose and viewpoint estimation; linear equations, independence, rank; algorithms for matrix decompositions, reduction of dimension; computation with large matrices, under and over-determined systems; applications to large data, computer vision, text processing. Prerequisite: CSCI 2113.

CSCI 4361. Simulation Methods. 3 Credits.
Computational methods for continuous and discrete system simulation; effects of computer software and hardware architectures on computational precision and accuracy requirements. Random-number generation and testing; calibration and scaling technique; verification and validation technique. May be taken for graduate credit. Prerequisite: CSCI 2113 or permission of the instructor. (Spring, Every Year).

CSCI 4364. Machine Learning. 3 Credits.
Overview of core machine learning techniques: nearest-neighbor, regression, classification, perceptron, kernel methods, support vector machine (SVM), logistic regression, ensemble methods, hidden Markov models (HMM), non-parametrics, online learning, active learning, clustering, feature selection, parameter tuning, and cross-validation. Prerequisites: CSCI 3212, CSCI 3362 and MATH 2184; or permission of the instructor. (Same as CSCI 6364) (Fall, Every Year).

CSCI 4415. Real-Time and Embedded Systems. 3 Credits.
Development of software for real-time control of physical systems. Reliability and fault tolerance, exceptions and exception handling, reliability and concurrent processes, timeouts, deadline scheduling, shared-memory and message-based device drivers. May be taken for graduate credit. Prerequisite: CSCI 2113.

CSCI 4417. UNIX System Programming. 3 Credits.
Exposure to UNIX internals. Use of UNIX system calls and utilities in conjunction with script and C programs. RFCs, GNU project, and other collaborative traditions in the UNIX community. May be taken for graduate credit. Prerequisite: Senior status or 1 year of C programming and UNIX user experience.

CSCI 4418. UNIX System Administration. 3 Credits.
System administration for the stand-alone system or small networks. Installation of two or more UNIX variants (Linux, FreeBSD, Solaris) on Intel or Sparc platforms. Configuration of mail, name services, and other network utilities. Backup and recovery, security and ethics. May be taken for graduate credit. Prerequisite: CSCI 4417.

CSCI 4431. Computer Networks I. 3 Credits.
Higher-layer protocols and network applications on the Internet, such as session layer, presentation layer, data encryption, directory services and reliable transfer services, telnet, network management, network measurements, e-mail systems, and error reporting. Prerequisite: CSCI 2461, CSCI 2113.

CSCI 4431W. Computer Networks I. 3 Credits.
Higher-layer protocols and network applications on the Internet, such as session layer, presentation layer, data encryption, directory services and reliable transfer services, telnet, network management, network measurements, e-mail systems, and error reporting. Prerequisite: CSCI 2461, CSCI 2113.

CSCI 4432. Computer Networks II. 3 Credits.
Computer networks and open system standards. Network configurations and signals, encoding and modulation, transmission media, connection interfaces, error detection and correction, signal compression, switching, link layer control, ISDN, X.25, frame relay, ATM, and Sonet. Bridges, routers, and routing algorithms. Prerequisite: CSCI 4431.

CSCI 4455. Computer Game Design and Programming. 3 Credits.
Principles, techniques, and design of computer games. Graphic game engines, modeling, motion, AI and interaction; sound design and synthesis; real-time software and hardware issues. May be taken for graduate credit. (Fall).

CSCI 4511. Artificial Intelligence Algorithms. 3 Credits.
Knowledge representation and reasoning, propositional logic and predicate calculus. Logic programming. Search, game trees, backtracking. Planning. May be taken for graduate credit. Restricted to graduate students. Prerequisites: CSCI 3221 and CSCI 3212.

CSCI 4521. Introduction to Mobile Robotics. 3 Credits.
Overview of autonomous mobile robotics. Sensing, localization, calibration, mapping, perception, decision making, planning, and control. Emphasis on algorithmic rather than hardware aspects of robotics. Development of algorithms that can operate autonomous mobile platforms in complex, real-world environments. Prerequisite: MATH 1232, MATH 2184; CSCI 3362 or CSCI 4341.

CSCI 4525. Autonomous Robotics: Manipulation. 3 Credits.
Introduction to robot manipulation. Core principles necessary to program robots for autonomous operation in dynamic and typically human-centric environments. Transdisciplinary concepts from computer science (reinforcement learning, perception), mechanical engineering (kinematics, dynamics), and electrical engineering (control theory). Prerequisite: permission of instructor.

CSCI 4527. Introduction to Computer Vision. 3 Credits.
Introduction and overview of computer vision. Image-formation signal processing and filtering. Saliency, image features and feature extraction, tracking, stereo disparity estimation, structure form motion, photogrammetry, optic flow, homography estimation and warping, scene segmentation, place recognition, object recognition, robust estimation, and camera calibration. Prerequisites: MATH 1232, MATH 2184 and CSCI 3362 or CSCI 4341. (Same as CSCI 6527) (Spring, Every Year).

CSCI 4531. Computer Security. 3 Credits.
Risk analysis, cryptography, operating system security, identification and authentication systems, database security. Prerequisite: CSCI 3411; corequisite: CSCI 4431.

CSCI 4532. Information Policy. 3 Credits.
Roles, issues, and impacts of computer-based information systems in national and international arenas, focusing on privacy, equity, freedom of speech, intellectual property, and access to personal and governmental information. Professional responsibilities, ethics, and common and best practices in information use.

CSCI 4541. Network Security. 3 Credits.
Security protocols and applications in local, global, and wireless networks; IPSec and packet-level communication security systems; network authentication and key-exchange protocols; intrusion detection systems and firewalls; secure network applications; network worms and denial-of-service attacks. Prerequisite: CSCI 4531.

CSCI 4551. Concepts and Applications of Computer Graphics. 3 Credits.
Introduction to computer graphics without programming; building 3-D geometry and rendering; computer animation; virtual reality and computer games; hands-on projects in modeling, rendering, and animation using commercial software; hands-on projects in photo and video manipulation.

CSCI 4552. Design of Computer Animation I. 3 Credits.
Use of commercial 3-D computer animation packages to create digital artistic works. Principles of animation, including timing, exaggeration of motion, and anticipation; use of a storyboard; modeling; motion; rendering and editing. Prerequisite: CSCI 4551.

CSCI 4553. Design of Computer Animation II. 3 Credits.
Use of commercial 3-D animation packages to create artistic works and visualizations. Process-spanning concepts of development through pre-production, production, and post-production. Emphasis on developing original content and attaining high production values. Prerequisite: CSCI 4552.

CSCI 4554. Computer Graphics 1. 3 Credits.
Hardware; concepts of graphics subroutine packages; programming concepts for interaction, display, and data structuring; basic clipping and scan-conversion algorithms; homogeneous coordinates; three-dimensional viewing transforms; basic rendering. May be taken for graduate credit. Prerequisite: CSCI 2113 or CSCI 6221.

CSCI 4561. Design of User–Interface Programs. 3 Credits.
Structure of interactive programs. Widgets, windows, and input devices. Client–server model, event-driven programming, and callbacks. Window systems (e.g., Xwindows) and dialog control. May be taken for graduate credit. Prerequisite: CSCI 2113 or CSCI 6221.

CSCI 4572. Computational Biology. 3 Credits.
Pairwise alignment and scoring. Multiple sequence alignment. Fragment assembly, physical mapping of DNA. Phylogenetic trees. Molecular structure prediction and protein folding. Microarrays and microarray data, image comparison. Clustering. Overview of biological databases, PDB, MMDB, GenBank. Draft genomes and genome browsers. Pathway databases. May be taken for graduate credit. Prerequisite: CSCI 3571 and CSCI 3212 or CSCI 6212.

CSCI 4576. Introduction to Biomedical Computing. 3 Credits.
A survey of the problems and solutions in biomedical computing. Application of computers in medicine. Patient care and monitoring systems, electronic medical records, digital imaging and analysis. Telemedicine, medical ethics, health care regulations and organizations.

CSCI 4577. Biomedical Computing. 3 Credits.
Computing issues in epidemiology and biosurveillance, decision support, medical imaging and visualization, image-guided surgery; medical databases, issues in system integration, mobile medical computing. May be taken for graduate credit. Prerequisite: CSCI 2113, CSCI 4576; corequisite: CSCI 2441.

CSCI 6010. Introduction to Computer Science Fundamentals. 3 Credits.
Review of programming in a high-level language using Java or C++ Introduction to objects and object-oriented programming: static and dynamic objects, inheritance, dynamic method invocation. Data structures: 2D-arrays, linked-lists, stacks, queues, trees, hashing. Discrete structures: sets, graphs, permutations and combinations. Prerequisite: one year of course work in programming in C, C++ or Java.

CSCI 6011. Introduction to Computer Systems. 3 Credits.
Introduction to basic concepts underlying all computer systems. Processor operation, hierarchical memory systems, elementary logic circuits, and systems software such as compilers, linkers, and operating systems from the programmer's perspective. Prerequisite: one year of course work in programming in C, C< or Java.

CSCI 6012. Cybersecurity and Privacy. 3 Credits.
Overview of cybersecurity and privacy, including cryptography, authentication, malware, viruses, network security, anonymity, privacy and online privacy, risk management; common cyberattacks and techniques for detection and defense; policy and legal perspectives for managing cybersecurity missions supporting private sector and government; cyber technologies as applied to the stability of global information and communications infrastructure; government cybersecurity policies. (Fall, spring, and summer).

CSCI 6013. Security in Mobile Computing. 3 Credits.
Relationship between security strategic plan and business strategic plan; mobile device solutions (MDS) to access enterprise corporate data; bring your own device (BYOD) paradigm; mobile device management (MDM) best practices, policies, network controls to identify countermeasures, and risk mitigation strategies against common threats. Overview of mobile security solutions for classified processing and communications. Prerequisites: CSCI 6012. (Fall, spring, and summer).

CSCI 6212. Design and Analysis of Algorithms. 3 Credits.
Design and analysis of algorithms. Turing machines; NP-Complete theory. Algorithmic techniques: divide-and-conquer, greedy, dynamic programming, graph traversal, backtracking, and branch-and-bound. Applications include sorting and searching, graph algorithms, and optimization. Restricted to graduate students. Prerequisites: CSCI 1112 and CSCI 1311.

CSCI 6221. Advanced Software Paradigms. 3 Credits.
Object-oriented, procedural, functional, and concurrent software design paradigms; design patterns; software life-cycle concepts. Tradeoffs between compiled and interpreted languages. Examples from Java, C, C++ and Perl. Prerequisites: CSCI 1112 and CSCI 1311 or graduate status.

CSCI 6223. Principles of Programming Languages. 3 Credits.
Fundamental concepts underlying design of programming languages. Detailed study of functional and object-oriented computational models. Types, evaluation, abstraction, control flow, modules, mutation, laziness, polymorphism, subtyping, inheritance. Practice learning new languages. Prerequisite: CSCI 1311, CSCI 2113.

CSCI 6231. Software Engineering. 3 Credits.
The life-cycle model. Requirements and specifications. Design models, structured and object-oriented design. Program development, PDL's tools, configuration control. Program, unit, and integration testing. Program verification. Other development models. Development metrics. Computer-aided software engineering (CASE). Prerequisite: CSCI 6221, CSCI 6212.

CSCI 6232. Software Engineering Development. 3 Credits.
Formal methods in software engineering. First-order logic, basic specification elements, rigorous proofs, formal development process, concurrency. Prerequisite: CSCI 6461, CSCI 6212.

CSCI 6233. Software Testing & Quality. 3 Credits.
Flow graphs and path testing, transaction flow testing, data flow testing, software metrics, system testing, test planning and documentation, reliability, statistical testing. Prerequisite: CSCI 6231.

CSCI 6234. Object-Oriented Design. 3 Credits.
Object-oriented systems, software reusability, software modularity, top–down and bottom–up approaches, object classification, genericity, metaprogramming, concurrent object-oriented programming languages. Prerequisite: CSCI 6221.

CSCI 6235. Component-Based Enterprise Software Development. 3 Credits.
Component-based software development for enterprise applications. Component models, multi-tier architecture. Specific case studies may include topics such as Enterprise Java Beans, DCOM, and COBRA. Prerequisite: CSCI 6221.

CSCI 6311. Theory of Computation. 3 Credits.
Theoretical foundations of computer science. Formal languages and automata; regular expressions, context-free languages, parsing; Turing machines and complexity; partial recursive functions; undecidability; program correctness; fixed-point theory; formal specifications of software. Prerequisite: CSCI 6212.

CSCI 6312. Graph Theory & Applications. 3 Credits.
Undirected and directed graphs. Connectivity, partitions, cycles and matchings. Edge and vertex coloring, chromatic polynomials, and the four-coloring problem. Planar graphs and Kuratowski's theorem. Properties of random graphs. Applications to a variety of problems. Prerequisite: CSCI 6212.

CSCI 6318. Complex Systems. 3 Credits.
The edge-of-chaos phenomenon, phase transitions, power laws, small-world networks, Boolean networks, cellular automata, and complex dynamics. Applications to networks and biological systems. Prerequisite: CSCI 6212.

CSCI 6331. Cryptography. 3 Credits.
Review of mathematical theory for cryptography. Classical ciphers. Modern block and stream ciphers. Symmetric and asymmetric systems. Digital signatures. Public key infrastructure. Authentication. Prerequisite: CSCI 6212.

CSCI 6341. Continuous Algorithms. 3 Credits.
Overview of structures in continuous mathematics from a computational viewpoint. Main topics include continuous system simulation, computational modeling, probability, statistical techniques, next-event simulation, algorithms for continuous optimization, machine learning, neural networks, statistical language processing, robot control algorithms. Prerequisite: CSCI 1311, CSCI 2113.

CSCI 6342. Computational Linear Algebra and Applications. 3 Credits.
Linear algebra applied to computational problems in computer science and engineering. Topics include points, vectors, matrices, and their programming abstractions; 3D transformations, pose and viewpoint estimation; linear equations; algorithms for matrix decompositions, dimension reduction, computation with large matrices, under- and over-determined systems; applications to big data, computer vision, text processing. Prerequisite: CSCI 2113.

CSCI 6351. Data Compression. 3 Credits.
Background on signals, information theory, transforms, human vision, and metrics. Lossless and lossy compression techniques. Video compression. Compression standards. Progressive transmission. Prerequisite: CSCI 6212.

CSCI 6362. Probability for Computer Science. 3 Credits.
Concepts of probability and statistics used in computer science. Random variables. Conditional probability, independence, correlation. Law of large numbers, central limit theorem. Applications to computer science, including entropy, information theory, data compression, coding, inference, Markov chains, randomized algorithms. Prerequisites: MATH 1232, CSCI 1311; or permission of instructor.

CSCI 6364. Machine Learning. 3 Credits.
Machine learning algorithms: nearest-neighbor, regression, classification, perceptron, kernel methods, support vector machine (SVM), logistic regression, ensemble methods, boosting, graphical models, hidden Markov models (HMM), non-parametrics, online learning, active learning, clustering, feature selection, parameter tuning, and cross-validation. Prerequisite: CSCI 6212; CSCI 6362, MATH 2184; or permission of instructor.

CSCI 6365. Advanced Machine Learning. 3 Credits.
Theory and algorithms for machine learning research. In-depth focus on advanced machine learning topics such as clustering, learning from data streams, and Climate Informatics. Prerequisite: CSCI 4364, CSCI 6212, CSCI 6362, MATH 2184; or permission of instructor.

CSCI 6411. Advanced Operating Systems. 3 Credits.
Fundamentals of operating system design and structure, resource management, and system support for multi-core. Topics include scheduling, synchronization, system structure, virtual address spaces, memory management, I/O management, and systems abstractions for modern multi-core architectures. The course involves an implementation component and requires substantial programming experience. This course can be taken for credit by undergraduates who have taken CSCI 3411. Prerequisite: CSCI 6461 or CSCI 2461.

CSCI 6412. OS Design & Implementation. 3 Credits.
Builds on CSCI 6411 to provide students with the knowledge to build parts of modern operating systems, which will be studied and motivated from the viewpoint of practical design and implementation. Students will learn how operating system's components for resource management and abstraction are built from the ground up and integrated into working systems considering the challenges of reliability, multi-core, and security. The course has a significant implementation component; substantial low-level programming experience is required. Prerequisite: CSCI 6411.

CSCI 6421. Distributed and Cluster Computing. 3 Credits.
In-depth study of the algorithmic and implementation challenges in building large scale distributed applications. Topics include distributed coordination, scheduling, consistency issues, and fault tolerance algorithms. The course will cover how fundamental distributed systems concepts are applied to both high performance computing and cloud computing environments. The course will mix algorithmic concepts and practical implementation concerns; substantial programming experience is recommended. Prerequisite: CSCI 6212, CSCI 3411.

CSCI 6431. Computer Networks. 3 Credits.
Fundamental concepts in the design and implementation of computer communication networks and internet, their protocols, and applications. Layered network architectures, applications, network programming interfaces, transport, routing, data link protocols, local area networks, network management, and network security. Prerequisite: CSCI 6461.

CSCI 6433. Internet Protocols. 3 Credits.
Understanding of the layered protocols for the Internet. Interconnection of networks. The IP protocol and routing algorithms, switches, bridges, and routers. The transmission control protocol (TCP). Addressing and names. Application-specific protocols, FTP, TELNET, SMTP, SNMP, HTTP. Domain name services. Prerequisite: CSCI 6221, CSCI 6431.

CSCI 6434. Design of Internet Protocols. 3 Credits.
Protocol specifications and formal description methods. Finite-state descriptions of Internet protocols. Specification and Description Language. Implementation of protocol specifications. Prerequisite: CSCI 6212, CSCI 6433.

CSCI 6441. Database Management Systems. 3 Credits.
Design and architecture of relational database management systems; query languages, data models, index structures, database application design. Prerequisite: CSCI 6221, CSCI 6461.

CSCI 6442. Database Systems II. 3 Credits.
Concepts in database systems. Relational database design. Editing, report generation, updating, schema refinement, tuning. Construction of database management systems. Conceptual and logical design of a database. Prerequisite: CSCI 6441.

CSCI 6443. Data Mining. 3 Credits.
Fundamental concepts of data mining. Algorithm techniques for data mining, including classification, clustering, association rules mining. Prerequisite: CSCI 6441 or permission of instructor.

CSCI 6444. Introduction to Big Data and Analytics. 3 Credits.
Big data, its properties, technology, and the types and classes of analytics that can be applied to it; associated storage and programming systems. Students gain practical experience through focused projects to apply different analytics to a data set. Prerequisite: CSCI 2113 or CSCI 6221. (Fall, spring, and summer).

CSCI 6451. Information Retrieval Systems. 3 Credits.
Information organization and retrieval of natural language data by digital computer systems; statistical, syntactic, and logical analysis of natural language; dictionary and thesaurus systems; searching strategies and cataloging. Large-scale file structures. Prerequisite: CSCI 6221, CSCI 6461.

CSCI 6461. Computer System Architecture. 3 Credits.
Concepts in processor, system, and network architectures; architecture of pipeline, superscalar, and VLIW/EPIC processors; multiprocessors and interconnection networks. Cache coherence and memory subsystem design for multiprocessor architectures. Parallel and distributed system architecture; internetworking. Prerequisite: CSCI 1311, CSCI 1112, CSCI 2461.

CSCI 6511. Artificial Intelligence. 3 Credits.
Representation and space search. Heuristic search. Predicate calculus. Knowledge representation and knowledge engineering for expert systems. Rule-based, hybrid, and O-O systems. Semantic nets, frames, and natural language. Theorem provers. Overview of planning, learning, neural nets. Use of AI languages. Prerequisite: CSCI 4511, CSCI 6212.

CSCI 6515. Natural Language Understanding. 3 Credits.
The state of the art of natural language parsing and semantic understanding by computer systems. Review of formal, context-free, and transformational grammars and parsing. Augmented transition networks: problems of complexity, semantics, and context. Deterministic parsing and semantic parsing. Prerequisite: CSCI 6511.

CSCI 6521. Introduction to Mobile Robotics. 3 Credits.
Concepts of autonomous mobile robotics with emphasis on algorithmic aspects. Sensing, sensor fusion, localization, calibration, mapping, perception, decision making, planning, behavior-based control, world modeling, and navigation. Development of algorithms that can operate autonomous mobile platforms in complex, real-world environments. Prerequisite: MATH 1232, MATH 2184; CSCI 6362 or CSCI 4341.

CSCI 6525. Autonomous Robotics: Manipulation. 3 Credits.
Manipulation and autonomous operation in dynamic, human-centric environments. Reinforcement learning, perception, optimization algorithms, kinematics, dynamics, control theory. Prerequisite: CSCI 6362, MATH 2184; or permission of instructor.

CSCI 6527. Introduction to Computer Vision. 3 Credits.
Image signal processing and filtering. Saliency, features and feature extraction, tracking, stereo disparity estimation, structure form motion, photogrammetry, optic flow, homography estimation and warping, scene segmentation, place recognition, object recognition, robust estimation, and camera calibration. Current research topics. Prerequisite: MATH 1232, MATH 2184; CSCI 6362 or CSCI 6341.

CSCI 6531. Computer Security. 3 Credits.
Functional description of cryptographic primitives. Risk analysis. Policy models: security, confidentiality, integrity, hybrid. Design principles: access control, information flow, confinement. Assurance: formal methods, evaluation. Malicious logic: security effects of programming languages. Prerequisite: CSCI 6461.

CSCI 6532. Information Policy. 3 Credits.
Roles, issues, and impacts of computer-based information systems in national and international arenas, focusing on privacy, equity, freedom of speech, intellectual property, and access to personal and governmental information. Professional responsibilities, ethics, and common and best practices in information use.

CSCI 6534. Information Security in Government. 3 Credits.

CSCI 6541. Network Security. 3 Credits.
Security protocols and applications in local, global, and wireless networks; IPSec and packet-level communication security systems; network authentication and key-exchange protocols; intrusion detection systems and firewalls; secure network applications; network worms and denial-of-service attacks. Prerequisite: CSCI 6531.

CSCI 6542. Computer Network Defense. 3 Credits.
Offensive and defensive information warfare operations. Simulation of various attacks on and defenses of computer systems. Laws related to information warfare. History and literature related to information warfare attacks. Prerequisite: CSCI 6541.

CSCI 6545. Software Security. 3 Credits.
Security for software systems. Theory and practice of designing and implementing secure software. Security in the context of software engineering. Practical experience with building a software system and securing it, with emphasis on correctness and robustness. Requires substantial prior programming experience. Prerequisite: CSCI 6461 or CSCI 6411; CSCI 6531 or EMSE 6540 or permission of instructor.

CSCI 6547. Wirless and Mobile Security. 3 Credits.
Mobile Agents, Wireless Web, WAP, WEP, Peer-to-Peer Computing; secure routing; intrusion detection and authentication on wireless networks; security for handheld devices; encryption and cryptographic measures for wireless; real-time wireless security; security measures for embedded devices. Prerequisite: CSCI 6431, CSCI 6531.

CSCI 6548. E-Commerce Security. 3 Credits.
Advanced technical topics in e-commerce security. X.500 registration systems, X.509/PKIX certification systems, secure payment methods, smart cards, authorization models in open distributed environments. Secure web systems, technologies, and applications. Prerequisite: CSCI 6541.

CSCI 6554. Computer Graphics II. 3 Credits.
Curves and surfaces. Spatial sampling and aliasing. Visible surface algorithms. Illumination and shading models, raytracing and radiosity. Image manipulation and texture mapping. Procedural models. Prerequisite: CSCI 4554.

CSCI 6555. Computer Animation. 3 Credits.
Euler angles and quaternions; articulated figure motion; forward and inverse kinematics; kinematic, physics based, and behavioral motion control; rendering problems (temporal aliasing); sound synthesis and synchronization; recording and editing techniques. Prerequisite: CSCI 4554 or permission of instructor.

CSCI 6561. Design of Human–Computer Interface. 3 Credits.
Design of dialogues for interactive systems. Psychological, physiological, linguistic, and perceptual factors. Advantages and disadvantages of various interaction techniques, command language syntaxes, and data presentations. Design methodology and guidelines. Case studies, research readings, and projects. Prerequisite: CSCI 6221.

CSCI 6562. Design of Interactive Multimedia. 3 Credits.
History, theory, and development of multimedia concepts. Hardware components, platforms, and authoring tools. Scientific, technical, and cognitive foundations of various media including text, sound, graphics, and video. Interface design. Use of a media taxonomy as a design and evaluation tool. Completion of a multimedia portfolio required. Prerequisite: CSCI 6221.

CSCI 6572. Computational Biology Algorithms. 3 Credits.
Algorithms and models for DNA and protein sequence alignments, gene finding, identification of gene regulatory regions, sequence evolution and phylogenetics, RNA and protein structure, microarray and/or proteomics data analysis. Prerequisite: CSCI 6212 ; programming experience in C/C or Java.

CSCI 6900. Colloquium. 0 Credits.
Lectures by outstanding authorities in computer science. Topics to be announced each semester. (Fall and spring).

CSCI 6907. Special Topics. 1-3 Credits.
Topics to be announced in the Schedule of Classes. (Fall and spring).

CSCI 6908. Research. 1-12 Credits.
Applied research and experimentation projects, as arranged. May be repeated for credit.

CSCI 6998. Thesis Research. 3 Credits.

CSCI 6999. Thesis Research. 3 Credits.

CSCI 8211. Advanced Topics in Algorithms. 3 Credits.
Graph algorithms, strongly connected components, biconnected components, dominators in acyclic graphs, ordered trees, network flow, planarity testing, bipartite matching, theory of NP completeness, NP-complete problems. Design and analysis of approximation algorithms for NP-complete problems. Prerequisite: CSCI 6212.

CSCI 8231. Advanced Topics in Software Engineering. 3 Credits.
Seminar on current research and developments in software engineering. Students develop a software package with the aid of available software tools such as requirement tool, design tool, code generators, testing tools, measurement tools, cost estimation tools. Prerequisite: CSCI 6232, CSCI 6233.

CSCI 8331. Advanced Cryptography. 3 Credits.
Linear and differential cryptanalysis. Cryptanalysis of AES. Factorization and primality. Computational and information-theoretic secrecy. Theory of secrecy. Zero-knowledge proofs. Secret sharing. Cooperative distributed cryptography. Provable security. Prerequisite: CSCI 6331.

CSCI 8401. Advanced Topics in Systems. 3 Credits.
Seminar on current research and developments in computer operating systems. May be repeated for credit. (Spring, even years).

CSCI 8431. Advanced Topics in Computer Networks and Networked Computing. 3 Credits.
Seminar on current research and developments in computer networks, Internet, networked computing, mobile computing and pervasive computing. May be repeated for credit. Prerequisites: CSCI 6461, CSCI 6212, CSCI 6433.

CSCI 8440. Advanced Topics in Data Management. 3 Credits.
Seminar on current research and developments in computer database systems and information retrieval. May be repeated for credit. Prerequisite: CSCI 6442 or CSCI 6451.

CSCI 8531. Advanced Topics in Security. 3 Credits.
Seminar on current research and developments in information assurance. May be repeated for credit. Prerequisite: CSCI 6531.

CSCI 8554. Advanced Topics in Computer Graphics. 3 Credits.
Seminar on current research and developments in computer graphics. Spatial and temporal anti-aliasing: hidden-surface algorithms: illumination models, radiosity, textural mapping. May be repeated for credit. Prerequisite: CSCI 6554.

CSCI 8900. Advanced Selected Topics. 3 Credits.
Topics announced in the Schedule of Classes.

CSCI 8901. Research and Evaluation Methods. 3 Credits.
Required for all computer science doctoral candidates. The scientific method; research/design requirements and objectives: qualitative, quantitative, and case studies; performance metrics; design procedures and control; sources of error and bias; evaluation tools; formal validation methods; documentation standards. Prerequisite: APSC 3115.

CSCI 8998. Computer Science Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy qualifying examination. May be repeated for credit.

CSCI 8999. Dissertation Research. 1-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

BACHELOR OF ARTS WITH A MAJOR IN COMPUTER SCIENCE

Bachelor of Arts Degree Program

The bachelor of arts with a major in computer science degree program provides a broad-based liberal arts curriculum for students who wish to augment technical knowledge with humanities, social sciences, business, communication, or management skills. Foundation courses focus on mathematics, science, software design and programming, computer systems and architecture, and algorithm design. Additional breadth or depth is afforded by selection of technical track courses that build on the foundations to provide in-depth exposure to a specific field in computer science. The program is designed for those with interests in two or more disciplines; students complete a second major or two minors in another academic department.

The minimum number of credits required for the major in computer science is 120; the credit total depends on the second major or minors chosen by the student. Students interested in pursuing a computer science major with preparation for application to medical school can also choose the medical preparation option. Students select a technical track in which at least three technical track elective courses are selected in consultation with advisor.

Additional information about the Bachelor of Arts with a major in computer science is available on the program website (http://www.cs.seas.gwu.edu/bachelor-arts-program).

Second Major in Computer Science

Students who are not enrolled in the School of Engineering and Applied Science (SEAS), who are enrolled in a bachelor of arts program and wish to declare a second major in computer science, must apply and be admitted to the computer science program.

Criteria for admission
To be considered for admission to the second major in computer science, a student must have:

- A minimum grade of *B* in CSCI 1111 Introduction to Software Development or CSCI 1011 Introduction to Programming with Java or CSCI 1121 Introduction to C Programming; and a minimum grade of *B–* in MATH 1220 Calculus with Precalculus I and MATH 1221 Calculus with Precalculus II or in MATH 1231 Single-Variable Calculus I.
- A minimum overall grade-point average of 3.0 at the time of application to the major.

Application Deadline
The application is due no later than the start of the 5th semester of study at GW or completion of the 60th credit, whichever comes first. Contact the School of Engineering and Applied Science Undergraduate Advising Office (https://www.seas.gwu.edu/academic-advising) for specific application deadlines.

Credits in residence requirement
- For a second major, at least 24 credits in computer science courses must be completed in SEAS.

Graduation grade-point average criteria
- To satisfactorily complete a second major in computer science, a student must have a minimum grade-point average of 2.2 in all the computer science courses. See the department website (http://www.seas.gwu.edu/department-computer-science) for more information on curriculum requirements for the second major in computer science.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
CSCI 1010	Computer Science Orientation	
CSCI 1111	Introduction to Software Development	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing *	
Math requirement *		
Social and behavioral sciences elective **		
Second semester		
CSCI 1112	Algorithms and Data Structures	
CSCI 1311	Discrete Structures I	
Math requirement *		
Science requirement *		
Social and behavioral sciences elective **		
Third semester		
CSCI 2113	Software Engineering	
CSCI 2461	Computer Architecture I	
Science requirement *		
Humanities elective †		
One of the following to fulfill the statistics requirement:		
APSC 3115	Engineering Analysis III	
CSCI 3362	Probability for Computer Science	
CSCI 4341	Continuous Algorithms	
STAT 1051	Introduction to Business and Economic Statistics	
STAT 1053	Introduction to Statistics in Social Science	
STAT 1091	Principles-Statistical Methods	
Fourth semester		
CSCI 2441W	Database Systems and Team Projects	
Humanities elective †		
Second major elective		
Science requirement *		
Unrestricted elective		
Fifth semester		
One of the following Computer Science restricted electives:		
CSCI 3212	Algorithms	
CSCI 3313	Foundations of Computing	
CSCI 3411	Operating Systems	
CSCI 4223	Principles of Programming Languages	

Creative arts elective	
Second major electives (9 credits)	
Sixth semester	
Technical track elective	
Humanities elective †	
Foreign languages and culture elective	
Second major electives (6 credits)	
Seventh semester	
One of the following Computer Science restricted electives: (if not taken above)	
Technical track elective	
Foreign languages and culture elective	
Second major electives (6 credits)	
Eighth semester	
Technical track elective	
Humanities elective †	
Unrestricted elective	
Second major electives (6 credits)	

*Course satisfies the university general education requirement in math, science, and writing. UW 1020 must be completed prior to any writing course in the major, including CSCI 2441W.
**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 38); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf).
†At least one humanities course must be selected from the University General Education Requirement list; the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list.

BACHELOR OF SCIENCE WITH A MAJOR IN COMPUTER SCIENCE

The program combines software development, computer systems and architecture, algorithms, project design, science, and mathematics to provide a strong foundation in the underpinnings of computer science. Students are prepared to design and implement software needed for Internet operations, computer graphics and animation, secure systems, and applications for small, large, and embedded systems. In consultation with the advisor, students choose a technical track and a non-technical track. The technical track provides depth in a particular area of computer science, while the non-technical track enables students to stay current with the rapidly evolving field and to establish the relevance of their studies in the ever-changing global environment. The B.S. in computer science program is accredited by ABET.

Medical Preparation Option in Computer Science

This option is for students interested in pursuing a computer science major as they prepare to apply to a medical school. The degree program combines additional natural science course work with computer science course requirements.

Visit the program website (http://www.cs.seas.gwu.edu/bachelor-science-program) for additional information.

Bachelor of Science With a Second Major in Computer Science

Students who are not enrolled in the School of Engineering and Applied Sciences (SEAS), who are enrolled in another bachelor of science program, but wish to declare a second major in computer science must apply and be admitted to the second major program in Computer Science. Students in this program must follow the same degree requirements as those receiving a bachelor of science in computer science as their primary major.

Criteria for admission:
To be considered for admission to the second major in computer science, a student must satisfy the following criteria:

- A minimum grade of *B* or above in CSCI 1111 or CSCI 1011 or CSCI 1121; and a *B–* or above in Math 1220 and Math 1221 or a *B–* in Math 1231;
- A minimum overall grade-point average of 3.0 at the time of application to the major;
- The application is due no later than the start of the 5th semester of study at GW or completion of the 60th credit, whichever comes first.

Contact the School of Engineering and Applied Science Undergraduate Advising Office (https://www.seas.gwu.edu/academic-advising) for current application deadlines for the second major in computer science.

Credits in residence requirement:
- For a second major at least 24 credits in computer science courses must be completed in SEAS.

Graduation grade-point average criteria:
- To satisfactorily complete a second major in computer science, a student must have a minimum grade-point average of 2.2 in all the computer science courses. See the department webpage (http://www.seas.gwu.edu/department-computer-science) for more information on curriculum requirements for the second major in computer science.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
UW 1020	University Writing *	
CSCI 1010	Computer Science Orientation	
CSCI 1111	Introduction to Software Development	
SEAS 1001	Engineering Orientation	
Math requirement *		
Humanities or social sciences elective **		
Second semester		
CSCI 1311	Discrete Structures I	
CSCI 1112	Algorithms and Data Structures	
Math requirement *		
Science requirement *		
Humanities or social sciences elective **		
Third semester		
CSCI 2312	Discrete Structures II	
CSCI 2461	Computer Architecture I	
CSCI 2113	Software Engineering	
Science requirement *		
Humanities or social sciences elective **		
Fourth semester		
CSCI 3410	Systems Programming	
CSCI 2441W	Database Systems and Team Projects	
Computer science elective ***		
Science requirement *		
Statistics requirement - one of the following:		
CSCI 4341	Continuous Algorithms	
CSCI 3362	Probability for Computer Science	
APSC 3115	Engineering Analysis III	
STAT 4157	Introduction to Mathematical Statistics I	
Fifth semester		
CSCI 3313	Foundations of Computing	
CSCI 3212	Algorithms	
CSCI 3411	Operating Systems	
Humanities or social sciences elective **		
Sixth semester		
Technical track elective		
Non-technical track elective		
Math or science elective *		
Humanities or social sciences elective **		
Unrestricted elective		
Seventh semester		
CSCI 4243W	Capstone Design Project I	
Technical track elective		
Non-technical track elective		
Humanities or social sciences elective **		
Unrestricted elective		
Eighth semester		
CSCI 4244	Capstone Design Project II	
Technical track elective		
Non-technical track elective		
Two unrestricted electives		

*Course satisfies the university general education requirement in math, science, or writing. UW 1020 must be completed prior to any writing course in the major, including CSCI 2441W.
**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 38); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list (p. 38); the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list. (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf)

***Any CS course number 3000 or above.

Mathematics requirements can be met by taking MATH 1220 Calculus with Precalculus I–MATH 1221 Calculus with Precalculus II and MATH 1232 Single-Variable Calculus II or by taking MATH 1231 Single-Variable Calculus I and MATH 1232 Single-Variable Calculus II. All students must take two math courses not counting MATH 1220 Calculus with Precalculus I; students who take MATH 1220 Calculus with Precalculus I must take it as one of their unrestricted electives. Science requirements can be met by choosing from BISC 1111 Introductory Biology: Cells and Molecules–BISC 1112 Introductory Biology: The Biology of Organisms, CHEM 1111 General Chemistry I–CHEM 1112 General Chemistry II, and PHYS 1021 University Physics I–PHYS 1022 University Physics II. The three science requirement courses must include a two-course sequence.

CSCI 4341 Continuous Algorithms and CSCI 3362/6362 Probability for Computer Science can count towards the statistics requirement or the math/science elective, but not both. Students who were admitted prior to fall 2014 may count STAT 1051 Introduction to Business and Economic Statistics and STAT 1053 Introduction to Statistics in Social Science towards the statistics requirement, if they took the course prior to the start of the Spring 2015 semester.

Some examples of technical tracks include computer security and information assurance, digital media, foundations and theory, biomedical computing, systems, software engineering and applications and research. Examples of non-technical tracks include business, project management, global engineering, pre-law,, and environment and climate change. Students may define their own non-technical track in consultation with their advisor. More information on the tracks and track requirements may be found on the program website (http://www.cs.seas.gwu.edu/bachelor-science-program).

MINOR IN COMPUTER SCIENCE

This minor, offered by the Department of Computer Science, is for students in other GW schools as well as other majors within the School of Engineering and Applied Science. The curriculum consists of two segments: core courses and electives whose purpose is to provide the student with depth in an area of computer science. The total number of credits for the minor is 18.

To be considered for admission to the minor in computer science, a student must satisfy the following criteria:

- A minimum grade of B or above in CSCI 1111 Introduction to Software Development, CSCI 1011 Introduction to Programming with Java, or CSCI 1121 Introduction to C Programming; and a B- or above in MATH 1220 Calculus with Precalculus I and MATH 1221 Calculus with Precalculus II or a B- in MATH 1231 Single-Variable Calculus I;
- A minimum overall grade-point average of 3.0 at the time of application to the minor.
- The application is due no later than the start of the 5th semester of study at GW or completion of the 60th credit, whichever comes first.

Contact the Department of Computer Science (https://www.cs.seas.gwu.edu) for current application deadlines for the minor in computer science.

Credits in residence requirement:

- For students pursuing a minor, at least 15 credits in computer science courses must be completed at GW.

Graduation grade-point average criteria:

- To satisfactorily complete a minor in computer science, a student must have a minimum grade-point average of 2.2 in all the computer science courses.

REQUIREMENTS

Code	Title	Credits
Required		
CSCI 1111	Introduction to Software Development	
CSCI 1112	Algorithms and Data Structures	
CSCI 1311	Discrete Structures I	
CSCI 2113	Software Engineering	
Electives		
Choose at least two Computer Science elective courses that either require CSCI 2113 as a prerequisite or have CSCI 2113 in the prerequisite chain. Possible electives include:		
CSCI 2441	Database Systems and Team Projects	
CSCI 2461	Computer Architecture I	
CSCI 3212	Algorithms	
CSCI 3221	Programming Languages	
CSCI 3313	Foundations of Computing	
CSCI 3410	Systems Programming	
CSCI 3411	Operating Systems	
CSCI 4223	Principles of Programming Languages	
CSCI 4235	Development of Open-Source Software	
CSCI 4237	Software Design for Handheld Devices	
CSCI 4331	Cryptography	
CSCI 4341	Continuous Algorithms	

CSCI 4342	Computational Linear Algebra and Applications
CSCI 4364	Machine Learning
CSCI 4415	Real-Time and Embedded Systems
CSCI 4431	Computer Networks I
CSCI 4511	Artificial Intelligence Algorithms
CSCI 4525	Autonomous Robotics: Manipulation
CSCI 4527	Introduction to Computer Vision
CSCI 4531	Computer Security
CSCI 4541	Network Security
CSCI 4554	Computer Graphics 1
CSCI 4561	Design of User–Interface Programs
CSCI 4572	Computational Biology
CSCI 4577	Biomedical Computing

Other electives may be substituted with the approval of the minor advisor.

MASTER OF SCIENCE IN THE FIELD OF COMPUTER SCIENCE

The Department of Computer Science offers a graduate degree program leading to the master of science in the field of computer science. After completing core requirements, students select electives in subject areas such as computer security and information assurance, database and information retrieval systems, software engineering and systems, biomedical computing, digital media and computer graphics, networking and mobile computing, computer architecture, pervasive computing and embedded systems, machine intelligence, robotics, and algorithms and theory. Students are not required to take elective courses in a particular subject area or across subject areas. Both thesis and non-thesis options are available.

In addition to the entrance requirements, students are expected to be adequately prepared in the basic physical sciences and in mathematics (one year each of university laboratory science and of math beyond precalculus). Students are also expected to have taken a course in computer programming using a structured language, as well as CSCI 1112 Algorithms and Data Structures, CSCI 1311 Discrete Structures I, and CSCI 2461 Computer Architecture I, or their equivalents.

Graduate students are required to attend several department colloquia each semester. These are intended to broaden the student's professional outlook and to encourage interaction with the faculty.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://www.cs.seas.gwu.edu/master-science-computer-science) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 9 credits in required courses and 21 credits in elective courses.

In addition to the entrance requirements, students are expected to be adequately prepared in the basic physical sciences and in mathematics (one year each of university laboratory science and of math beyond precalculus). Students also are expected to have taken a course in computer programming using a structured language, as well as CSCI 1112 Algorithms and Data Structures, CSCI 1311 Discrete Structures I, and CSCI 2461 Computer Architecture I, or their equivalents.

Code	Title	Credits
Required		
CSCI 6212	Design and Analysis of Algorithms	
CSCI 6221	Advanced Software Paradigms	
CSCI 6461	Computer System Architecture	
Electives		
21 credits in elective course selected in consultation with the advisor. As a general rule, no more than two courses may be taken outside of the department.		

At least 24 of the 30 credits required for this program must be at the 6000 level or above.

Graduate students are required to attend several department colloquia each semester. These are intended to broaden the student's professional outlook and to encourage interaction with the faculty.

MASTER OF SCIENCE IN THE FIELD OF CYBERSECURITY IN COMPUTER SCIENCE

The master of science in the field of cybersecurity in computer science degree program was created in response to the significant and fast-growing need for technical cybersecurity experts, both nationally and internationally. Students in the program acquire up-to-date knowledge and skills in cybersecurity, a field with increasing importance to national

security, the economy, and private citizens. Students take courses in computer security, software security, network security, cryptography, and security management, among others. They also gain a firm grounding in computer science and take courses in related disciplines such as cybersecurity law and digital forensics.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the departmental website (http://www.cs.seas.gwu.edu/master-science-cybersecurity-computer-science) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 12 credits in required courses and 18 credits in elective courses. Thesis and non-thesis options are available; students should contact the department concerning these options.

Code	Title	Credits
Required		
CSCI 6212	Design and Analysis of Algorithms	
CSCI 6221	Advanced Software Paradigms	
CSCI 6461	Computer System Architecture	
EMSE 6540	Management of Information and Systems Security	
Electives		
In addition to the four required courses, four designated security courses are required. Two of these courses must be Computer Science (CSCI) courses and one must be a CSCI applied cryptography course. In addition, students must take two graduate-level, credit-bearing courses. See the Department of Computer Science website for specifics.		
Normally, no more than three courses may be taken outside of those offered by the Department of Computer Science.		
At least 24 of the 30 credits required for the degree must be at the 6000 level or above.		

DOCTOR OF PHILOSOPHY IN THE FIELD OF COMPUTER SCIENCE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under School of Engineering, Doctoral Program Regulations (http://bulletin.gwu.edu/engineering-applied-science/#Doctor_of_Philosophy).

Students with an MS degree must take a minimum of 30 credits, consisting of 18 credit hours of courses available for graduate credit and 12 credit hours of dissertation research. For students without an MS degree, an additional 24 credit hours have to be completed, that may be divided between courses available for graduate credit and dissertation credit hours, subject to the approval of the student's advisor. For students without a prior master's degree, 15 credits may be taken outside of the department; for those with a prior master's degree, 9 credits may be taken outside of the department. In some cases, particularly when the student undertakes a doctoral program in a field other than that in which the earlier degree was earned, the program of study exceeds the minimum number of credits.

No specific courses are required. Individual plans of study are developed in consultation with the advisor; however, the plan of study must include one course in of each of the areas of theory, systems, and applications and one advanced topics course.

Other requirements

- Preliminary examination—Students must pass the examination within four semesters of starting the program
- Dissertation proposal examination—Students must pass the preliminary examination prior to the dissertation proposal examination. The student must then submit a written proposal for evaluation and undergo an oral examination.
- Students are responsible for forming a dissertation committee comprising three members in addition to the advisor and co-advisor(s).
- Peer-reviewed papers—Students are required to have one peer-reviewed article accepted for publication; two to three published peer-reviewed articles are encouraged.
- Colloquium requirement—Each semester, students must attend a minimum of two seminars, workshops, or symposia sponsored by the department in order to fulfill this zero-credit requirement.

Student should contact the department for additional information and requirements.

GRADUATE CERTIFICATE IN COMPUTER SECURITY AND INFORMATION ASSURANCE

The graduate certificate in computer security and information assurance provides a strong technical education in the security of computer systems and networks, as well as training in related policy issues. The program emphasizes concepts in computer security, augmented with current industry standard techniques and challenges. It provides an alternative to the full M.S. program for practicing computer scientists and other information technology personnel who wish to extend their education beyond the B.S. level, and to those who wish to

acquire up-to-date knowledge in the burgeoning field of computer and network security.

The George Washington University has been recognized as a Center of Academic Excellence in Education-Research and by the National Security Agency (NSA) and the Department of Homeland Security (DHS).

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 6 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
CSCI 6531	Computer Security	
CSCI 6541	Network Security	
Elective		
Two of the following:		
CSCI 6331	Cryptography	
CSCI 6532	Information Policy	
CSCI 6542	Computer Network Defense	
CSCI 6547	Wirless and Mobile Security	
CSCI 6548	E-Commerce Security	
CSCI 8331	Advanced Cryptography	
CSCI 8531	Advanced Topics in Security	

ELECTRICAL AND COMPUTER ENGINEERING

OVERVIEW

Mission Statement

The mission of the department is to motivate and inspire students by providing high-caliber, fully integrated programs in electrical and computer engineering. These programs prepare graduates to provide leadership in a rapidly evolving global information society and to serve the greater good. The programs are also designed to allow students to advance the state of knowledge in our disciplines by actively pursuing scholarly research for publication and dissemination.

Educational Objectives

The objectives of the electrical and computer engineering undergraduate program of study are to educate students in the principles of engineering, as well as ensure awareness of their social responsibilities. The engineering education is based on the sciences and the principles of design. A balanced program in the humanities and social sciences as well as coverage of specific topics in professional ethics and social responsibilities, further instills a sense of social responsibilities. The programs provide students with a solid foundation in electrical and computer engineering through a balanced curriculum integrating the underlying scientific and mathematical knowledge with the latest technological developments. The curriculum is designed to produce engineers capable of functioning in the present technological environment and of adapting to future directions of the profession. Specifically, the programs aim to teach students how to analyze and implement complex interdisciplinary engineering projects; to give students a strong foundation for graduate study in their field; to prepare students for competitive and challenging industrial applications; to teach students how to use state-of-the-art computer tools for solving engineering problems; to expose students to hands-on engineering experience through laboratory courses; to cultivate students' abilities to communicate and work effectively in teams; and to help students develop an understanding of the ethical issues and global perspectives arising in the practice of the engineering profession.

Educational Outcomes

The Department of Electrical and Computer Engineering aims to produce graduates who will have the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context, as well as professional and ethical responsibility; and a recognition of the need for, and an ability to engage in life-long learning.

Graduates will also have the ability to:

- Apply knowledge of mathematics, science, and engineering
- Design and conduct experiments, as well as analyze and interpret data
- Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- Function on multidisciplinary teams
- Identify, formulate, and solve engineering problems
- Communicate effectively
- Use the techniques, skills, and modern engineering tools necessary for engineering practice.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science with a major in computer engineering (p. 655)
- Bachelor of Science with a major in electrical engineering (p. 656)
- Bachelor of Science with a major in electrical engineering, energy option (p. 657)
- Bachelor of Science with a major in electrical engineering, medical preparation option (p. 659)

Minors

- Minor in computer engineering (p. 660)
- Minor in electrical engineering (p. 660)

GRADUATE

Master's programs

- Master of Science in the field of computer engineering (p. 661)
- Master of Science in the field of electrical engineering (p. 662)
- Master of Science in the field of telecommunications engineering (p. 664)

Professional programs

See the School of Engineering and Applied Science for programs leading to the professional degree.

Doctoral programs

- Doctor of Philosophy in the field of computer engineering (p. 665)
- Doctor of Philosophy in the field of electrical engineering (p. 665)

CERTIFICATES

- Graduate certificate in high-performance computing (p. 665)

FACULTY

Professors S. Ahmadi, L. Bennett (*Research*), C.B. Cameron *(Practice),* R.L. Carroll, E. Della Torre, T. El-Ghazawi, K.B. Eom, R.J. Harrington, H.J. Helgert, C.E. Korman, N. Kyriakopoulos, R.H. Lang, D. Nagel *(Research)*, A. Louri *(Chair)*, S. Subramaniam, M.E. Zaghloul

Associate Professors M. Doroslovacki, H.H. Huang, T. Lan, G.P. Venkataramani

Assistant Professors A. Etemadi, E. Simsek, V. Sorger

Assistant Research Professors V. Narayana

Professorial Lecturers A. Mehrotra, S.A. Torrico

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ECE 1010. Introduction to Electrical, Computer, and Biomedical Engineering. 1 Credit.
Basic and emerging concepts in electrical, computer, and biomedical engineering. Hands-on experiments and projects. Introduction to the professional literature and available resources and to technical writing, speaking, and presentation skills.

ECE 1020. Introduction to Electrical, Computer, and Biomedical Engineering. 1 Credit.
Continuation of ECE 1010. Basic and emerging concepts in electrical, computer, and biomedical engineering. Hands-on experiments and projects. Introduction to the professional literature and available resources and to technical writing, speaking, and presentation skills.

ECE 1120. C Programming for ECE. 3 Credits.
Basic programming concepts including algorithmic thinking and structured programming, control flow, data types, pointers, functions, algorithms, I/Os, threads, and performance evaluation and optimization. Concurrency and multicore programming using threads, processes as well as parallel C programming paradigms. Controlling hardware devices and fine control via interfacing with assembly language.

ECE 1125. Data Structures&Algorithms ECE. 3 Credits.
Fundamentals of algorithms and data structures for electrical and computer engineering. Topics include techniques to solve problems through programming in C/C++ languages, linked lists, stacks, queues and trees; searching methods such as binary trees, hashing, and multi-way trees; design and analysis of algorithms and their space and time complexity. (Fall).

ECE 2110. Circuit Theory. 4 Credits.
Lecture (3 hours), laboratory (3 hours). Circuit elements, techniques of circuit analysis; circuit theorems; operational amplifiers; RLC circuits; natural and step responses; series, parallel and resonant circuits; sinusoidal steady-state analysis; phasers; power calculations; transformers; two-port circuits. CAD tools used in circuit projects. Corequisite: APSC 2113. Prerequisites: PHYS 1022 or PHYS 1026. (Fall and spring).

ECE 2115. Engineering Electronics. 4 Credits.
Lecture (3 hours), laboratory (3 hours). Solid-state devices used in electronic engineering. Physics of their operation. Application to electronic circuits. Primary emphasis on application of these elements in power supplies and in linear amplifiers. Design concepts through use of SPICE and graphical techniques. Prerequisite: ECE 2110.

ECE 2120. Engineering Seminar. 0-1 Credits.
This seminar course provides electrical and computer engineering students with a detailed view of the electrical and computer engineering professions. Speakers from within and outside of the department discuss facets of ECE, engineering education, and other important department, college, or university topics of interest. (Fall).

ECE 2140. Design of Logic Systems I. 4 Credits.
Lecture (3 hours), laboratory (3 hours). Boolean algebra; combinational and sequential circuits; minimization techniques; design-and-build logic subsystems, such as decoders, multiplexers, adders, and multipliers; use of CAD tools. Corequisite: ECE 2115.

ECE 2210. Circuits, Signals, and Systems. 3 Credits.
Circuit analysis using Laplace transforms; transfer functions; poles and zeroes; Bode diagrams; effects of feedback on circuits; convolution; Fourier series and Fourier transforms; design of filters; CAD tools used in design of projects. Prerequisite: ECE 2110.

ECE 3125. Analog Electronics Design. 4 Credits.
Design, testing, and measurement of analog electronic circuits. Differential and multistage amplifiers. Output stages and power amplifiers. Frequency response of amplifiers, high-frequency models of FETs and BJTs. Introduction to feedback circuit topologies. Use of electronic CAD tools, such as P-SPICE. Prerequisite: ECE 2115.

ECE 3130. Digital Electronics and Design. 4 Credits.
Lecture (3 hours), laboratory (3 hours). Design and testing of logic gates, regenerative logic circuits, and semiconductor memory circuits. Implementation of such circuits with NMOS, CMOS, TTL, and other integrated circuit technologies. Use of electronic CAD tools, such as SPICE. Prerequisite: ECE 2140.

ECE 3135. Design of Logic Systems II. 4 Credits.
Lecture (3 hours), laboratory (3 hours). Introduction of ASIC design techniques; design and programming of FPGAs using CAD tools; timing in sequential circuits; essential hazards; races in sequential circuits; design-and-build FPGA project. Prerequisite: ECE 2140.

ECE 3220. Intro to Digital Signal Proces. 3 Credits.
Signal representation, sampling and quantization, discrete-time signals, z-transforms and spectra, difference equations. Fourier analysis. Discrete Fourier transform, IIR and FIR filter design. Prerequisite: ECE 2210.

ECE 3225. Signal and Image Analysis. 3 Credits.
Introduction and clinical applications; characteristics of biomedical problems, time- and frequency-domain techniques for signal feature analysis; spectral estimation and analysis; autoregressive modeling; detection and estimation of periodicity; digital images as two-dimensional signals; 2-D Fourier transform. Corequisite: ECE 2210, ApSc 3115.

ECE 3310. Introduction to Electromagnetics. 3 Credits.
Maxwell's equations, pulse propagation in one dimension, transmission line equations, reflection coefficient, capacitance and inductance calculations, Smith chart, plane waves, reflection from a dielectric of fiber and integrated optics. Prerequisites: APSC 2113, PHYS 1022.).

ECE 3315. Fields and Waves I. 3 Credits.
Complex phasor notation, uniform transmission lines, standing wave ratio, power, reflection coefficient, impedance matching. Review of vector analysis and numerical methods. Electrostatics, generalizations of Coulomb's law, Gauss's law, potential, conductors, dielectrics, capacitance, energy. Prerequisites: APSC 2113 and PHYS 1022. (Fall and spring).

ECE 3410. Communications Engineering. 3 Credits.
Fourier series and Fourier transform in relation to signal analysis. Convolution and linear filtering. Signal bandwidth and sampling theorem. Analog modulation. Random variables and stochastic processes; power spectrum. Digital modulation: BPSK, QPSK, MSK. Pulse code modulation, DPCM and delta modulation. Prerequisites: APSC 3115, ECE 2210.).

ECE 3420. Communications Laboratory. 1 Credit.
Experiments supporting communications systems. Fourier analysis and Fourier transform. Sampling theorem, filtering, and aliasing. Amplitude modulation (AM), frequency modulation (FM), quantization, and pulse code modulation (PCM). Delta modulation. Binary phase shift keying (BPSK). Quadrature phase shift keying (PSK). Prerequisite or corequisite: ECE 3410.

ECE 3515. Computer Organization. 3 Credits.
Structure and operation of a digital computer. Design of computer arithmetic units, data and instruction paths. Microprogramming; memory technology; virtual memory; caches; pipelined computer organization; characteristics of secondary storage; I/O interfacing. May be taken for graduate credit. Prerequisite: ECE 2140. (Same as CSCI 3462) (Fall, Every Year).

ECE 3520. Microprocessors: Software, Hardware, and Interfacing. 3 Credits.
Microprocessor architecture, assembly language, address decoding, hardware interrupt, parallel and serial interfacing with various circuits, timer/counters, direct memory access, microprocessor-based system. Hands-on laboratory experience is an integral part of this course. Prerequisite: ECE 2140.

ECE 3525. Introduction to Embedded Systems. 3 Credits.
Microcontrollers and their application in embedded systems. Topics include assembly and C for microcontroller programming, serial and parallel I/O interfacing, and multimedia interfacing. Students perform laboratory experiments and a final project to develop a microcontroller-based embedded system. Prerequisite: CSCI 1121, ECE 3520.

ECE 3530. Introduction to Parallel and Distributed Computer Systems. 3 Credits.
Shared and distributed memory computer systems. Parallel computation. Interprocess communication and synchronization. Terminal, file transfer, and message handling protocols. Algorithms for deadlock detection, concurrency control, and synchronization in distributed systems. Network security and privacy. Resource control and management. Prerequisite: ECE 3515.

ECE 3915W. Electrical, Computer, and Biomedical Engineering Capstone Project Lab I. 1 Credit.
ECE 3915, ECE 4920, and ECE 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project.

ECE 4140. VLSI Design and Simulation. 3 Credits.
Study of VLSI circuit design including PMOS and NMOS transistor analysis, switch and gate logic design, understanding of semiconductor fabrication processes and design rules, CAD system, speed and power considerations, scaling of transistors to the nano-scale, and designing with highly variable process parameters. Each student will design a VLSI chip, simulate the design and submit a GDS II file for chip fabrication. Prerequisites: ECE 3130, ECE 3135. Same as ECE 6240. (Fall).

ECE 4145. Micro and Nano Fabrication Techniques. 3 Credits.
Introduction to modern fabrication process technologies associated with various types of nano-or micro fabrications process, with applications to the micro- and nano scale device fabrications; steps of standard processing will be illustrated; nano lithography and other available modern technologies. Prerequisite: ECE 2110. (Fall).

ECE 4150. ASIC Design and Testing of VLSI Circuits. 3 Credits.
ASIC and mixed-signal design methodology, use of ASIC design CAD tools. Logic synthesis, styles of synthesis, power/area/speed constraints. MIPS CPU HDL implementation/verification/testing. VLSI testing, fault models, design for testability techniques, scan path, built-in self-test. Testing of chips designed and fabricated in ECE 4140 or equivalent chips. Prerequisite: ECE 4140. (Same as ECE 6250) (Spring, Every Year).

ECE 4155. Modern Measurements and Sensors. 3 Credits.
Measurement of dc, ac, and high-frequency signals. Interface electronic circuits. Sensors for measurement of mechanical, optical, magnetic, electromagnetic, thermal, chemical, and biochemical signals. Prerequisite: ECE 4320, ECE 3125, ECE 2140. May be taken for graduate credit.

ECE 4160. Introduction to Nanoelectronics. 3 Credits.
Nanoscience and technology and nanoelectronics. Basic nanofabrication steps, and techniques to build devices such as carbon nanotubes, Graphene device, and other 2D nanoelectronic devices. Tools for performing design and characterizations of nanodevices, including scanning electron microscopy (SEM), atomic force microscopy (AFM), and transmission electron microscope (TEM). Prerequisite: ECE 2115. (Same as ECE 6260) (Fall, Every Year).

ECE 4320. Fields and Waves II. 3 Credits.
Magneto-stationary fields, Lorentz force torques, Biot–Savart law, Ampere's law, magnetic materials, inductance, energy. Maxwell's equations, Faraday's law, charge–current continuity, vector potential. Time-harmonic fields, plane waves, polarization, skin effect, dielectric boundaries, and fiber optics. Radiation, dipole, gain, effective area. Prerequisites: APSC 2114, ECE 3315.).

ECE 4325. Microwave and Optics Laboratory. 1 Credit.
Experiments in transmission lines, network analyzer measurements of scattering parameters, microwave systems, fiber-optic systems and antennas. Introduction to the characteristics of laser and optical systems. Prerequisite: ECE 4320.

ECE 4435. Fiber Optical Communications. 3 Credits.
Lightwave fundamentals. Integrated optics. Optical fiber waveguides. Light sources and detectors. Distribution networks and fiber components. Modulation. Noise and detection. System design. Prerequisite: APSC 2114; ECE 3310 or ECE 4320.

ECE 4535. Computer Architecture and Design. 3 Credits.
Design of bus-based digital computer systems, memory subsystems, caches, and multiple processors. Comparison of RISC and CISC processors and standard buses. Bus transfer and control signals. Performance, memory management, architectural support for protection, task switching, exception handling, instruction pipelines. Prerequisite: ECE 3515.

ECE 4610. Electrical Energy Conversion. 3 Credits.
Three-phase and single-phase AC rotating machines and transformers, DC machines, rotating machines as circuit elements, power semiconductor converters. Renewable generation, utility grid integration, smart grid applications. Prerequisites: ECE 2210, ECE 3315. (Same as ECE 6610) (Spring, Every Year).

ECE 4615. Electrical Power Laboratory. 1 Credit.
Experiments in support of the analysis and design of electrical power systems. Measurements of the characteristics of devices to generate electric power. Rectification and inversion processes for power systems and drives. Prerequisite or corequisite: ECE 4610.

ECE 4620. Electrical Power Systems. 3 Credits.
AC power grids, transmission line parameters, load flow, economic dispatch voltage, frequency and power flow control. Voltage, current and power limitations. Fault analysis and stability considerations. Effect of independent power producers and variable energy sources and energy storage. (Same as ECE 6620) (Fall, Every Year).

ECE 4710. Control Systems Design. 3 Credits.
Mathematical models of linear systems; steady-state and transient analyses; root locus and frequency response methods; synthesis of linear feedback control systems. Prerequisite: APSC 2114, ECE 2210 or MAE 3134.

ECE 4715. Control Systems Laboratory. 1 Credit.
Experiments in support of control theory, involving the use of the digital computer for process control in real time. Design of feedback and compensation with computer implementation. Digital simulation of linear and nonlinear systems. Prerequisite or corequisite: ECE 4710.

ECE 4730. Robotic Systems. 3 Credits.
Modeling and analysis of robot designs. Kinematics of mechanical linkages, structures, actuators, transmissions, and sensors. Design of robot control systems, computer programming, and vision systems. Use of artificial intelligence. Current industrial applications and limitations of robotic systems. Same as MAE 3197. Prerequisite: computer programming, APSC 2058, ECE 4710.

ECE 4735. Robotics Laboratory. 1 Credit.
Experiments illustrating basic principles and programming of robots and other automated machinery. Design and writing of computer programs to use a robot's arm, vision, and data files to accomplish tasks. Prerequisite or corequisite: ECE 4730/ MAE 3197.

ECE 4920W. Electrical, Computer, and Biomedical Engineering Capstone Project Lab II. 3 Credits.
ECE 3915, ECE 4920, and ECE 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project.

ECE 4925W. Electrical, Computer, and Biomedical Engineering Capstone Project Lab III. 2 Credits.
ECE 3915, ECE 4920, and ECE 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project.

ECE 4980. Special Topics. 1-3 Credits.
Topic to be announced in the Schedule of Classes. (Fall and spring).

ECE 4990. Research. 1-3 Credits.
Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status.

ECE 6005. Microcomputer Systems Architecture. 3 Credits.
Advanced topics in computer architecture and design; instruction-level parallelism, thread-level parallelism, memory, multithreading, and storage systems. (Fall, Every Year).

ECE 6010. Linear Systems Theory. 3 Credits.
Introduction to linear systems theory. Topics include linear vector spaces and linear operators, mathematical representation of dynamic linear systems, concept of state and solution of the state equation, controllability and observability, canonical forms of the state equation, state feedback, and state estimation. (Fall, Spring, Every Year).

ECE 6015. Stochastic Processes in Engineering. 3 Credits.
Basic concepts of modeling of random phenomena in electrical and computer systems: probability framework, stationarity, linear filtering. Optimization of discrete and continuous stochastic processes. Elements of performance analysis. (Fall, Spring, and Summer, Every Year).

ECE 6020. Applied Electromagnetics. 3 Credits.
Review of Maxwell's equations; electromagnetics of circuits, plane wave propagation; transmission lines; waveguides; radiating systems; receiving antennas and pattern reciprocity, array antennas; electromagnetic properties of materials: conductors, crystals, devices; optical transmission. (Fall, Every Year).

ECE 6025. Signals and Transforms in Engineering. 3 Credits.
Signal spaces and approximation. Orthogonal functions. Fourier series and transform. Bandpass signals and modulation. Hilbert transform and analytic signals. Timefrequency analysis. Short-time Fourier transform. Linear systems properties. Laplace transform. Sampling and discrete-time signals. Discrete-time Fourier transform and z-transform. Wavelets. (Fall and Spring, Every Year).

ECE 6030. Device Electronics. 3 Credits.
Semiconductor device concepts; doping, drift diffusion, recombination. Analysis of Schottky and Ohmic contacts, pn junctions, MOS systems. Modeling and analysis of semiconductor devices such as MOSFET and bipolar transistors. Hot electron and short and narrow channel effects. (Spring, Every Year).

ECE 6035. Introduction to Computer Networks. 3 Credits.
Layered protocol architectures. Digital transmission, fundamental limits. Error detection and ARQ protocols. Data link layer and control. Multiple access protocols. Circuit and packet switching. Multiplexing. Routing. Flow and congestion control, queue management. LAN standards. TCP/IP. Next-generation Internet. (Same as ECE 3415) (Spring and fall).

ECE 6045. Special Topics. 1-3 Credits.
Topics to be announced in the Schedule of Classes. (Fall and spring).

ECE 6050. Research. 1-12 Credits.
Applied research and experimentation projects, as arranged. May be repeated for credit.

ECE 6060. Electric Power Generation. 3 Credits.
Overview of primary traditional and alternative energy sources and storage. Analysis of machinery employed in energy conversion processes. Effect of independent power producers on long-term and short-term stability of large grids. (Fall, Every Year).

ECE 6065. Colloquium. 0 Credits.
Lectures by outstanding authorities in electrical and computer engineering. Topics to be announced each semester. (Fall and spring).

ECE 6105. Introduction to High-Performance Computing. 3 Credits.
Taxonomy and classifications of computers and parallel computers. Parallel thinking and parallel algorithms. Domain decomposition and load balancing. Programming parallel computers using the message passing, global address space, and partitioned global address space paradigms. Prerequisite: graduate standing in science or engineering or consent of instructor.

ECE 6120. High-Performance Processors. 3 Credits.
Processor microarchitecture and instruction-level parallelism. Superpipelines and superscalar processors. Multiple-instruction fetching, aligning, merging, and issuing. Hardware and software solutions to structural and data and control hazards. Branch prediction and static and dynamic speculation. Register renaming, Tomasulo's algorithm. VLIWs. Prerequisite: ECE 6005.

ECE 6125. Parallel Computer Architecture. 3 Credits.
Architectural classifications and taxonomies of parallel computers; enabling technologies, including advanced processor concepts, interconnection networks, high-speed memory architectures and protocols; parallel performance and scalability; and introduction to parallel algorithms and parallel programming. Prerequisite: ECE 6005 or ECE 6105.

ECE 6130. Big Data and Cloud Computing. 3 Credits.
Research topics related to big data and cloud computing, including data centers, virtualization, hardware and software architecture; system-level issues on performance, energy efficiency, reliability, scalability, and security. Prerequisite: ECE 6105. (Spring).

ECE 6132. Secure Cloud Computing. 3 Credits.
Security and privacy issues in cloud computing systems; confidentiality, integrity, and availability of data and computations; cloud computing models, threat models, outsourcing, and security issues. Practical applications of secure cloud computing. (Fall, spring, and summer).

ECE 6140. Embedded Systems. 3 Credits.
Architectural advances and instruction sets for embedded microprocessors. Real-time operating systems and real-time scheduling, use of pre-designed software and hardware cores. Sensors, actuators, and data acquisition. System-on-chip (SoC). Design case studies. Prerequisite: ECE 6005.

ECE 6213. Design of VLSI Circuits. 3 Credits.
Top-down ASIC/FPGA design methodology; modeling of VLSI circuits using HDL; behavioral, structural, and RTL modeling techniques; logic synthesis techniques; design verification plan and techniques. Students design and verify a final project using state of the art commercial VLSI CAD tools for ASIC and FPGA (Altera). Prerequisite: ECE 6240. (Fall, Every Year).

ECE 6214. High-Level VLSI Design Methodology. 3 Credits.
High-level ASIC–FPGA design methodology. RTL modeling of VLSI circuits, using HDL for synthesis. Detailed discussion of logic synthesis. Architectural tradeoff for large VLSI circuits. Advanced optimization techniques. VLSI design flow, using the state-of-the-art, front-end design entry and simulation tools and back-end logic synthesis. Prerequisite: ECE 6213.

ECE 6215. Introduction to MEMS. 3 Credits.
Introduction to microelectromechanical and nanoelectromechanical systems (MEMS/NEMS). Basic principles of simulating, designing, and fabricating MEMS/NEMS. Prerequisite: ECE 6240. (Spring, Every Year).

ECE 6216. RF/VLSI Circuit Design. 3 Credits.
Introduction to radio frequency systems. RF design, specifications, S-parameters, gain, noise, stability, matching concepts, small signal amplifiers, low noise amplifiers, power amplifiers, system-level design. Students use CAD tools such as ADS and other industrial tools to design class project. Prerequisite: ECE 6240. (Spring, Odd Years).

ECE 6218. Advanced Analog VLSI Circuit Design. 3 Credits.
MOS technology: building blocks, devices, capacitors, limitations. Operational amplifiers and other analog systems. Layout examples and design principles. Mixed-signal A/D and D/A. Students use the CAD VLSI laboratory to design and simulate circuits. Prerequisite: ECE 6240. (Spring, Odd Years).

ECE 6221. Introduction to Physical Electronics. 3 Credits.
Theoretical principles underlying the operation of electronic devices. Postulates of quantum mechanics: wave–particle duality, uncertainty relations, electronic band structure. Free-carrier statistics; electron–photon interaction. Physical principles of semiconductor and optoelectronic devices. (Fall, Every Year).

ECE 6240. VLSI Design and Simulation. 3 Credits.
Study of VLSI circuit design including PMOS and NMOS transistor analysis, switch and gate logic design, understanding of semiconductor fabrication processes and design rules, CAD system, speed and power considerations, scaling of transistors to the nano-scale, and designing with highly variable process parameters. Each student will design a VLSI chip, simulate the design and submit a GDS II file for Chip fabrication. (Same as ECE 4140) (Fall, Every Year).

ECE 6245. Micro and Nano Fabrication Technology. 3 Credits.
Introduction to the basic fabrication principles at the micro and nano scale; students practice and fabricate simple devices. Restricted to graduate students. Prerequisites: ECE 2150. (Fall and spring).

ECE 6250. ASIC Design and Testing of VLSI Circuits. 3 Credits.
ASIC and mixed-signal design methodology, use of ASIC design CAD tools. Logic synthesis, styles of synthesis, power/area/speed constraints. MIPS CPU HDL implementation/verification/testing. VLSI testing, fault models, design for testability techniques, scan path, built-in self-test. Testing of chips designed and fabricated in ECE 4140 or equivalent chips. (Same as ECE 4150) (Spring, Every Year).

ECE 6260. Introduction to Nanoelectronics. 3 Credits.
Nanoscience and technology and nanoelectronics. Basic nanofabrication steps; techniques to build devices such as carbon nanotubes, graphene device, and other 2D nanoelectronic devices. Tools for performing design and characterizations of nanodevices, including scanning electron microscopy (SEM), atomic force microscopy (AFM), and transmission electron microscope (TEM). (Same as ECE 4160) (Fall, Every Year).

ECE 6500. Information Theory. 3 Credits.
The concepts of source and channel. Measure of information, entropy, mutual information. The noiseless coding theorem. The noisy coding theorem. Channel capacity: symmetric and nonsymmetric channels, Gaussian and binary symmetric channels. Rate-distortion theory. Basics of multiple-user information theory. Prerequisite: ECE 6015.

ECE 6505. Error Control Coding. 3 Credits.
Algebraic coding theory: finite fields, linear block codes, cyclic and Reed– Solomon codes. Error detection using CRC codes. Convolutional codes and trellis-coded modulations: structure, properties, performance bounds. Capacity achieving codes; soft-input–soft-output decoding; computationally efficient decoding algorithms. Prerequisite: ECE 6015.

ECE 6510. Communication Theory I. 3 Credits.
Principles of digital communications. Channels, digital modulation; optimum receivers and algorithms in the AWGN; coherent, non-coherent, and fading channels. Correlation detectors, matched filters; diversity. Bounds on performance of communications, comparison of communications systems and implementation issues. Prerequisite: ECE 6015.

ECE 6520. Mobile and Wireless Communication Systems. 3 Credits.
Characterization of mobile and wireless channels. Indoor and outdoor path loss models. Multipath propagation. Fading. Fading countermeasures (coding and equalization). Power control. Cellular design and frequency reuse. Modulation and coding techniques. Spread spectrum and orthogonal frequency-division multiplexing (OFDM). Space-code division multiple access (SCDMA), multiple-input and multiple-output (MIMO). Prerequisite: ECE 6510. (Fall, Odd Years).

ECE 6525. Satellite Communication Systems. 3 Credits.
Low earth orbit and geostationary satellite systems; transmission systems; RF link budgets; modulation and multiplexing; multiple access techniques, including FDMA, TDMA, and CDMA; satellite transponders, antennas, and earth stations. Prerequisite: ECE 6510. (Fall, odd years).

ECE 6530. Electronic Warfare. 3 Credits.
Electronic attack and protection of information. Countermeasures and counter-countermeasures. Electronic attacks on ranging and tracking radar systems; jamming and jamming defense. Electronic attack on communications systems. Defensive techniques, signal design, spread spectrum. Attack and defense of optical and high-energy systems. Prerequisite: ECE 6510. (Fall and Spring, Every Year).

ECE 6550. Advanced Network Architectures. 3 Credits.
Review of packet and circuit switching. Local access networks: digital subscriber lines. High-speed wide area networks: Frame relay, asynchronous transfer mode, and synchronous optical network. Multi-protocol label switching. Network layer protocols. Network management systems. Prerequisite: ECE 6035. (Spring, Every Year).

ECE 6555. Networks Protocols. 3 Credits.
Layering, OSI, and Internet architectures. Link–layer protocols: PPP, HDLC, SONET. Cell-switching, ATM, and adaptation protocols. MAC layer protocols: Ethernet, 802.11. IP addressing, routing protocols: RIP, OSPF. Multi-domain routing: CIDR, BGP. End-to-end protocols: UDP, TCP. TCP congestion control. Application layer protocols: DNS, HTTP, SMTP, FTP. Prerequisite: ECE 6035. (Fall and Spring, Every Year).

ECE 6560. Network Performance Analysis. 3 Credits.
Telecommunications traffic models: arrival and service time distributions, Poisson and Erlang formulas. Topological design algorithms. Delay and blocking models and probabilities for packet switched networks. Routing, relaying, and flow control algorithms: delay and cost minimization, throughput optimization. Prerequisite: ECE 6015, ECE 6035. (Fall, Every Year).

ECE 6565. Telecommunications Security. 3 Credits.
Speech and data scrambling. Linear and nonlinear transformations. Cryptographic techniques. Block and stream ciphers. The Data Encryption Standard (DES). Key management, digital signatures, message authentication, hash functions. Public key algorithms. Prerequisite: graduate standing in science or engineering or consent of instructor.

ECE 6570. Telecommunications Security Protocols. 3 Credits.
The OSI security architecture: services and mechanisms, risk analysis. Internet protocol mechanisms. Ipv4 and Ipv6 security, security associations, authentication, MD5. Encapsulating security payload. E-mail security: PGP, S/MIME, PEM, MSP. Secure voice communications algorithms. Security in Internet commerce: SSL, SET. Prerequisite: ECE 6565.

ECE 6575. Optical Communication Networks. 3 Credits.
Wave propagation through fiber, dispersion, polarization. Multiplexing techniques, WDM. Optical networking components. Optical transmission systems design. All-optical networking, broadcast star and wavelength routing networks. Performance analysis, survivability, control and management. Optical access networks. Prerequisite: APSC 3115.

ECE 6580. Wireless Networks. 3 Credits.
Telecommunications traffic models: arrival and service time distributions, Poisson and Erlang formulas. Topological design algorithms. Delay and blocking models and probabilities for packet switched networks. Routing, relaying, and flow control algorithms: delay and cost minimization, throughput optimization. Prerequisite: ECE 6015, ECE 6035. (Fall, Every Year).

ECE 6610. Electrical Energy Conversion. 3 Credits.
Three-phase and single-phase AC rotating machines and transformers, DC machines, rotating machines as circuit elements, power semiconductor converters. Renewable generation, utility grid integration, smart grid applications. May be taken for graduate credit by students in fields other than electrical engineering. Prerequisites: ECE 2210, ECE 3315. (Same as ECE 4610) (Spring, Every Year).

ECE 6620. Electrical Power Systems. 3 Credits.
AC power grids, transmission line parameters, load flow, economic dispatch voltage, frequency, and power flow control. Voltage, current, and power limitations. Fault analysis and stability considerations. Effect of independent power producers and variable energy sources and energy storage. (Same as ECE 4620) (Fall, Every Year).

ECE 6662. Power Electronics. 3 Credits.
The application of electronics to energy conversion. Principles of operation, analysis, and control of circuits including solid-state electronic switches. Methods of solving power electronic circuits and finding the steady-state values of important quantities. Deriving the linear model of the studied power electronic circuits and designing controllers for these devices. A general knowledge of electric circuits and linear control theory is required. (Spring, Every Year).

ECE 6666. Power System Transmission, Control, and Security. 3 Credits.
Analysis of AC networks, load flow, economic dispatch, voltage and frequency control. N-1 contingency and its role in assessing and maintaining system integrity. Analysis of loss of critical generating units and transmission capabilities under severe threats. Rapid restoration techniques based on historical data and heuristic approaches. Prerequisite: ECE 6620. (Spring, Odd Years).

ECE 6667. Nuclear Power Generation. 3 Credits.
Review of nuclear reactor engineering, traditional and developing reactor design, issues regarding the safe operation of nuclear plant, and control and regulatory aspects of nuclear power generation. Prerequisites: ECE 6620 or permission of the instructor. (Fall, Even Years).

ECE 6668. Power Distribution Grids. 3 Credits.
Equipment for power distribution for industrial, commercial, and residential applications. Switching and safety at the distribution voltage level. Bulk insulation level and insulation coordination principles. Smart grid innovations. Remote metering. Prerequisites: ECE 4620 or permission of course director. (Fall, odd years).

ECE 6669. Smart Power Grids. 3 Credits.
Review of power systems and elements of smart grids; wide-area monitoring (WAMS) and advanced metering infrastructure (AMI); communication and networking architecture (SCADA, Zigbee, PLC, GSM), standards and reliability aspects; state estimation; synchrophasors and their applications; demand response; distributed energy resources (DER) and microgrids; power electronic interface of DER units; switching techniques of inverters; control of DER units; control of microgrids; and electric vehicles. (Fall, Odd Years).

ECE 6670. Power System Protection. 3 Credits.
Main philosophy for protection of power systems. Protection systems and approaches; reliability and security of protection systems; protection of generators, transformers, motors and transmission lines; requirements for distributed source generation (DSG); and requirements for system protection to prevent grid blackouts and enhance power system security. Prerequisite: ECE 6620 or permission of instructor. (Spring, Even Years).

ECE 6690. Power Systems Economics. 3 Credits.
Overview of electrical power market economics and market participants. Production pricing and market clearing pricing. Market ancillary service pricing. Location marginal pricing and zonal pricing schemes. New electrical generation entrant impact. Investing in generation and in transmission. Independent power producers and independent transmission owners. Prerequisites: ECE 6060 or permission of course director. (Fall).

ECE 6691. Power Systems Reliability. 3 Credits.
Overview of probability theory and basic power market reliability modeling and evaluation; generation supply reliability techniques; reliability of transmission system and delivery of supply; loss of load probability evaluation; forced and maintenance outages; load forecasting and probability of interconnected systems; risk evaluation and operating reserves. Prerequisite: ECE 6620 or permission of the instructor. (Spring, Even Years).

ECE 6699. Energy and Sustainability. 3 Credits.
Energy sources, consumption, and the societal and environmental impacts. Energy generation and harvesting technology. Thermodynamics and efficiency limits. Nanotechnology for sustainability. Emission and pollution. Growth models; learning curves. Life-cycle analysis. Energy in an international perspective: origins, crises, and solutions. Recommended background: Basic understanding of energy and thermodynamics, such as ECE 4620, MAE 2131, or with permission from the course director. (Fall, even years).

ECE 6705. Introduction to Microwave Engineering I. 3 Credits.
Transmission lines, scattering parameters, microwave networks, resonators. Modes in uniform waveguides, general characteristics of waveguide junctions. Transfer representations, filters, couplers, symmetrical waveguide junctions. Prerequisite: ECE 6020.

ECE 6710. Microwave Engineering. 3 Credits.
Transmission line theory, transmission lines and waveguides, waveguide discontinuities, microwave networks, impedance matching and tuning, microwave resonators, power dividers and directional couplers, and microwave filters and active microwave circuits. (Fall, Even Years).

ECE 6715. Antennas. 3 Credits.
Antenna circuits, radiation pattern, reciprocity, gain, receiving cross-section, scattering by antennas, mutual coupling, arrays. Polarization. Radiation from current distributions, equivalent aperture currents, dipoles, patch antennas, large phased arrays. Prerequisites: ECE 6020.).

ECE 6720. Remote Sensing. 3 Credits.
Active and passive remote-sensing systems: scatterometers, real-aperture imaging, and synthetic-aperture radars. Sensing of surface, subsurface, and atmospheric parameters at microwave, infrared, and optical frequencies. Analysis of radiometric techniques using radiative transport theory, inverse scattering methods, profile inversion. Prerequisite: ECE 6020.

ECE 6725. Electromagnetic Radiation and Scattering. 3 Credits.
Alternative representations of solutions to Maxwell equations, Fourier transforms and spherical mode representations, field equivalence principles, dyadic Green's functions, radiation and scattering by simple shapes, geometrical theory of diffraction, integral equations and the moment method. Prerequisite: ECE 6020, ECE 6025.

ECE 6730. Waves in Random Media. 3 Credits.
Propagation and scattering of electromagnetic, optical, and acoustic waves in random media, scattering from rough surfaces and randomly distributed particles, turbulence. Applications to propagation through rain and fog. Laser beam scintillations, remote sensing, and communications channel modeling. Monte Carlo simulation. Prerequisite: ECE 6015, ECE 6725.

ECE 6735. Numerical Electromagnetics. 3 Credits.
Systematic discussion of useful numerical methods in computational electromagnetics, including integral equation techniques and differential equation techniques, both in the frequency and time domains. Hands-on experience with numerical techniques, including the method of moments, finite element and finite-difference time-domain methods, and spectral integral methods. Related numerical issues such as accuracy, stability, and dispersion are discussed. Examples are drawn from various electromagnetic applications such as nanowires, waveguides, and antenna radiation. Prerequisite: ECE 6020. (Fall, Odd Years).

ECE 6745. Analysis of Nonlinear and Multivalued Devices. 3 Credits.
Numerical techniques for modeling semiconductor and magnetic devices. Modeling multivalued behavior of memory materials. Optimization of geometry. Prerequisite: ECE 6020.

ECE 6750. Introduction to Radar Systems. 3 Credits.
The radar range equation. Radar cross section of targets, target detection and parameter estimation, detection in clutter. Resolution, ambiguities, and signal design. Moving-target indicators. Pulse Doppler radar. Radar antennas, phased arrays. Synthetic aperture and space-based radar. Prerequisite: ECE 4320, ECE 6015.

ECE 6760. Propagation Modeling in Wireless Communications. 3 Credits.
Wireless communication channel modeling, propagation mechanisms, terrestrial fixed links, satellite fixed links, macrocells, fading models, micro-cells, picocells, diversity, equalizers. Prerequisite: ECE 6020 or permission of instructor.

ECE 6765. Photonics and Fiber Optics. 3 Credits.
Concepts of opto-electronic devices. Light-matter-interaction and absorption. Device details and applications, including laser, photodetector, and modulators. Optical cavity. Waveguides and optical fibers. Device and link considerations include energy-per-bit, modulation speed, and nano fabrication. Plasmonics and nanophotonics. Industry perspective. (Fall, Odd Years).

ECE 6770. Applied Magnetism. 3 Credits.
Classification of magnetic materials. Magnetic measurements. Soft and hard magnetic materials. Applications to microwave, magnetic recording, permanent magnets, magneto-optics, magnetostrictive devices. Magnetic sensors. Electric power. Superconducting devices. Prerequisite: ECE 6020.

ECE 6800. Computational Techniques in Electrical Engineering. 3 Credits.
Introduction to linear algebra and vector spaces as applied to networks and electrical systems. Orthogonal bases, projections, and least squares. Fast Fourier transforms. Eigenvalues and eigenvectors with applications. Computations with matrices. Constrained optimization in electrical systems. Network models and applications. Prerequisite: ECE 2210, APSC 2114.

ECE 6810. Speech and Audio Processing by Computer. 3 Credits.
Acoustic sensor technologies and characteristics. Speech coding: waveform coding, voice source coding. Speech enhancement and noise reduction. Speech analysis and synthesis, audio formats and compression standards. Speech recognition: isolated word recognition, continuous speech recognition, language identification. Models for speech and audio. Prerequisite: graduate standing.

ECE 6815. Microarchitect/Multimedia Proc. 3 Credits.
Introduction to multimedia. Multimedia formats, conversion, and combinations. Delivery and trends. Servers and networks. Hardware and architecture. End-user devices. Digital libraries, video conferencing and collaboration. Educational and health applications. Case studies and trials. Prerequisite: ECE 6005.

ECE 6820. Real Time DSP. 3 Credits.
Digital signals, binary number representation, fixed-point and floating-point DSP architectures. Q-format for data representation, bit allocation and arithmetic. Portability of arithmetic expressions: floating point vs. fixed point. Applications to signal parameter estimation, signal generation, filtering, signal correlation, spectral estimation (FFT). Prerequisite: ECE 6005. Recommended background: Basic knowledge of computer architecture and DSP algorithms; knowledge of C programming language, assembly language and Matlab is desirable. (Fall and Spring, Every Year).

ECE 6825. Computer Control Systems. 3 Credits.
Analysis of automatic control systems in which the control procedure uses on-line digital computation. Topics include single- and multirate sampling, z-transforms, responses of discrete systems, stability criteria, and discrete control design. Prerequisite or concurrent registration: ECE 6010.

ECE 6830. System Optimization. 3 Credits.
Parameter optimization problems, theory of minima and maxima. Optimization problems for dynamic systems, calculus of variations, the maximum principle and the Hamilton–Jacobi equation. Optimization problems with constraints, optimal feedback systems. Numerical solution of optimal problems. Prerequisite: ECE 6010.

ECE 6835. Nonlinear Systems. 3 Credits.
Definition of linear and nonlinear systems; introduction to approximate analysis of nonlinear systems—describing functions, Krylov and Bogoliubov asymptotical method, and Tsypkin locus. Forced oscillations—jump resonance. Stability analysis—Liapunov criterion. Luré problem and Popov method. Prerequisite: ECE 6010.

ECE 6840. Digital Image Processing. 3 Credits.
Properties of images and visual systems. Image acquisition, sampling, quantization. One- and two-dimensional image transform techniques; enhancement and restoration. Image coding and data compression. Segmentation, representation, boundary and shape, texture, matching. Image understanding. Prerequisite: ECE 6800.

ECE 6842. Image Engineering. 3 Credits.
Sensor/camera design and analysis as a system. Detection and noise processes underlying the sensing of optical radiation; the engineering and physics of image formation. Topics covered include radiometry/photometry, optics and image formation, device and camera characterization, and image quality metrics and system design trades. Prerequisites: ECE 6010, ECE 6015. (Fall, even years).

ECE 6845. Image Synthesis. 3 Credits.
Image synthesis techniques, mathematical image models, image reconstruction techniques, color texture synthesis, synthesis of three-dimensional scenes. Prerequisite: ECE 6015.

ECE 6850. Pattern Recognition. 3 Credits.
Random vectors, transformations. Hypothesis testing, error probability, sequential methods. Bayes, other linear classifiers. Discriminant functions, parameter estimation, learning, and dimensionality reduction. Nonparametric methods; clustering; feature selection and ordering. Computer applications and projects. Prerequisite: ECE 6015.

ECE 6855. Digital Signal Processing. 3 Credits.
Signal and system representation, sampling and quantization, transform techniques. Recursive and nonrecursive digital filter design, recursive estimation, linear predictive filtering. Fast algorithms for signal processing. Current topics. Prerequisites: ECE 3220 or ECE 6025, and ECE 6015.).

ECE 6860. Compression Techniques for Data, Speech, and Video. 3 Credits.
Lossless and lossy coding theorems, rate distortion bound. Data compression algorithms: Huffman coding, run-length coding. Differential coding. Transform coding. Voice, audio, image and video coding techniques: CELP, JPEG, MPEG, MP3. Data coding standards: G.722, G.726, G.728, H.261, H.323. Prerequisite: ECE 6015, ECE 6025.

ECE 6865. Statistical Signal Estimation. 3 Credits.
Minimum variance unbiased estimation. Cramer–Rao bound, statistical modeling, sufficient statistics, maximum likelihood estimation, efficient estimators, and least squares. Bayesian estimators. Wiener and Kalman filters, complex data and parameters. Applications to radar, speech, image, biomedicine, and communications, control. Prerequisites: ECE 6010, ECE 6015, and ECE 6025. (Fall, Even Years).

ECE 6875. Wavelets and Their Applications. 3 Credits.
Time-frequency analysis. Continuous, discrete, and discrete-time wavelet transform. Multirate filter banks. Multiband wavelets, two-dimensional wavelets. Wavelet packets and matching pursuit. Wavelets in noise filtering, compression, modeling of fractals, communications, detection, adaptive systems, neural networks, and fast computation. Prerequisite: ECE 6025, ECE 6855.

ECE 6880. Adaptive Signal Processing. 3 Credits.
Adaptation criteria. On-line adaptive filtering algorithms: least mean square and recursive least square. Adaptation in transform domain. Convergence of adaptive algorithms and tracking. Applications in system identification, adaptive channel equalization, interference cancellation and suppression, and adaptive antenna arrays. Blind deconvolution. Prerequisite: ECE 6865.

ECE 6885. Computer Vision. 3 Credits.
Image processing; edge detection, segmentation, local features, shape and region description in 2D and 3D. Insights from human vision studies. Representation for vision: object models, synthetic images, matching, gaps, algorithms. Interference, production system, syntactic networks. Planning spatial reasoning for robot vision. Prerequisite: CSCI 6511; ECE 6850.

ECE 6998. Thesis Research. 3 Credits.

ECE 6999. Thesis Research. 3 Credits.

ECE 8150. Advanced Topics in Computer Architecture. 3 Credits.
Examples of topics are interconnection networks, fault tolerance, load balancing, workload characterization, and performance modeling of advanced computer systems. Prerequisite: ECE 6120, ECE 6125.

ECE 8999. Dissertation Research. 0-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

BACHELOR OF SCIENCE WITH A MAJOR IN COMPUTER ENGINEERING

Computer engineering combines electronic design, computer architecture, programming of computing systems, computer networks, and applied mathematics. The bachelor of science with a major in computer engineering degree program prepares students in the theory and application of hardware and software design, computer networks, embedded systems, and very large scale integrated (VLSI) circuit design and applications. Students may take electives in advanced topics such as optical networks, broadband wireless networks, and technologies for the next generation of information systems.

Visit the program website (http://www.ece.seas.gwu.edu/bachelor-science-computer-engineering) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
First semester		
CHEM 1111	General Chemistry I [1]	
ECE 1010	Introduction to Electrical and Computer Engineering	
MATH 1231	Single-Variable Calculus I [1]	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing [1]	
Humanities or social sciences elective [2]		
Second semester		
CSCI 1311	Discrete Structures I	
ECE 1020	Introduction to Electrical and Computer Engineering	
ECE 1120	C Programming for ECE	
MATH 1232	Single-Variable Calculus II [1]	
PHYS 1021	University Physics I [1]	
Humanities or social sciences elective [2]		
Third semester		
APSC 2113	Engineering Analysis I	
ECE 1125	Data Structures&Algorithms ECE	
ECE 2110	Circuit Theory	
ECE 2120	Engineering Seminar	
MATH 2233	Multivariable Calculus [1]	
PHYS 1022	University Physics II [1]	
Fourth semester		
APSC 3115	Engineering Analysis III	
ECE 2115	Engineering Electronics	
ECE 2140	Design of Logic Systems I	
ECE 2210	Circuits, Signals, and Systems	
Humanities or social sciences elective [2]		
Fifth semester		

CSCI 3411	Operating Systems
ECE 3130	Digital Electronics and Design
ECE 3220	Intro to Digital Signal Proces
ECE 3515	Computer Organization
ECE 3520	Microprocessors: Software, Hardware, and Interfacing
Sixth semester	
ECE 3135	Design of Logic Systems II
ECE 3310	Introduction to Electromagnetics
ECE 3415	Introduction to Computer Networks
ECE 3425	Data Communications Laboratory
ECE 3525	Introduction to Embedded Systems
ECE 3915	Electrical, Computer, and Biomedical Engineering Capstone Project Lab I
Humanities or social sciences elective [2]	
Seventh semester	
ECE 4140	VLSI Design and Simulation
ECE 4535	Computer Architecture and Design
ECE 4920	Electrical, Computer, and Biomedical Engineering Capstone Project Lab II
Humanities or social sciences elective [2]	
Technical elective [3]	
Eighth semester	
ECE 4150	ASIC Design and Testing of VLSI Circuits
ECE 4925	Electrical, Computer, and Biomedical Engineering Capstone Project Lab III
PHIL 2135	Ethics in Business and the Professions
Two technical electives [3]	

[1] Course satisfies the university general education requirement in math, science, and writing.

[2] At least two social and behavioral sciences courses must be selected from the University General Education Requirement list; (p. 38) the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list (p. 38); the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list. (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf)

[3] Three 3-credit technical courses must be chosen with the approval of the advisor from advanced undergraduate or graduate courses in engineering, computer science, mathematics, physical sciences, or biological sciences. At least one of the technical electives must be an upper-level math or science course.

BACHELOR OF SCIENCE WITH A MAJOR IN ELECTRICAL ENGINEERING

Electrical engineers design the enabling technology for all applications of electricity; examples include energy, telecommunications, the Internet, biomedical instrumentation, and electromagnetic applications. The bachelor of science with a major in electrical engineering degree program focuses on signal processing; communication theory and practice; voice, data, video and multimedia communication networks; very large scale integrated (VLSI) circuit design and applications; and control and power systems. Students can take electives in advanced topics, such as optical networks, broadband wireless networks, and technologies for the next generation of information systems.

Visit the program website (http://www.ece.seas.gwu.edu/bachelor-science-electrical-engineering) for additional information.

REQUIREMENTS

Recommended program of study

First semester	
CHEM 1111	General Chemistry I *
ECE 1010	Introduction to Electrical, Computer, and Biomedical Engineering
MATH 1231	Single-Variable Calculus I *
SEAS 1001	Engineering Orientation
UW 1020	University Writing *
Humanities or social sciences elective **	
Second semester	
ECE 1020	Introduction to Electrical, Computer, and Biomedical Engineering

ECE 1120	C Programming for ECE
MATH 1232	Single-Variable Calculus II *
PHYS 1021	University Physics I *
Two humanities or social sciences electives **	
Third semester	
APSC 2113	Engineering Analysis I
ECE 1125	Data Structures&Algorithms ECE
ECE 2110	Circuit Theory
ECE 2120	Engineering Seminar
MATH 2233	Multivariable Calculus *
PHYS 1022	University Physics II *
Fourth semester	
APSC 2114	Engineering Analysis II
ECE 2115	Engineering Electronics
ECE 2140	Design of Logic Systems I
ECE 2210	Circuits, Signals, and Systems
Humanities or social sciences elective **	
Fifth semester	
APSC 3115	Engineering Analysis III
ECE 3130	Digital Electronics and Design
ECE 3220	Intro to Digital Signal Proces
ECE 3315	Fields and Waves I
ECE 3520	Microprocessors: Software, Hardware, and Interfacing
Sixth semester	
ECE 3125	Analog Electronics Design
ECE 3135	Design of Logic Systems II
ECE 3410	Communications Engineering
ECE 3915	Electrical, Computer, and Biomedical Engineering Capstone Project Lab I
ECE 4320	Fields and Waves II
Seventh semester	
ECE 4710	Control Systems Design
ECE 4920	Electrical, Computer, and Biomedical Engineering Capstone Project Lab II
Technical elective	
Two ECE restricted electives	
Eighth semester	
ECE 4610	Electrical Energy Conversion
ECE 4925	Electrical, Computer, and Biomedical Engineering Capstone Project Lab III
PHIL 2135	Ethics in Business and the Professions
Two technical electives	
Humanities or social sciences elective **	

*Course satisfies the university general education requirement in math, science, and writing.
**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 38); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list; the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list.

The Electrical and Computer Engineering electives must be selected from upper level ECE courses. Three 3-credit technical courses must be chosen with the approval of the advisor from advanced undergraduate or graduate courses in engineering, computer science, mathematics, physical sciences, or biological sciences.

Visit the program website (http://www.ece.seas.gwu.edu/bachelor-science-electrical-engineering) for additional information.

BACHELOR OF SCIENCE WITH A MAJOR IN ELECTRICAL ENGINEERING, ENERGY OPTION

The bachelor of science with a major in electrical engineering, energy option degree program energy option prepares students to work in technical energy fields such as electric utility companies and in research into improved methods of generation, transmission, and distribution of electrical energy.

Visit the program website (http://www.ece.seas.gwu.edu/bachelor-science-electrical-engineering) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
First semester		
CHEM 1111	General Chemistry I [1]	
ECE 1010	Introduction to Electrical and Computer Engineering	
MATH 1231	Single-Variable Calculus I [1]	
UW 1020	University Writing [1]	
SEAS 1001	Engineering Orientation	
Humanities or social sciences elective [2]		
Second semester		
ECE 1020	Introduction to Electrical and Computer Engineering	
ECE 1120	C Programming for ECE	
MATH 1232	Single-Variable Calculus II [1]	
PHYS 1021	University Physics I [1]	
Two humanities or social sciences electives [2]		
Third semester		
APSC 2057	Analytical Mechanics I	
APSC 2113	Engineering Analysis I	
ECE 2110	Circuit Theory	
ECE 2120	Engineering Seminar	
MATH 2233	Multivariable Calculus [1]	
PHYS 1022	University Physics II [1]	
Fourth Semester		
APSC 2058	Analytical Mechanics II	
APSC 2114	Engineering Analysis II	
ECE 2115	Engineering Electronics	
ECE 2210	Circuits, Signals, and Systems	
ECE 2140	Design of Logic Systems I	
Fifth Semester		
APSC 3115	Engineering Analysis III	
ECE 3130	Digital Electronics and Design	
ECE 3220	Intro to Digital Signal Proces	
ECE 3315	Fields and Waves I	
ECE 3520	Microprocessors: Software, Hardware, and Interfacing	
Sixth Semester		
ECE 3125	Analog Electronics Design	
ECE 3915W	Electrical and Computer Engineering Capstone Project Lab I	
ECE 4320	Fields and Waves II	
MAE 2131	Thermodynamics	
MAE 3134	Linear System Dynamics	
Humanities or social sciences elective [2]		
Seventh Semester		
ECE 4620	Electrical Power Systems	
ECE 4710	Control Systems Design	
ECE 4920W	Electrical and Computer Engineering Capstone Project Lab II	
Humanities or social sciences elective [2]		
Technical elective [3]		
Eighth Semester		
ECE 3410	Communications Engineering	
ECE 4610	Electrical Energy Conversion	
ECE 4625	Power Electronics	
ECE 4925W	Electrical and Computer Engineering Capstone Project Lab III	
PHIL 2135	Ethics in Business and the Professions	

[1] Course satisfies the university general education requirement in math, science, and writing.

[2] At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 38); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list; the remaining courses must be selected from

either the University General Education Requirement list or the SEAS General Education Requirement list.

[3] Technical electives must be chosen with the approval of the advisor from advanced undergraduate or graduate courses in engineering, computer science, mathematics, physical sciences, or biological sciences.

Visit the program website (http://www.ece.seas.gwu.edu/bachelor-science-electrical-engineering) for additional information.

BACHELOR OF SCIENCE WITH A MAJOR IN ELECTRICAL ENGINEERING, MEDICAL PREPARATION OPTION

The bachelor of science with a major in electrical engineering, medical preparation option degree program prepares students for application to medical school. Student also are prepared to work in various health sciences fields, to conduct research toward development of electronic equipment to assist in diagnosing and treating disease, or to continue as a graduate student in engineering with exceptional qualifications for biomedical engineering.

Visit the program website (http://www.ece.seas.gwu.edu/bachelor-science-electrical-engineering) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
First semester		
BISC 1111	Introductory Biology: Cells and Molecules	
CHEM 1111	General Chemistry I *	
ECE 1010	Introduction to Electrical and Computer Engineering	
MATH 1231	Single-Variable Calculus I *	
UW 1020	University Writing *	
SEAS 1001	Engineering Orientation	
Second semester		
CHEM 1112	General Chemistry II	
ECE 1020	Introduction to Electrical and Computer Engineering	
ECE 1120	C Programming for ECE	
MATH 1232	Single-Variable Calculus II *	
PHYS 1021	University Physics I *	
Third semester		
APSC 2113	Engineering Analysis I	
ECE 1125	Data Structures&Algorithms ECE	
ECE 2110	Circuit Theory	
ECE 2120	Engineering Seminar	
MATH 2233	Multivariable Calculus *	
PHYS 1022	University Physics II *	
Fourth Semester		
BISC 1112	Introductory Biology: The Biology of Organisms	
ECE 2115	Engineering Electronics	
ECE 2140	Design of Logic Systems I	
ECE 2210	Circuits, Signals, and Systems	
Humanities or social sciences elective **		
Fifth Semester		
APSC 3115	Engineering Analysis III	
CHEM 2151	Organic Chemistry I	
CHEM 2153	Organic Chemistry Laboratory I	
ECE 3130	Digital Electronics and Design	
ECE 3220	Intro to Digital Signal Proces	
ECE 3520	Microprocessors: Software, Hardware, and Interfacing	
Sixth Semester		
CHEM 2152	Organic Chemistry II	
CHEM 2154	Organic Chemistry Laboratory II	
ECE 3125	Analog Electronics Design	
ECE 3310	Introduction to Electromagnetics	
ECE 3410	Communications Engineering	
ECE 3915W	Electrical and Computer Engineering Capstone Project Lab I	
Humanities or social sciences elective **		

Seventh Semester	
BME 3820	Principles and Practice of Biomedical Engineering
ECE 4710	Control Systems Design
ECE 4920W	Electrical and Computer Engineering Capstone Project Lab II
Technical elective	
Humanities or social sciences elective **	
Eighth Semester	
ECE 4925W	Electrical and Computer Engineering Capstone Project Lab III
PHIL 2135	Ethics in Business and the Professions
Technical elective	
Two humanities or social sciences electives **	

*Course satisfies the university general education requirement in math, science, and writing.
**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 38); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list; the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list.

Technical courses must be chosen with the approval of the advisor from advanced undergraduate or graduate courses in engineering, computer science, mathematics, physical sciences, or biological sciences.

Visit the program website (http://www.ece.seas.gwu.edu/bachelor-science-electrical-engineering) for additional information.

MINOR IN COMPUTER ENGINEERING

REQUIREMENTS

The minor in computer engineering is offered by the department of electrical and computer engineering. The curriculum consists of prerequisite courses, core courses, and elective courses. The total number of credit hours beyond the prerequisites is 18, out of which at least 9 credit hours are from the courses not required for the major.

The following requirements must be fulfilled:

Code	Title	Credits
Prerequisites		
The following courses must be completed before beginning the minor program.		
PHYS 1022	University Physics II *	
ECE 1120	C Programming for ECE	
APSC 2113	Engineering Analysis I *	
Required		
ECE 2110	Circuit Theory	
ECE 2115	Engineering Electronics	
ECE 2140	Design of Logic Systems I	
Electives		
Two of the following:		
ECE 3310	Introduction to Electromagnetics	
ECE 3220	Intro to Digital Signal Proces *	
ECE 3130	Digital Electronics and Design	
ECE 4140	VLSI Design and Simulation *	
ECE 3520	Microprocessors: Software, Hardware, and Interfacing	
ECE 3525	Introduction to Embedded Systems *	
ECE 3515	Computer Organization	
ECE 4535	Computer Architecture and Design *	
* These courses require additional preqrequisites.		

MINOR IN ELECTRICAL ENGINEERING

REQUIREMENTS

The minor in electrical engineering is offered by the department of electrical and computer engineering. The curriculum consists of prerequisite courses, core courses, and elective courses. The total number of credit hours beyond the prerequisites is 17, out of which at least 9 credit hours are from the courses not required for the major.

The following requirements must be fulfilled:

Code	Title	Credits
Prerequisites		
The following courses must be completed before beginning the minor program.		
PHYS 1022	University Physics II	
APSC 2113	Engineering Analysis I	
Required		
ECE 2110	Circuit Theory	
ECE 2115	Engineering Electronics	
ECE 2210	Circuits, Signals, and Systems	
Electives		
Two of the following:		
ECE 3220	Intro to Digital Signal Proces	
ECE 3125	Analog Electronics Design	
ECE 3130	Digital Electronics and Design *	
ECE 3315	Fields and Waves I *	
ECE 3410	Communications Engineering *	
ECE 3415	Introduction to Computer Networks *	
ECE 3520	Microprocessors: Software, Hardware, and Interfacing *	
ECE 4610	Electrical Energy Conversion	
ECE 4620	Electrical Power Systems	
ECE 4710	Control Systems Design *	

* These course have additional prerequisites.

MASTER OF SCIENCE IN THE FIELD OF COMPUTER ENGINEERING

The master of science in the field of computer engineering degree program provides students with the latest knowledge and skills training to address contemporary advances in computer systems architecture and networking. It also addresses the rapidly growing use of superscalar microprocessors, real-time embedded systems, VLSI and ASIC design modules, digital signal processors, and networked computing platforms.Students learn sophisticated computer architecture and integrated circuit design techniques using industry-standard computer-aided design tools and choose between two areas of focus: computer architecture and high-performance computing or microelectronics and VLSI systems.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (http://www.ece.seas.gwu.edu/master-science-computer-engineering) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 15 credits in required courses and 15 credits in elective courses. Thesis and non-thesis options are available. Students should contact the department concerning these options.

Students select one of the areas of focus leading to the Master of Science degree including computer architecture and high-performance computing, and MEMS, electronics, and photonics.

Computer Architecture and High-Performance Computing

Code	Title	Credits
Required		
ECE 6005	Microcomputer Systems Architecture	
ECE 6065	Colloquium	
4 of the following:		
ECE 6105	Introduction to High-Performance Computing	
ECE 6120	Advanced Microarchitectures	
ECE 6125	Parallel Computer Architecture	
ECE 6130	Grid and Cloud Computing	
ECE 6140	Embedded Systems	
ECE 8150	Advanced Topics in Computer Architecture	
Electives		
15 credits in elective courses; normally, no more than two courses taken outside the Department of Electrical and Computer Engineering may be counted toward the requirements for the graduate degree		

Microelectronics and VLSI systems

Code	Title	Credits
Required		

ECE 6030	Device Electronics
4 of the following:	
ECE 6213	Design of VLSI Circuits
ECE 6214	High-Level VLSI Design Methodology
ECE 6215	Introduction to MEMS
ECE 6216	RF/VLSI Circuit Design
ECE 6218	Advanced Analog VLSI Circuit Design
ECE 6221	Introduction to Physical Electronics
ECE 6223	Introduction to Nanotechnology
ECE 6240	VLSI Design and Simulation
ECE 6245	
ECE 6250	ASIC Design and Testing of VLSI Circuits
ECE 6260	Introduction to Nanoelectronics
Electives	
15 credits in elective courses; normally, no more than two courses taken outside the Department of Electrical and Computer Engineering may be counted toward the requirements for the graduate degree	

Additional requirements are found on the Department of Electrical and Computer Engineering Master's Degree requirements (https://www.ece.seas.gwu.edu/masters-program-degree-requirements) webpage.

MASTER OF SCIENCE IN THE FIELD OF ELECTRICAL ENGINEERING

The master of science in the field of electrical engineering degree program is designed to help students understand and apply the principles of the field to diverse areas such as communications, power and energy, and micro- and nano-electronics. Students may choose from the following five areas of focus: communications and networks; electrical power and energy; applied electromagnetics; electronics, photonics, and MEMS; and signal and image processing, systems, and controls.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (http://www.ece.seas.gwu.edu/master-science-electrical-engineering) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including the number of required and elective credits determined by the selected focus area. Thesis and non-thesis options are available. Students should contact the department concerning these options.

Students select one of the following five areas of focus: communications and networks; electrical power and energy; applied electromagnetics; electronics, photonics, and MEMS; and signal and image processing, systems, and controls.

Communications and Networks

Code	Title	Credits
Required		
ECE 6015	Stochastic Processes in Engineering	
ECE 6035	Introduction to Computer Networks	
ECE 6510	Communication Theory I	
ECE 6065	Colloquium	
Two of the following:		
ECE 6500	Information Theory	
ECE 6505	Error Control Coding	
ECE 6520	Mobile and Wireless Communication Systems	
ECE 6525	Satellite Communication Systems	
ECE 6530	Electronic Warfare	
ECE 6550	Advanced Network Architectures	
ECE 6555	Networks Protocols	
ECE 6560	Network Performance Analysis	
ECE 6565	Telecommunications Security	
ECE 6570	Telecommunications Security Protocols	
ECE 6575	Optical Communication Networks	
ECE 6580	Wireless Networks	
Electives		
15 credits in elective courses.*		

Electrical Power and Energy

Code	Title	Credits
Required		

ECE 6010	Linear Systems Theory
ECE 6020	Applied Electromagnetics
ECE 6060	Electric Power Generation
ECE 6065	Colloquium
Three of the following:	
ECE 6025	Signals and Transforms in Engineering
ECE 6610	Electrical Energy Conversion
ECE 6620	Electrical Power Systems
ECE 6662	Power Electronics
ECE 6666	Power System Transmission, Control, and Security
ECE 6667	Nuclear Power Generation
ECE 6668	Power Distribution Grids
ECE 6669	Smart Power Grids
ECE 6670	Power System Protection
ECE 6690	Power Systems Economics
ECE 6691	Power Systems Reliability
Electives	

12 credits in elective courses.*

Applied Electromagnetics

Code	Title	Credits
Required		
ECE 6020	Applied Electromagnetics	
ECE 6065	Colloquium	
ECE 6710	Microwave Engineering	
ECE 6715	Antennas	
One of the following:		
ECE 6720	Remote Sensing	
ECE 6725	Electromagnetic Radiation and Scattering	
ECE 6730	Waves in Random Media	
ECE 6735	Numerical Electromagnetics	
ECE 6745	Analysis of Nonlinear and Multivalued Devices	
ECE 6750	Introduction to Radar Systems	
ECE 6760	Propagation Modeling in Wireless Communications	
ECE 6765	Photonics and Fiber Optics	
ECE 6770	Applied Magnetism	
Electives		

18 credits in elective courses.*

Electronics, Photonics, and MEMS

Code	Title	Credits
Required		
ECE 6030	Device Electronics	
ECE 6065	Colloquium	
Four of the following:		
ECE 6213	Design of VLSI Circuits	
ECE 6214	High-Level VLSI Design Methodology	
ECE 6215	Introduction to MEMS	
ECE 6216	RF/VLSI Circuit Design	
ECE 6218	Advanced Analog VLSI Circuit Design	
ECE 6221	Introduction to Physical Electronics	
ECE 6223	Introduction to Nanotechnology	
ECE 6240	VLSI Design and Simulation	
ECE 6245		
ECE 6250	ASIC Design and Testing of VLSI Circuits	
ECE 6260	Introduction to Nanoelectronics	
Electives		

15 credits in elective courses.*

Signal and Image Processing, Systems and Controls

Code	Title	Credits
Required		
ECE 6015	Stochastic Processes in Engineering	

ECE 6065	Colloquium
Four of the following:	
ECE 6005	Microcomputer Systems Architecture
ECE 6010	Linear Systems Theory
ECE 6025	Signals and Transforms in Engineering
ECE 6666	Power System Transmission, Control, and Security
ECE 6800	Computational Techniques in Electrical Engineering
ECE 6810	Speech and Audio Processing by Computer
ECE 6815	Multimedia Processing
ECE 6820	Real Time DSP
ECE 6825	Computer Control Systems
ECE 6830	System Optimization
ECE 6835	Nonlinear Systems
ECE 6840	Digital Image Processing
ECE 6842	Image Engineering
ECE 6845	Image Synthesis
ECE 6850	Pattern Recognition
ECE 6855	Digital Signal Processing
ECE 6860	Compression Techniques for Data, Speech, and Video
ECE 6865	Statistical Signal Estimation
ECE 6875	Wavelets and Their Applications
ECE 6880	Adaptive Signal Processing
ECE 6885	Computer Vision
Electives	
15 credits in elective courses.*	

*Normally, no more than two elective courses taken outside the Department of Electrical and Computer Engineering may be counted toward the requirements for the degree.

Additional requirements found on the Department of Electrical and Computer Engineering Master's Degree requirements (https://www.ece.seas.gwu.edu/masters-program-degree-requirements) webpage.

MASTER OF SCIENCE IN THE FIELD OF TELECOMMUNICATIONS ENGINEERING

The master of science in the field of telecommunications engineering degree program is designed for the practicing or aspiring telecommunications engineer. The program provides students with a foundation in the fundamentals of telecommunications engineering, including topics such as transmission systems, computer networking, network architectures and protocols, and telecommunications security protocols. In addition, students have the option to take courses on optical networking, wireless networking, and cloud computing.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (http://www.ece.seas.gwu.edu/master-science-telecommunications-engineering) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 15 credits in required courses, 15 credits in elective courses, and a zero-credit colloquium. Thesis and non-thesis options are available. Students should contact the department concerning these options.

Required	
ECE 6035	Introduction to Computer Networks
ECE 6065	Colloquium
ECE 6550	Advanced Network Architectures
ECE 6565	Telecommunications Security
ECE 6575	Optical Communication Networks
ECE 6580	Wireless Networks
Three of the following:	
ECE 6005	Microcomputer Systems Architecture
ECE 6015	Stochastic Processes in Engineering
ECE 6130	Grid and Cloud Computing
ECE 6560	Network Performance Analysis
ECE 6570	Telecommunications Security Protocols
Electives	

6 credits of electives

Additional requirements found on the Department of Electrical and Computer Engineering Master's Degree requirements (https://www.ece.seas.gwu.edu/masters-program-degree-requirements) webpage.

DOCTOR OF PHILOSOPHY IN THE FIELD OF COMPUTER ENGINEERING

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under School of Engineering, Doctoral Program Regulations (http://bulletin.gwu.edu/engineering-applied-science/#Doctor_of_Philosophy).

Students with an MS degree must take a minimum of 30 credits, of which at least 18 must be credits from courses available for graduate credit, and at least 12 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor. Students with a BS degree must take a minimum of 54 credits, of which at least 36 must be credits from courses available for graduate credit, and at least 12 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor. In some cases, particularly when the student undertakes a doctoral program in a field other than that in which the earlier degree was earned, the program of study exceeds the minimum number of credits.

No specific courses are required; the student and advisor design the curriculum to meet the student's needs and goals.

Other requirements

- Scholarship requirements–Students must have a minimum GPA of 3.4 at the time of graduation and a minimum grade of *B* in all courses that count toward the degree.
- Seminar requirement–Students must present one departmental seminar, excluding the dissertation defense, prior to graduation.
- Colloquium requirement–Students must attend five seminars, workshops, or symposia sponsored by the department in order to fulfill this zero-credit requirement.

Student should contact the department for additional information and requirements

DOCTOR OF PHILOSOPHY IN THE FIELD OF ELECTRICAL ENGINEERING

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under School of Engineering, Doctoral Program Regulations (http://bulletin.gwu.edu/engineering-applied-science/#Doctor_of_Philosophy).

Students with an MS degree must take a minimum of 30 credits, of which at least 18 must be credits from courses available for graduate credit, and at least 12 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor. Students with a BS degree must take a minimum of 54 credits, of which at least 36 must be credits from courses available for graduate credit, and at least 12 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor. In some cases, particularly when the student undertakes a doctoral program in a field other than that in which the earlier degree was earned, the program of study exceeds the minimum number of credits.

No specific courses are required; the student and advisor design the curriculum to meet the student's needs and goals.

Other requirements

- Seminar requirement–Students must present one departmental seminar, excluding the dissertation defense, prior to graduation.
- Colloquium requirement–Students must attend a minimum of five seminars, workshops, or symposia sponsored by the department in order to fulfill this zero-credit requirement.

Student should contact the department for additional information and requirements

GRADUATE CERTIFICATE IN HIGH-PERFORMANCE COMPUTING

The graduate certificate in the field of high-performance computing (HPC) program provides a mechanism for practicing interdisciplinary computational engineers and scientists to acquire up-to-date knowledge in the advances of computer systems, in particular, the rapidly growing use of multicore processors, parallel computers, hardware accelerators, and networked computing platforms in applications. The program is tailored to provide students with necessary knowledge in all aspects of high performance computing including programming, applications, performance, architectures, and systems.

The certificate program may serve as an alternative to a master of science degree program for professionals who may not have the time to commit to a full graduate degree program, but who wish to align their background with the rapid changes in computing technologies and to expand their education beyond the bachelor's degree. All courses taken as part of this program may be transferred to the Department of Electrical and Computer Engineering's M.S. and/or Ph.D. programs. While the HPC certificate can be coupled with a graduate degree program, interested students must be admitted to and complete the HPC certificate program separately.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (http://www.ece.seas.gwu.edu/graduate-certificate-high-performance-computing) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 6 credits in required courses and 6 credits in elective courses.

Required	
ECE 6105	Introduction to High-Performance Computing
At least one of the following:	
ECE 6125	Parallel Computer Architecture
ECE 6130	Grid and Cloud Computing
Electives	
Six additional credits from the following:	
CE 6210	Introduction to Finite Element Analysis
CE 6705	Nonlinear Finite Element Modeling and Simulation
CE 8330	Advanced Finite Element Analysis
CSCI 3571	Introduction to Bioinformatics
CSCI 4572	Computational Biology
CSCI 6421	Distributed and Cluster Computing
ECE 6005	Microcomputer Systems Architecture
ECE 6045	Special Topics
ECE 6050	Research
ECE 6120	High-Performance Processors
ECE 6140	Embedded Systems
ECE 6213	Design of Vlsi Circuits
ECE 6214	High-Level VLSI Design Methodology
ECE 6735	Numerical Electromagnetics
ECE 6800	Computational Techniques in Electrical Engineering
MAE 6225	Computational Fluid Dynamics
MAE 6291	Special Topics in Mechanical Engineering
PHYS 6130	Computational Physics I
PHYS 6230	Computational Physics II
PHYS 6330	Computational Physics III
PHYS 8110	Selected Topics in Theoretical Nuclear Physics

Credits taken for the certificate may be used towards a graduate degree, with academic advisor approval.

ENGINEERING MANAGEMENT AND SYSTEMS ENGINEERING

Mission Statement

The mission of the Department of Engineering Management and Systems Engineering is to deliver an integrated program of research, teaching, and public service to the technology community. The department develops creative leadership to bridge dynamic, complex technologies, and societal needs. This includes delivering instruction in the management of technology and in systems engineering, operations research, and allied fields to undergraduate and graduate students who are preparing to assume leadership roles as technology professionals. The department's programs provide an understanding of the managerial role, analysis of the diverse functions of technology-based organizations, and instruction in modern management and mathematical analysis and modeling tools as they apply to formulating and executing decisions in engineering and scientific organizations. In addition, research programs feature the study of the management of technology; fundamental and applied research in systems engineering and operations, with a particularly strong interest in stochastic analysis and system optimization; sponsorship from government, industry, and the technology community; and a strong presence in refereed professional journals and leadership in professional societies.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in applied science and technology (p. 667)
- Bachelor of Science with a major in systems engineering (p. 669)

Minor

- Minor in operations research (p. 671)
- Minor in systems engineering (p. 671)

GRADUATE

Master's programs

- Master of Engineering in the field of cybersecurity policy and compliance (online) (p.)
- Master of Science in the field of data analytics (p. 672)
- Master of Science in the field of engineering management (p. 673)
- Master of Science in the field of systems engineering (p. 674)

Doctoral program

- Doctor of Engineering in the field of engineering management (p. 675)
- Doctor of Philosophy in the field of engineering management (p. 676)
- Doctor of Philosophy in the field of systems engineering (p. 676)

CERTIFICATES

- Graduate certificate in emergency management and public health (p. 677)
- Graduate certificate in energy engineering and management (p. 699)
- Graduate certificate in engineering and technology management (p. 677)
- Graduate certificate in enterprise information assurance (p. 678)
- Graduate certificate in e (p. 678)nvironmental and energy systems management
- Graduate certificate in greenhouse gas management (p. 678)
- Graduate certificate in homeland security emergency preparedness and response (http://bulletin.gwu.edu/engineering-applied-science/engineering-management-systems-engineering/%20/engineering-applied-science/engineering-management-systems-engineering/homeland-security-emergency-preparedness-response-certificate)
- Graduate certificate in systems engineering (p. 679)

FACULTY

Professors J.P. Deason, J.R. van Dorp, T.A. Mazzuchi (*Chair*), B. Narahari, S. Sarkani

Associate Professors H. Abeledo, J.A. Barbera, M.R. Duffey, J.J. Ryan, J.R. Santos, G.L. Shaw

Assistant Professors D. Broniatowski, R.A. Francis, E. Gralla, E. Shittu, Z. Szajnfarber,

Professorial Lecturers R.M. Andersen, M.J. Armstrong, J.H. Chang, T.H. Holzer Jr., D.J. Ryan, J.V. Shah, J.S. Wasek, R.C. West

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

- Applied Sciences (APSC) (p. 1036)
- Engineering Management and Systems Engineering ((p. 1196)EMSE (p. 1196))

BACHELOR OF ARTS WITH A MAJOR IN APPLIED SCIENCE AND TECHNOLOGY

The bachelor of arts with a major in applied science and technology is a broad-based, engineering-oriented degree program that includes significant exposure to the liberal arts. It is designed for students who intend to make their careers in fields allied to science and technology and/or continue their education toward professional careers in law, medicine, business, teaching, or the media.

The program can be enhanced with a second major in either the Columbian College of Arts and Sciences (https://columbian.gwu.edu) or the Elliott School of International Affairs (http://elliott.gwu.edu). A second major in the School of Engineering and Applied Science also is possible.

Visit the program website (http://www.emse.seas.gwu.edu/bachelor-arts-applied-science-technology) for additional informational.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
First semester		
CHEM 1111	General Chemistry I [1]	
EMSE 1001	Introduction to Systems Engineering	
SEAS 1001	Engineering Orientation	
MATH 1231	Single-Variable Calculus I [1]	
UW 1020	University Writing [2]	
Humanities or social sciences elective [3]		
Second semester		
CHEM 1112	General Chemistry II [1]	
CSCI 1121	Introduction to C Programming	
or CSCI 1112	Algorithms and Data Structures	
MATH 1232	Single-Variable Calculus II [1]	
Humanities or social sciences elective [3]		
Arts elective [4]		
Third semester		
CSCI 1132	Data Structures and Software Design	
or CSCI 1112	Algorithms and Data Structures	
PHYS 1011	General Physics I [1]	
or PHYS 1021	University Physics I	
Literature elective [5]		
Two unrestricted electives [6]		
Fourth semester		
APSC 3115	Engineering Analysis III	
EMSE 4410	Engineering Economic Analysis	
PHYS 1012	General Physics II [1]	
or PHYS 1022	University Physics II	
Literature elective [5]		
Unrestricted elective [6]		
Fifth semester		
BISC 1111	Introductory Biology: Cells and Molecules	
EMSE 3850	Quantitative Models in Systems Engineering	
COMM 1040	Public Communication [1]	
or COMM 1041	Interpersonal Communication	
or COMM 1042	Business and Professional Speaking	
MAE 1004	Engineering Drawing and Computer Graphics	
Allied minor elective [7]		
Sixth semester		
BISC 1112	Introductory Biology: The Biology of Organisms [1]	
ISTM 4121	Database Principles and Applications	
Humanities or social sciences elective [3]		
Two allied minor electives [7]		
Seventh semester		
MAE 3192	Manufacturing Processes and Systems	
EMSE 3740	Systems Thinking and Policy Modeling I	
EMSE 6005	Organizational Behavior for the Engineering Manager	
Allied minor elective [7]		
SEAS elective [8]		
Eighth semester		
CE 4330	Contracts and Specifications	
Allied minor elective [7]		
Humanities or social sciences elective [3]		
Three unrestricted electives [6]		

Electives

Students choose electives in specified categories from lists of courses available from the advisor. Allied minor electives are selected, with the approval of the advisor, to form a coherent and meaningful program of 15 credits. Popular selections include biology, communication, computer science, design, economics, engineering, environmental studies, finance, international business, management, mathematics, medical preparation, psychology, statistics, and operations research.

[1] Course satisfies the University General Education Requirement (http://bulletin.gwu.edu/university-regulations/general-education) in either mathematics or statistics, natural or physical laboratory sciences, or writing.

[2] Literacy (7 credits). UW 1020 (a required freshman writing course) and COMM 1040, COMM 1041, or COMM 1042. In addition to UW 1020, the student's academic program must include two writing#intensive courses to satisfy the GW Writing in the Disciplines (WID) requirement; one such course is CE 4330W.

[3] Humanities (6) and Social Sciences (6). two two#course sequences selected from the SEAS menu of electives in the humanities and social sciences.

[4] Creative and performing arts (3 credits). One of the following: ENGL 1210; FA 1014, FA 1017, FA 1021, or FA 1041; MUS 1103, MUS 1104, MUS 1107, MUS 1108, or performance study course; PHIL 3162; TRDA 1015, TRDA 1017, TRDA 1025, TRDA 1150, TRDA 1151, TRDA 1152, TRDA 1153, TRDA 1214, or an advanced performance course. Other choices are possible.

[5] Literature (6 credits). One two-course sequence selected from among CHIN 3111 and CHIN 3112; ENGL 1410 and ENGL 1411, ENGL 1510 and ENGL 1511, ENGL 1710 and ENGL 1711, or ENGL 1830 and ENGL 1840; FREN 3210 and FREN 3220; GER 2091 and GER 2092; JAPN 3111 and JAPN 3112; REL 1009 and REL 1010; SLAV 1391 and SLAV 1392; SPAN 3210 and SPAN 3220. Other choices are possible.

[6] Unrestricted (or "free") electives (18 credit). The academic advisor must approve the student's selection of unrestricted electives. If necessary, unrestricted electives may be used to satisfy prerequisite requirements for the allied minor. Such electives also may be used to convert the allied minor into an official minor or second major. Exercise and sport activities courses may not be used as unrestricted electives.

[7] Allied minor (15 credits). The student constructs a coherent program with the assistance of the academic advisor. Popular selections include biology, chemistry, business, communication, design, economics, engineering, environmental studies, finance, international business, management, mathematics, media, medical preparation, physics, psychology, public health, statistics, and operations research. The allied minor may be part of a second major in CCAS, ESIA, or SEAS, part of the concentration in general business, or part of an official minor.

[8] See the advisor for details.

BACHELOR OF SCIENCE WITH A MAJOR IN SYSTEMS ENGINEERING

The bachelor of science with a major in systems engineering degree program provides students with a broad and solid education in the basics of mathematical modeling, software and information systems, and the treatment of uncertainty. Systems engineering can be applied in many areas, including communications, energy, environment, finance, health care, information technology, marketing, national defense, project management, software development, and transportation. The program emphasizes analytical thinking and fosters communication skills and awareness of the current professional world in order to prepare students for graduate education or productive professional employment.

Visit the program website (http://www.emse.seas.gwu.edu/bachelor-science-systems-engineering) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
First semester		
EMSE 1001	Introduction to Systems Engineering	
MATH 1231	Single-Variable Calculus I [1]	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing [2]	
Computing Track Elective [2]		
BISC 1111	Introductory Biology: Cells and Molecules	
or BISC 1112	Introductory Biology: The Biology of Organisms	
or CHEM 1111	General Chemistry I	
or CHEM 1112	General Chemistry II	
Second semester		
ECON 1011	Principles of Economics I [1]	
MATH 1232	Single-Variable Calculus II [1]	
PHYS 1021	University Physics I	
COMM 1042	Business and Professional Speaking	
Computing track elective [2]		
Third semester		
APSC 3115	Engineering Analysis III	
EMSE 2801	Fundamentals of Systems Engineering	
MATH 2233	Multivariable Calculus [1]	

PHYS 1022	University Physics II
Computing track elective [2]	
Fourth semester	
EMSE 2705	Mathematics in Operations Research
EMSE 3815	Requirements Analysis and Elicitation
EMSE 4765	Data Analysis for Engineers and Scientists
Computing track elective [2]	
Humanities or social sciences elective [3]	
Fifth semester	
APSC 2113	Engineering Analysis I
EMSE 3740W	Systems Thinking and Policy Modeling
EMSE 3850	Quantitative Models in Systems Engineering
EMSE 4755	Quality Control and Acceptance Sampling
Humanities or social sciences elective [3]	
Professional elective [4]	
Sixth semester	
EMSE 4770	Techniques of Risk Analysis and Management
EMSE 3820	Project Management for Engineering Systems
EMSE 3855W	Critical Infrastructure Systems
EMSE 4410	Engineering Economic Analysis
PHIL 2135	Ethics in Business and the Professions
Professional elective [4]	
Seventh semester	
EMSE 3760	Discrete Systems Simulation
EMSE 4190	Senior Project in Systems Engineering I
EMSE 4710	Applied Optimization Modeling
Humanities or social sciences elective [3]	
Professional elective [4]	
Eighth semester	
EMSE 4191	Senior Project in Systems Engineering II
Humanities or social sciences elective [3]	
Three professional electives [4]	

Code	Title	Credits
Computing track electives:		
Option One		
Taken sequentially:		
CSCI 1111	Introduction to Software Development	
CSCI 1112	Algorithms and Data Structures	
CSCI 2113	Software Engineering	
CSCI 2441W	Database Systems and Team Projects	
Option Two		
Taken sequentially:		
CSCI 1111	Introduction to Software Development	
or CSCI 1121	Introduction to C Programming	
or CSCI 1131	Introduction to Programming with C	
BADM 2301W	Mgt Information Systems Tech	
ISTM 4120	Business Systems Development	
ISTM 4121	Database Principles and Applications	

[1] Course satisfies the university general education requirement in math, science, and writing.

[2] Computing track elective requirements may be met with the courses in either option in the list directly above.

[3] At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 38); any remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list (p. 38); the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list. (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf)

[4] Professional electives: Each systems engineering major will gain specific expertise in a chosen technical area by

taking a six-course sequence leading to a minor from another department of the University. Technical electives are selected with the approval of the student's academic advisor. Areas frequently chosen are computer science, economics, finance, management, mathematics, naval science, statistics, or specific fields of engineering. Consult the advisor for other approved areas and requirements.

Internship requirement–All EMSE majors are required to complete an appropriate internship/co-op experience during the last two years of the program. This requirement may be satisfied by an approved full-time summer position after the second or third year, or by one or two approved part-time positions requiring 15–20 hours per week during two of the final four semesters. A position obtained through the GW Career Center (http://gwired.gwu.edu/career) will usually be acceptable; the position may be either paid or unpaid. Consult the advisor for approval.

Medical preparation option

The bachelor of science with a major in civil engineering, medical preparation option (p. 613) leads to a bachelor's degree in systems engineering and quantitatively prepares students for medical careers through a program that emphasizes decision modeling. Decision modeling is increasingly applicable to the medical field because of the growing use of computers and information systems in medicine and the interplay of diagnosis, treatment, and economics.

MINOR IN OPERATIONS RESEARCH

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
Required		
Four of the following:		
EMSE 2705	Mathematics in Operations Research	
EMSE 3701	Operations Research Methods	
EMSE 3740	Systems Thinking and Policy Modeling I	
EMSE 3760	Discrete Systems Simulation	
EMSE 4710	Applied Optimization Modeling	
EMSE 4755	Quality Control and Acceptance Sampling	

MINOR IN SYSTEMS ENGINEERING

REQUIREMENTS

Code	Title	Credits
Prerequisites		
The following courses must be completed before beginning the minor program:		
APSC 3115	Engineering Analysis III	
COMM 1040	Public Communication	
or COMM 1041	Interpersonal Communication	
or COMM 1042	Business and Professional Speaking	
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
MATH 2233	Multivariable Calculus	
MATH 2184	Linear Algebra I	
or EMSE 2705	Mathematics in Operations Research	
UW 1020	University Writing	
Required		
EMSE 2801	Fundamentals of Systems Engineering	
EMSE 3815	Requirements Analysis and Elicitation	
EMSE 3820	Project Management for Engineering Systems	
EMSE 3850	Quantitative Models in Systems Engineering	
EMSE 4765	Data Analysis for Engineers and Scientists	
Elective		
One additional EMSE course selected in consultation with the advisor.		

ONLINE MASTER OF ENGINEERING IN THE FIELD OF CYBERSECURITY POLICY AND COMPLIANCE

The online master of engineering in cybersecurity policy and compliance is an interdisciplinary program that draws courses from three areas of study across SEAS: computer

science, electrical and computer engineering, and engineering management and systems engineering. The purpose of the M.Eng.(CPC) degree is to capture the latest trends and issues from the field of cybersecurity to provide students the tools and skills necessary to stay in the forefront of this fast-changing discipline. The program is expected to attract prospective students with technical degrees, as well as those with nontechnical degrees who wish to study the complex issues of cybersecurity policy and compliance.

Please visit the program website (http://onlinecybersecurity.seas.gwu.edu) for more information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits in required courses.

Code	Title	Credits
Required		
CSCI 6012		
CSCI 6532	Information Policy	
EMSE 6540	Management of Information and Systems Security	
CSCI 6013		
CSCI 6534	Information Security in Government	
ECE 6132		
EMSE 6542	Cybersecurity Risk Management and Compliance	
EMSE 6543	Managing the Protection of Information Assets and Systems	
EMSE 6544	Auditing, Monitoring, and Intrusion Detection for Information Security Managers	
EMSE 6546	Cybercrime for Info Secur Mgrs	

MASTER OF SCIENCE IN THE FIELD OF DATA ANALYTICS

Administered jointly through the Department of Computer Science (http://cs.seas.gwu.edu) and the Department of Engineering Management & Systems Engineering (http://emse.seas.gwu.edu), the program seeks to address the growing demand for professionals skilled in big data and data analytics in government, industry and research organizations. Through courses led by top faculty members at SEAS and the GW School of Business, this program covers topics in computer science, business analytics, and systems engineering while focusing on the foundations of analytics from a technical, engineering perspective.

This program is ideal for those seeking to learn in a small, tight-knit cohort about the engineering foundations that propel the fields of data science and analytics; pursue or enhance careers as data analysts or data scientists; lead interdisciplinary teams; or apply data science and analytics techniques in the decision-making process of a wide range of organizations.

REQUIREMENTS

Code	Title	Credits
Required		
CSCI 6362	Probability for Computer Science	
CSCI 6441	Database Management Systems	
CSCI 6444	Introduction to Big Data and Analytics	
EMSE 6574	Programming for Analytics	
SEAS 6401	Data Analytics Capstone 1	
SEAS 6402	Data Analytics Capstone 2	
Electives		
Students take six elective courses, at least four of which must be in either the computer science track or in the engineering management and systems engineering track, effectively constituting a concentration in one of the two tracks. Up to two courses may be taken outside of SEAS; courses in the business analytics program are recommended.		
Computer science track electives		
CSCI 6212	Design and Analysis of Algorithms	
CSCI 6312	Graph Theory & Applications	
CSCI 6341	Continuous Algorithms	
CSCI 6342	Computational Linear Algebra and Applications	
CSCI 6351	Data Compression	
CSCI 6364	Machine Learning	
CSCI 6365	Advanced Machine Learning	
CSCI 6421	Distributed and Cluster Computing	
CSCI 6442	Database Systems II	
CSCI 6443	Data Mining	
CSCI 6451	Information Retrieval Systems	
CSCI 6515	Natural Language Understanding	

CSCI 6527	Introduction to Computer Vision
Engineering management and systems engineering track electives	
EMSE 6020	Decision Making with Uncertainty
EMSE 6510	Decision Support Systems and Models
EMSE 6575	Data Minning and Processing
EMSE 6579	Applied Data Mining in Engineering Management
EMSE 6740	Systems Thinking and Policy Modeling I
EMSE 6760	Discrete Systems Simulation
EMSE 6770	Techniques of Risk Analysis and Management

MASTER OF SCIENCE IN THE FIELD OF ENGINEERING MANAGEMENT

The master of science in engineering management is designed for the technical manager who needs a broad education to keep an organization operating efficiently and working ahead of its competitors. The program provides graduate education in the most current management techniques for technological and scientific organizations. Students can pursue their degree by selecting electives in one of five areas of focus: crisis, emergency, and risk management; economics, finance, and cost engineering; engineering and technology management; environmental and energy management; and knowledge and information management.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://www.emse.seas.gwu.edu/master-science-engineering-management) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 12 credits in required courses, 12 to 15 credits in a focus area, and 3 to 9 credits in elective courses, depending on which focus area is selected.

Code	Title	Credits
Required		
EMSE 6001	The Management of Technical Organizations	
EMSE 6020	Decision Making with Uncertainty	
EMSE 6410	Engineering Economic Analysis	
EMSE 6801	Systems Engineering I	

Crisis, Emergency, and Risk Management

Code	Title	Credits
Required		
EMSE 6305	Crisis and Emergency Management	
EMSE 6310	Information Technology in Crisis and Emergency Management	
EMSE 6315	Management of Risk and Vulnerability for Hazards and Terrorism	
EMSE 6325	Medical and Public Health Emergency Management	
or EMSE 6330	Management of Terrorism Preparedness and Response	
Two of the following:		
EMSE 6240	Environmental Hazard Management	
EMSE 6300	Homeland Security: The National Challenge	
EMSE 6345	Disaster Recovery and Organizational Continuity	
EMSE 6350	Hazard Mitigation in Disaster Management	
EMSE 6540	Management of Information and Systems Security	
EMSE 6820	Program and Project Management	
EMSE 6992	Special Topics (with program advisor approval)	
Electives		
Two additional Engineering Management and Systems Engineering (EMSE) courses with the advisor's approval.		

Engineering and Technology Management

Code	Title	Credits
Required		
EMSE 6005	Organizational Behavior for the Engineering Manager	
EMSE 6820	Program and Project Management	
EMSE 6099	Problems in Engineering Management and Systems Engineering	

Two of the following:	
EMSE 6010	HR for Engineering Managers
EMSE 6014	Management of Engineering Contracts
EMSE 6018	Engineering Law
EMSE 6023	Technology Issue Analysis
EMSE 6026	Technical Enterprises
EMSE 6030	Technological Forecasting and Management
EMSE 6035	Marketing of Technology
EMSE 6070	Management of Research and Development
EMSE 6430	Financial Management for Engineers
EMSE 6505	Knowledge Management I
EMSE 6760	Discrete Systems Simulation
EMSE 6805	Systems Engineering II
EMSE 6992	Special Topics (with program advisor approval)
Electives	
Three additional Engineering Management and Systems Engineering (EMSE) courses with the advisor's approval.	

Environmental and Energy Management

Code	Title	Credits
Required		
EMSE 6220	Environmental Management	
EMSE 6225	Air Quality Management	
EMSE 6235	Water Quality Management	
EMSE 6260	Energy Management	
Two of the following:		
EMSE 6200	Policy Factors in Environmental and Energy Management	
EMSE 6230	Hazardous Waste Management and Cleanup	
EMSE 6240	Environmental Hazard Management	
EMSE 6245	Analytical Tools for Environmental Management	
EMSE 6285	Analytical Tools for Energy Management	
EMSE 6290	Climate Change: Policy, Impact	
EMSE 6295	Environmental Secuity	
EMSE 6992	Special Topics (with program advisor approval)	
Electives		
Two additional Engineering Management and Systems Engineering (EMSE) courses with the advisor's approval.		

Economics, Finance, and Cost Engineering

Code	Title	Credits
Required		
EMSE 6420	Uncertainity Analysis in Cost Engineering	
EMSE 6430	Financial Management for Engineers	
EMSE 6450	Investment Engineering	
EMSE 6820	Program and Project Management	
Two of the following:		
EMSE 6014	Management of Engineering Contracts	
EMSE 6018	Engineering Law	
EMSE 6026	Technical Enterprises	
EMSE 6701	Operations Research Methods	
EMSE 6840	Applied Enterprise Systems Engineering	
EMSE 6850	Quantitative Models in Systems Engineering	
EMSE 6992	Special Topics (with program advisor approval)	
Electives		
Two additional Engineering Management and Systems Engineering (EMSE) courses with the advisor's approval.		

MASTER OF SCIENCE IN THE FIELD OF SYSTEMS ENGINEERING

The master of science in systems engineering program provides broad knowledge of the systems approach for designing and managing large-scale engineering systems throughout the lifecycle, with faculty and students exploring case studies and methodologies from NASA, the U.S.

Department of Defense, and domestic corporations. Students can pursue the degree by selecting electives in one of two areas of focus: operations research and management science or systems engineering.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the department website (http://www.emse.seas.gwu.edu/master-science-systems-engineering) for more information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 12 credits in required courses and 21 credits in a focus area.

Code	Title	Credits
Required		
EMSE 6001	The Management of Technical Organizations	
EMSE 6020	Decision Making with Uncertainty	
EMSE 6410	Engineering Economic Analysis	
EMSE 6801	Systems Engineering I	

Operations Research and Management Science

Code	Title	Credits
Required		
EMSE 6701	Operations Research Methods	
EMSE 6710	Applied Optimization Modeling	
EMSE 6760	Discrete Systems Simulation	
EMSE 6765	Data Analysis for Engineers and Scientists	
EMSE 6770	Techniques of Risk Analysis and Management	
Three of the following:		
EMSE 6705	Mathematics in Operations Research	
EMSE 6715	Theory of Games	
EMSE 6730	Integer and Network Programming	
EMSE 6740	Systems Thinking and Policy Modeling I	
EMSE 6750	Stochastic Foundations of Operations Research	
EMSE 6755	Quality Control and Acceptance Sampling	
EMSE 6992	Special Topics	

Systems Engineering

Code	Title	Credits
Required		
EMSE 6805	Systems Engineering II	
EMSE 6810	Systems Analysis and Management	
EMSE 6820	Program and Project Management	
EMSE 6850	Quantitative Models in Systems Engineering	
Four of the following:		
EMSE 6540	Management of Information and Systems Security	
EMSE 6580	Information and Software Engineering	
EMSE 6815	Requirements Engineering	
EMSE 6992	Special Topics (in consultation with advisor)	

DOCTOR OF ENGINEERING IN THE FIELD OF ENGINEERING MANAGEMENT

The Doctor of Engineering (D.Eng.) in the field of Engineering Management (EM) is designed for students who seek a practice- or praxis-oriented doctoral degree. Such students typically have professional needs that the traditional Ph.D. degree does not meet. The D.Eng. (EM) focuses on solutions to real-world problems. Unlike the Ph.D., for which fundamental research leads to foundational work that is published and contributes to the basic understanding of a field, the D.Eng. (EM) is applied, not basic research.

In a broad-based program of study, the D.Eng. (EM) course work culminates in the student's production of a praxis for use by practicing engineers. The D.Eng. (EM) is ideal for individuals doing advanced engineering in the workplace, who want to update their knowledge with cutting-edge techniques from the engineering disciplines, and cap it with a formal degree that recognizes their contributions to the field.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://emse.offcampus.gwu.edu/doctor-engineering-degree-program) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 30 credits in required courses and 15 credits in research culminating in a practice-based case study.

Code	Title	Credits
Required		
EMSE 6115	Uncertainty Analysis for Engineers	
EMSE 6992	Special Topics (Quantitative Methods for Engineering Managers)	
A minimum of 6 credits of EMSE analytical methods courses selected in consultation with advisor.		
A minimum of 9 credits of EMSE engineering management courses selected in consultation with advisor.		
Electives		
6 credits selected in consultation with advisor		
Praxis		
EMSE 6992	Special Topics (Research Methods for the Praxis) *	
EMSE 8998	Adv Reading & Research (taken for 15 credits) *	

*Students must complete the praxis proposal examination by preparing and defending their proposal before a committee of at least two full-time SEAS faculty members and one outside advisor external to the faculty.

DOCTOR OF PHILOSOPHY IN THE FIELD OF SYSTEMS ENGINEERING

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under School of Engineering, Doctoral Program Regulations (http://bulletin.gwu.edu/engineering-applied-science/#seasregulationstext)

Students with an MS degree must take a minimum of 54 credits, of which at least 30 must be credits from courses available for graduate credit, and at least 24 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor. Students with a BS degree must take a minimum of 78 credits, consisting of 54 credits of graduate coursework and at least 24 credits of dissertation research. The courses to be taken by the student must be approved by the student's advisor. In some cases, particularly when the student undertakes a doctoral program in a field other than that in which the earlier degree was earned, the program of study exceeds the minimum number of credits.

No specific courses are required beyond the preparatory courses. The student and advisor design the curriculum to meet the student's needs and goals.

Prepatory courses	
MATH 1231	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
APSC 3115	Engineering Analysis III
Other requirements	
Qualifying examinations	
Proposal defense	
Final examination	
Post-graduate survey	

Student should contact the department for additional information and requirements.

DOCTOR OF PHILOSOPHY IN THE FIELD OF ENGINEERING MANAGEMENT

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under School of Engineering, Doctoral Program Regulations (http://bulletin.gwu.edu/engineering-applied-science/#seasregulationstext)

Students with an MS degree must take a minimum of 54 credits, of which at least 30 must be credits from courses available for graduate credit, and at least 24 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor. Students with a BS degree must take a minimum of 78 credits, consisting of 54 credits of graduate coursework and at least 24 credits of dissertation research. The courses to be taken by the student must be approved by the student's advisor. In some cases, particularly when the student undertakes a doctoral program in a field other than that in which the earlier degree was earned, the program of study exceeds the minimum number of credits.

No specific courses are required beyond the preparatory courses. The student and advisor design the curriculum to meet the student's needs and goals.

Preparatory courses	
MATH 1231	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
APSC 3115	Engineering Analysis III
Other requirements	
Qualifying examinations	
Proposal defense	
Final examination	
Post-graduate survey	

Student should contact the department for additional information and requirements

GRADUATE CERTIFICATE IN EMERGENCY MANAGEMENT AND PUBLIC HEALTH

Offered through the Department of Engineering Management and Systems Engineering (EMSE) (http://www.emse.seas.gwu.edu/graduate-certificates), the graduate certificate in emergency management and public health program helps students define emergencies and disasters as well as develop incident management plans for responding to and managing environmental and public health emergencies. In addition to course work within the department, students take courses at GW's Milken Institute School of Public Health (http://publichealth.gwu.edu).

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 12 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
EMSE 6305	Crisis and Emergency Management	
EMSE 6325	Medical and Public Health Emergency Management	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
Electives		
Two of the following:		
EMSE 6240	Environmental Hazard Management	
EMSE 6300	Homeland Security: The National Challenge	
EMSE 6310	Information Technology in Crisis and Emergency Management	
EMSE 6315	Management of Risk and Vulnerability for Hazards and Terrorism	
EMSE 6320	International Disaster Management	
EMSE 6330	Management of Terrorism Preparedness and Response	
EMSE 6335	Geographic Information Systems for Emergency Management	
EMSE 6345	Disaster Recovery and Organizational Continuity	
EMSE 6350	Hazard Mitigation in Disaster Management	
EMSE 6820	Program and Project Management	
EMSE 6992	Special Topics (as approved by academic advisor)	

Appropriate electives from other departments may be permitted with the advisor's approval.

GRADUATE CERTIFICATE IN ENGINEERING AND TECHNOLOGY MANAGEMENT

The graduate certificate program in engineering and technology management helps students understand management theory and practice as it is applied to engineering projects and organizations. The program emphasizes the study of general management issues as well as specific methods in resolving such problems in practice.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (https://graduate.seas.gwu.edu/engineering-and-technology-management) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required		
EMSE 6001	The Management of Technical Organizations	
EMSE 6014	Management of Engineering Contracts	
EMSE 6020	Decision Making with Uncertainty	
EMSE 6035	Marketing of Technology	
EMSE 6801	Systems Engineering I	
EMSE 6820	Program and Project Management	

GRADUATE CERTIFICATE IN ENTERPRISE INFORMATION ASSURANCE

The graduate certificate program in enterprise information assurance is designed to help information security managers understand, manage, and reduce the risk to information assets within technological organizations and enterprises. Course work covers everything from program and project management to techniques in auditing and monitoring system intrusions.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (https://www.seas.gwu.edu/enterprise-information-assurance) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required		
EMSE 6345	Disaster Recovery and Organizational Continuity	
EMSE 6540	Management of Information and Systems Security	
EMSE 6543	Managing the Protection of Information Assets and Systems	
EMSE 6544	Auditing, Monitoring, and Intrusion Detection for Information Security Managers	
EMSE 6801	Systems Engineering I	
EMSE 6820	Program and Project Management	

GRADUATE CERTIFICATE IN ENVIRONMENTAL AND ENERGY SYSTEMS MANAGEMENT

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required		
EMSE 6220	Environmental Management	
EMSE 6245	Analytical Tools for Environmental Management	
EMSE 6260	Energy Management	
EMSE 6285	Analytical Tools for Energy Management	
EMSE 6992	Special Topics (Beyond Compliance: Next Generation Environmental Self-governance)	
EMSE 6992	Special Topics (Global Connections: Standards in Technology, Business & Public Policy)	

GRADUATE CERTIFICATE IN GREENHOUSE GAS MANAGEMENT

The graduate certificate in greenhouse gas (GHG) management, which was developed in cooperation with experts at the Greenhouse Gas Management Institute, provides an alternative for professionals who wish to expand their knowledge in the field without committing to the requirements of a master's degree program. The program addresses the engineering, economic, legal, and logistical considerations for implementing GHG management in compliance with existing and planned GHG mitigation. The focus is on managing GHG emissions from energy-related activities in a business setting,

through the measurement, reporting, analysis, reduction, trading, and verification of GHG emissions from these activities.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Required	
EMSE 6290	Climate Change: Policy, Impact
EMSE 6291	Greenhouse Gas Measurement and Reporting
EMSE 6292	Greenhouse Gas Mitigation
EMSE 6293	Greenhouse Gas Management Assurance and Information Systems Design

GRADUATE CERTIFICATE IN HOMELAND SECURITY, EMERGENCY PREPAREDNESS, AND RESPONSE

Students pursuing the graduate certificate in homeland security, emergency preparedness, and response also may apply for the master of science degree in engineering management with a focus area in crisis, emergency, and risk management. Upon acceptance to the master's program, such students may transfer the 18 credits required for the certificate into the master of science degree program of study.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 3 credits in required courses and 15 credits in elective courses.

Graduate Certificate in Homeland Security, Emergency Preparedness, and Response

GRADUATE CERTIFICATE IN SYSTEMS ENGINEERING

The graduate certificate program in systems engineering provides a foundation in the "systems approach" for designing and managing large-scale engineering systems.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Graduate Certificate in Systems Engineering

MECHANICAL AND AEROSPACE ENGINEERING

Mission Statement

The mission of the Department of Mechanical and Aerospace Engineering is to educate students to become professional mechanical and aerospace engineers who are confident in their understanding of science and technology and creative in the face of new challenges. Graduates of the program have the analytical skill and thirst for lifelong learning that will expand career horizons. The program prepares students to conduct relevant research at the forefront of mechanical and aerospace engineering knowledge. Students learn through faculty mentoring and go on to practice mechanical engineering as skilled, responsible, and ethical professionals.

Educational Objectives

The mechanical engineering program provides an integrated curriculum designed to produce graduates who develop successful careers in mechanical engineering or in science and technology. Graduates will be prepared to accomplish the following objectives within a few years after graduation:

1. Practice mechanical engineering in industry or government, applying knowledge and skills acquired in the program to the design of engineering systems and devices, and the analysis and solution of engineering problems of complex scope; and/or
2. Succeed in advanced education, research and development, or other creative efforts in engineering, science, and technology; and/or
3. Apply engineering skills while pursuing careers in other professions, such as law, medicine, business, or public policy (this objective reflects the program's patent law and medical preparation options and will apply to a selected group of graduates);
4. Conduct themselves in a responsible and ethical manner, cognizant of the social, environmental, and economic impact of engineering and technology on society;
5. Embark upon a process of lifelong learning in their profession; and
6. Enter into leadership roles in technological development or local, national, or global economic development.

Student Outcomes

Students acquire knowledge of the following disciplines:

Chemistry and calculus-based physics with depth in at least:

- Advanced mathematics through multivariate calculus and differential equations; familiarity with statistics and linear algebra;
- Thermal, fluid, and mechanical systems areas.

In addition, students gain the ability to fulfill the following professional responsibilities:

- Understand professional and ethical responsibility;
- Apply knowledge of mathematics, science, and engineering, and familiarity with materials science, electrical circuits, and electromechanical control theory;
- Design and conduct experiments, as well as analyze and interpret data;
- Design a mechanical engineering system, component, or process to meet desired needs within realistic constraints;
- Identify, formulate, and solve engineering problems;
- Use the techniques, skills, and modern engineering tools necessary for engineering practice;
- Use computer systems and knowledge of computer programming;
- Apply computer software used in engineering practice, such as computer-aided engineering packages and mathematical software, to the solution of mechanical engineering problems;
- Apply manufacturing techniques to realize mechanical engineering designs;
- Communicate effectively both orally and graphically;
- Write technical reports in a professional manner; and
- Function on multidisciplinary teams.

The program prepares graduates who have the broad education necessary to practice mechanical engineering, including the following fundamentals:

- An understanding of the impact of engineering solutions in a global, economic, environmental, and societal context;
- Recognition of the need for, and an ability to engage in life-long learning; and
- Knowledge of contemporary issues.

For more information contact the Department of Mechanical and Aerospace Engineering. (http://www.mae.seas.gwu.edu)

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science with a major in mechanical engineering (p. 688)
- Bachelor of Science with a major in mechanical engineering, aerospace option (p. 689)
- Bachelor of Science with a major in mechanical engineering, biomechanical option (p. 691)
- Bachelor of Science with a major in mechanical engineering, medical preparation option (p. 692)
- Bachelor of Science with a major in mechanical engineering, patent law option (p. 693)
- Bachelor of Science with a major in mechanical engineering, robotics option (p. 695)

Combined program

- Combined Bachelor of Science with a major in mechanical engineering and Master of Science in the field mechanical engineering (p. 696)

Minor

- Minor in mechanical engineering (p. 696)

GRADUATE

Master's program

- Master of Science in the field of mechanical and aerospace engineering (p. 697)

Doctoral program

- Doctor of Philosophy in the field of mechanical and aerospace engineering (p. 698)

CERTIFICATE

- Graduate certificate in energy engineering and management (p. 699)
- Graduate certificate in computer-integrated design in mechanical and aerospace engineering (p. 699)

FACULTY

Professors E. Balaras, A.D. Cutler, D.S. Dolling, C.A. Garris, S.M. Hsu, M. Keidar, J.D.-Y. Lee, M.W. Plesniak (*Chair*), K. Sarker, Y.-L. Shen, M. Snyder

Associate Professors L. Barba, T. Lee, Y. Leng, S. Solares, L. Zhang

Assistant Professors P.M. Bardet, S. LeBlanc, M. Leftwich, C. Liang, A.M. Wickenheiser

Assistant Research Professors K. Bulusu

Professorial Lecturers M.A. Busby, T. Conway, S.S. Dodbele, G.C. Everstine, J.M. Fleming, D.R. Gerk, T.M. Krafchak, R. Krishnamurthy, J.H. Milgram, A. Rao, J. Silver, J.K. Soldner

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MAE 1001. Introduction to Mechanical and Aerospace Engineering. 1 Credit.
Careers in mechanical and aerospace engineering and the necessary academic program. Teamworking and problem-solving skills for solution of design problems. Analytical and design problems and correlations between academic skills and the mechanical and aerospace engineering professions. Basic aspects of engineering ethics. (Fall).

MAE 1004. Engineering Drawing and Computer Graphics. 0-3 Credits.
Introduction to technical drawing, including use of instruments, lettering, geometric construction, sketching, orthographic projection, section view, dimensioning, tolerancing, and pictorial drawing. Introduction to computer graphics, including topics covered in manual drawing and computer-aided drafting. (Fall and spring).

MAE 2117. Engineering Computations. 3 Credits.
Numerical methods for engineering applications. Round-off errors and discretization errors. Methods for solving systems of linear equations, root finding, curve fitting, numerical Fourier transform, and data approximation. Numerical differentiation and integration and numerical solution of differential equations. Computer applications. Prerequisite: MATH 1232. (Fall, Every Year).

MAE 2124. Linear Systems Analysis for Robotics. 3 Credits.
Properties of linear systems. Mathematical modeling of dynamic systems. State space, state variables, and their selection. Linearization of non-linear behavior. Matrix functions. Solution of state equations in the time domain and using transformations. System stability and frequency response.

MAE 2131. Thermodynamics. 3 Credits.
Fundamentals of equilibrium thermodynamics; Zeroth, First, and Second Laws. Work, heat, internal energy, enthalpy, thermodynamic potential functions; heat transfer mechanisms, phase diagrams, equations of state and property tables, power systems, refrigeration, heat pump systems. Reversible and irreversible processes, Carnot cycle, entropy, exergy. Prerequisite: PHYS 1021.

MAE 2170. History and Impact of the U.S. Patent System. 3 Credits.
Economic systems and emergence of the free market; role of the patent system in the industrial development of the United States; constitutional foundations; evolution of the U.S. patent system; landmark litigation; impact on future innovation; international aspects; the likely future of the patent system.

MAE 3120. Methods of Engineering Experimentation. 0-3 Credits.
Acquisition and analysis of experimental data. Laws of modeling and simulation. Report formulation and presentation. Basic principles of measuring instruments and sensors. Fundamentals of digital data acquisition and use of computer-based data systems. Strain gages, oscilloscopes, transducers, and computerized data systems. Prerequisite: MAE 2117.

MAE 3126. Fluid Mechanics I. 0-3 Credits.
Fluid properties, fluid statics, integral and differential formulations of conservation of mass, momentum, and energy. Bernoulli's equation. Dimensional analysis and similitude. Inviscid flow. Viscous flow. Experimental and computational methods in fluid mechanics. Prerequisite: APSC 2058. (Fall, Every Year).

MAE 3128. Biomechanics I. 3 Credits.
Mechanical analysis of biological systems. Characterization of living tissue. Applications of statics, solid mechanics, kinematics, and elementary dynamics to the human musculoskeletal system. May be taken for graduate credit with departmental approval. Prerequisites: APSC 2057, CE 2220. (Spring, Every Year).

MAE 3134. Linear System Dynamics. 3 Credits.
Modeling of linear mechanical, electrical, and fluid systems as transfer functions and in state space. Linearization, discretization. Laplace and z-transforms. Natural frequencies and damping, free vibration, forced vibration. Measurement techniques, parameter estimation, and computer simulation. Time and frequency domain analysis. Prerequisite: APSC 2113; corequisite: APSC 2058.

MAE 3145. Orbital Mechanics and Spacecraft Dynamics. 3 Credits.
Coordinate systems and transformations, rocket equation, two-body problem, orbit transfers, orbit perturbations, attitude dynamics and stability of symmetric spacecraft, environmental and control torques. Prerequisite: APSC 2058. (Fall).

MAE 3155. Aerodynamics. 3 Credits.
Subsonic and supersonic aerodynamics: potential flow, lift and form drag, viscous effects, compressible flow. Prerequisite: MAE 3126.

MAE 3162. Aerospace Structures. 3 Credits.
Basic structural theory of lightweight aerospace structures; analysis of typical monocoque structures; load transfer in stiffened panel structures; virtual work and energy methods of structural analysis, bending of open and closed, thin walled beams, shear and torsion of beams, and structural idealization. Restricted to juniors and seniors; permission of the instructor may be substituted. Prerequisites: APSC 2057 and CE 2220. (Fall, Every Year).

MAE 3166W. Materials Science and Engineering. 3 Credits.
Mechanical properties, plastic deformation dislocation theory, yielding, strengthening mechanisms, microstructure and properties, heat treatment of steel, composites, amorphous materials, viscoelastic deformation, creep, fracture, fatigue, fatigue crack propagation. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: CHEM 1111 and PHYS 1022. (Fall, Every Year).

MAE 3167W. Mechanics of Materials Lab. 1 Credit.
Measurement of strains and study of failure resulting from applied forces in ductile, brittle, anisotropic, elastomeric, plastic, and composite materials. Tension, compression, bending, impact, and shear failures. Prerequisites: MAE 3166W. (Spring).

MAE 3171. Patent Law for Engineers. 3 Credits.
Types of patents; international patents; inventorship; prosecution process; basic references for patents; detailed structure of a patent; patentability requirements; reexamination and reissue; litigation; infringement and invalidity; copyrights, trademarks, and trade dress. May be taken for graduate credit with approval of department.

MAE 3184. Robotics Lab. 1 Credit.
Forward and inverse kinematics modeling of robots, control design, trajectory planning, and force rendering. Corequisite: MAE 3197.

MAE 3187. Heat Transfer. 3 Credits.
Steady- and unsteady-state heat conduction problems. Analytical and numerical solution methods. Convective heat transfer, boundary-layer approach, analogy between heat and momentum transfer. Thermal radiation; fundamental concepts and laws. Heat-exchanger design. Prerequisite: MAE 3126, MAE 2131.

MAE 3190. Analysis and Synthesis of Mechanisms. 3 Credits.
Kinematics and dynamics of mechanisms. Displacements, velocities, and accelerations in linkage, cam, and gear systems by analytical, graphical, and computer methods. Synthesis of linkages to meet prescribed performance requirements. Prerequisite: APSC 2058. (Fall).

MAE 3191. Mechanical Design. 3 Credits.
Integration of knowledge of strength of materials in a design context. Stresses and deflections in engineering structures. Theories of failure. Introduction to the design of mechanical components, such as fasteners, shafts, springs. Introduction to the use of computers in mechanical engineering design. Prerequisite: CE 2220, MAE 2117.

MAE 3192. Manufacturing Processes and Systems. 3 Credits.
Introduction to manufacturing techniques for metals, polymers, ceramics, and composites. Relationships between properties of materials and techniques for processing them. Process selection, design, control, and integration. Computer-integrated manufacturing, robotics and assembly automation. Prerequisite or concurrent registration: MAE 1004.

MAE 3193. Mechanical Systems Design. 3 Credits.
Creative engineering design, problem definition, and concept generation; design of mechanisms and mechanical systems; safety, reliability, manufacturability, material selections, cost, and integration in design process; finite element analysis of mechanical systems, computer-aided design, and optimization. Prerequisites: MAE 3191. (Spring).

MAE 3195. Computer-Aided Engineering of Mechanical Systems. 3 Credits.
Presentation of the major elements of computer-aided engineering systems: interactive computer graphics, finite element analysis, and design optimization. Consideration of economics, safety, and reliability factors. Prerequisite: MAE 4193; concurrent registration: MAE 3196.

MAE 3196. Computer-Aided Engineering Laboratory. 1 Credit.
Instruction and hands-on applications of computer-aided engineering systems to the design, analysis, and optimization of mechanical engineering components and systems. Concurrent registration: MAE 3195.

MAE 3197. Robotic Systems Design and Applications. 3 Credits.
Modeling and analysis of robot designs. Kinematics, statics, and dynamics of linkages. Design and selection of mechanical structures, actuators, transmissions, and sensors. Design of robotic control systems. Relevant computer hardware and software. Industrial applications and limitations of robot systems. Lab experiments. Same as ECE 4730. Prerequisite: MAE 3134.

MAE 4129. Biomechanics II. 3 Credits.
Mechanical analysis of physiological fluid dynamics. Application of fluid flow analysis techniques to cardiovascular, pulmonary, respiratory, and phonatory flows. Introduction to biomedical devices that manipulate physiological flows. May be taken for graduate credit with approval of department. Prerequisite: MAE 3128.

MAE 4149. Thermal Systems Design. 3 Credits.
Completion of a thermal systems design project that requires integration of engineering science, economics, reliability, safety, ethics, professional responsibility, and social considerations. Development and use of design methodology, optimization, feasibility considerations, detailed system descriptions, and presentation of results. Prerequisite: MAE 3187.

MAE 4151. Mechanical Engineering Project. 1 Credit.
Capstone design project. Conceptualization, research, specification of constraints, and preliminary design analysis. Presentations and proposal. Project is continued in MAE 4152W. Prerequisites: MAE 3193. (Fall).

MAE 4152W. Mechanical Engineering Laboratory. 3 Credits.
Project-oriented course. Simulates working environment of professional engineers. Projects are assigned in student's areas of interest; student is expected to design and assemble own experiments. Extensive use of instrumentation and computing facilities. Project proposal, progress reports, final report, and periodic oral presentations required. (Spring).

MAE 4157. Aerodynamics Laboratory. 1 Credit.
Subsonic and supersonic wind tunnel experiments and simulations. Prerequisite: MAE 3155. (Fall).

MAE 4163. Airplane Performance. 3 Credits.
Lift and drag estimation methods. Airplane performance measures, such as range and endurance, turning flight, specific excess power and acceleration, takeoff and landing performance. Longitudinal and lateral-direction static and dynamic stability. Control surface effectiveness. Prerequisites: MAE 3134. (Fall).

MAE 4168. Intro. to Biomaterials. 3 Credits.
Fundamentals of materials science and engineering applied to artificial materials in the human body. Topics include biocompatibility, techniques to minimize corrosion or other degradation of implant materials, and the use of artificial materials in various tissues and organs. Prerequisite: Approval of department. Course not open to MAE students.

MAE 4172. Engineering Design and the Patent System. 3 Credits.
Design experience in group projects involving following precisely the teachings of a licensed patent; or avoiding infringement of a provided patent while offering a competitive alternative; or evaluating a provided patent in light of prior art or by attempting to design a competitive product. May be taken for graduate credit with approval of department. Prerequisite: MAE 3171 and senior status.

MAE 4182. Electromechanical Control System Design. 3 Credits.
Application of control theory to the design of electromechanical systems. Transducers, valves, and other control components. Mathematical models of open- and closed-loop electromechanical systems. Root locus and frequency response methods; application to the synthesis of feedback systems by both manual and computer-aided techniques. Prerequisite: MAE 2117, MAE 3134.

MAE 4183. Controls Lab. 1 Credit.
Modeling, control design, simulation, implementation, tuning, and operation of a control system. Corequisite: MAE 4182.

MAE 4193. Engineering Systems Design. 3 Credits.
Creative engineering design, problem definition, and concept generation. Design of journal and roller element bearings, fasteners and permanent joints, and springs. Design project incorporating design selection, and optimization. Project presentation using graphical and computer resources. Prerequisite: MAE 3191. (Fall, Every Year).

MAE 4194. Mechatronics Design. 3 Credits.
Data acquisition and digital signal processing. Sensors and their characteristics—displacement, position/velocity, force/pressure, piezoelectric. Actuators—mechanical, electrical, pneumatic, hydraulic. Modeling and simulation of dynamic systems. Mechanism design. Digital control systems. Microprocessors, digital logic/circuits, motor drives. Lab experiments. Prerequisite: MAE 4182.

MAE 4195. Mechatronics Lab. 1 Credit.
Corequisite: MAE 4194.

MAE 4198. Research. 1-3 Credits.
Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status.

MAE 4199. Student Design Project. 1-3 Credits.
Special student projects involving extensive design of various mechanical engineering systems. Examples include the solar car, mini-Baja, or other design competitions that typically are national in scope. May be taken for graduate credit by graduate students.

MAE 6194. Mechatronics Design. 3 Credits.
Review of data acquisition and digital signal processing. Mathematical models, design, and applications of sensors and actuators in mechatronic systems. Theory and applications of mechanism design. Microprocessor-based design integration, motor drives, and digital logic/circuits. Case studies and lab experiments. Restricted to graduate students. (Same as MAE 4194) (Spring).

MAE 6195. Mechatronics Lab. 1 Credit.
Designing and building a mechatronic system based around a programmable microcontroller; using sensors and actuators to create devices capable of sensing their surrounding environment and reacting to stimuli from that environment. Restricted to graduate students. (Same as MAE 4195) (Spring).

MAE 6201. Intro to Manufacturing. 3 Credits.
Fundamentals of modern manufacturing. Processes for manufacturing mechanical and electronic components from metals, polymers, ceramics, and silicon. Manufacturing systems, CAD, robotics, and design for assembly. Current capabilities, technological needs, and competitiveness. Examples from high-tech industries. Prerequisite: approval of department.

MAE 6203. Adv Experimentation Tech. 3 Credits.
Sensors; measurement of displacement, temperature, pressure and velocity. Optical methods. Signal conditioning. Computer data acquisition. Uncertainty analysis. Case studies of instrumentation systems such as hot-wire anemometers, laser-doppler anemometers, shlieren/shadowgraph and interferometers. Laboratory projects. (As arranged).

MAE 6204. Tissue Engineering. 3 Credits.

MAE 6207. Theory of Elasticity I. 3 Credits.
Introduction to Cartesian tensors; deformation, stress, constitutive relations for linear elasticity; formulation of boundary value problems, variational principles, torsion and bending of prismatial rods, plane problems. Prerequisite: approval of department. Same as CE 6207.

MAE 6210. Continuum Mechanics. 3 Credits.
Tensor analysis; fundamental concepts of continuum mechanics; kinematics of continuum; derivation of balance laws of mass, linear momentum, angular momentum, energy and entropy; axioms of constitutive theory; formulation of constitutive theories; Onsager's principle; objectivity; representation theorem for isotropic functions; plasticity, including concepts of internal variables, yield surface, return mapping algorithm. Departmental approval required. (Fall, Every Year).

MAE 6220. Applied Computational Fluid Dynamics. 3 Credits.
Basic principles of fluid dynamics and aerodynamics. Finite difference and finite volume methods. Fluid flow and heat transfer analysis of thermo-fluid mechanical systems. Computational aerodynamics codes. Individual hands-on experience with a commercial CFD code such as FLUENT. Prerequisite: approval of department.

MAE 6221. Fluid Mechanics. 3 Credits.
Continuum, kinematics of fluids; stress and strain rate tensors; fundamental equations of viscous compressible flows. Irrotational flows; sources, sinks, doublets, and vortices. Laminar flow of viscous incompressible fluids; boundary-layer concept. Prerequisite: approval of department.

MAE 6222. Applied Aerodynamics. 3 Credits.
Introduction to practical and computational methods for solving two-dimensional and three-dimensional aerodynamics problems. Linear methods, nonlinear potential methods, coordinate transforms, and boundary-layer methods. Prerequisite: MAE 6221, MAE 6286.

MAE 6223. Turbomachinery. 3 Credits.
Turbine, compressor, and pump types and uses; dimensional analysis of turbomachines; cycle analysis of gas and steam turbines; energy interchange in fluid machinery; design, characteristics, and performance of turbines, compressors, and pumps; comparison of types of turbines, compressors, and pumps. Prerequisite: MAE 6221.

MAE 6224. Viscous Flow. 3 Credits.
Exact solutions of Navier–Stokes equations; the laminar boundary-layer theory. Reynolds stresses and turbulence; internal, boundary-layer, and mixing flows. Applications to heat and mass transfer and to reacting flows. Prerequisite: APSC 6213, MAE 6221, .

MAE 6225. Computational Fluid Dynamics. 3 Credits.
Theory of discrete methods for solving the governing equations of fluid dynamics. Potential flow, Euler equations, Navier-Stokes equations. Emphasis on algorithm development appropriate to modern supercomputers. Prerequisite: MAE 6221, MAE 6286.

MAE 6226. Aero/Hydrodynamics. 3 Credits.
Inviscid flows in two and three dimensions and irrotational flow theory; conformal mapping and applications. Helmoltz theorems and vorticity dynamics. Applications such as airfoil theory, finite wing theory, panel methods, instabilities, free surface flow. Prerequisite: MAE 6221 .

MAE 6227. Aeroelasticity. 3 Credits.
Static and dynamic structural deformations; static aeroelasticity (structural deformation, divergence, control effectiveness, and reversal); dynamic aeroelasticity (flutter, response to gusts and turbulence); unsteady aerodynamics for 2-D wings; strip theory for 3-D lifting surfaces; piston and Newtonian-flow theories. Prerequisite: MAE 6221, MAE 6257.

MAE 6228. Compressible Flow. 3 Credits.
Thermodynamics and equations of compressible inviscid flow. One-dimensional flow. Isentropic flow. Normal and oblique shock waves. Quasi-one-dimensional flow. Unsteady one-dimensional and steady two-dimensional flow. Introduction to transonic flow. Prerequisite: APSC 6213, MAE 6221 .

MAE 6229. Propulsion. 3 Credits.
Basic concepts of propulsion: energy transformations in propulsive flows, gas dynamics of combustion. Thermal and propulsive efficiencies. Cycle and engine component analysis. Intake, nozzle performance. Drag and thrust generation. Augmentation. Propellers, turbojets, turbofans, ramjets, and rockets. Prerequisite: Graduate Standing or MAE 2131 and MAE 3126. (Spring).

MAE 6230. Space Propulsion. 3 Credits.
Advanced chemical propulsion: dynamic combustion and instabilities in solid propellants. Injection, atomization, mixing in liquid propellant engine performance. Plasma propulsion: electrostatic, electromagnetic, and electrothermal instabilities (laser and microwave). Nuclear propulsion. Prerequisite: MAE 6229.

MAE 6231. Structure and Transformations in Materials. 3 Credits.
Structure of crystals, crystal binding, crystal defects, dislocations, solid solutions, phases, diffusion, phase transformations, deformation twinning, and martensite. Prerequisite: APSC 2130.

MAE 6232. Fracture Mechanics. 3 Credits.
Concepts, history, and recent developments of fracture mechanics. Singularity at the crack tip; solutions around crack tip; stress intensity factors; energy release rate; J-integral; direction of crack extension; Plasticity and slow crack growth; dynamic crack propagation; molecular dynamics simulation of fracture. Prerequisite: approval of department.

MAE 6233. Mechanics of Composite Materials. 3 Credits.
Stress-strain relationship for orthotropic materials, invariant properties of an orthotropic lamina, biaxial strength theory for an orthotropic lamina. Mechanics of materials approach to stiffness, elasticity approach to stiffness. Classical lamination theory, strength of laminates. Statistical theory of fatigue damage. Same as CE 6209. Prerequisite: approval of department.

MAE 6234. Composite Materials. 3 Credits.
Principles of composites and composite reinforcement. Micromechanics and failure, interface reactions in various composites, reinforcing materials. Structure of composites: fiber-reinforced polymers, filler-reinforced polymers, fiber-reinforced metals, directionally solidified alloys, dispersion-strengthened metals. Prerequisite: approval of department.

MAE 6235. Deformation and Failure of Materials. 3 Credits.
Elastic and plastic deformation, yield, dislocation theory, strengthening mechanisms, creep, polymers, fracture, transition temperature, microstructure, fatigue. (Spring, odd years).

MAE 6237. Applied Electrochemistry. 3 Credits.
Charged interfaces, electrochemical cells, corrosion thermodynamics, electrode kinetics, general corrosion, crevice corrosion, pitting, stress-corrosion cracking, corrosion protection, batteries and fuel cells, energy storage. May include current and potential distribution in electrochemical cells and scaling effects in modeling. Prerequisite: approval of department.

MAE 6238. Biomaterials. 3 Credits.
Applications of materials science and engineering to artificial materials in the human body with the objective of detailed understanding of synthetic materials and biopolymers. Biocompatibility and its consequences on tissue–implant interfaces. Design and development of new implant materials, drug delivery systems, and biosensors. Prerequisite: MAE 3166 or MAE 4168.

MAE 6239. Computational Nanosciences. 3 Credits.
Introduction to surface force measurements in nanosciences; continuum contact mechanics in nanoscience research; intermolecular forces; empirical potentials for transition metals; surface forces in liquids; large-scale atomic/molecular massively parallel simulator; force field development from quantum mechanical density–functional theory for organic/metal molecular systems. Prerequisite: approval of department.

MAE 6240. Kinematic Synthesis. 3 Credits.
Techniques for the analysis and synthesis of function, path, and motion generating mechanisms. Methods for the dimensional design of mechanisms. Computer-aided techniques for the optimal design of planar linkages. Review of recent developments and current research. Term project. Prerequisite: MAE 3190 .

MAE 6241. Computer Models of Physical and Engineering Systems. 3 Credits.
Reduction of physical and engineering systems to simplified physical and mathematical models. Manipulation of models using C/C programming. Numerical algorithms for optimization, graph identification, mini-sum arithmetic, and searching. Styles of problem solving. Prerequisite: MAE 2117.

MAE 6242. Advanced Mechanisms. 3 Credits.
Emphasis on spatial kinematics. Analysis and synthesis of mechanisms. Analytical techniques using matrices, dual numbers, quaternion algebra, finite and instantaneous screws, theory of envelopes. Applications to design of linkages, cams, gears. Use of digital computers in mechanism analysis and design. (Spring, even years).

MAE 6243. Advanced Mechanical Engineering Design. 3 Credits.
Design of mechanical engineering components and systems emphasizing computer-aided engineering (CAE), including interactive computer graphics, finite element analysis, and design optimization. Creation of a complete design on an engineering workstation. Prerequisite: approval of department.

MAE 6244. Computer-Integrated Engineering Design. 3 Credits.
Design of engineering components and systems on engineering workstations using I-DEAS. Interactive computer graphics, finite element analysis, computer-based design optimization, and other relevant computer-based tools. Students apply design concepts in a computer-aided engineering environment to a selected project. Prerequisite: approval of department.

MAE 6245. Robotic Systems. 3 Credits.
Classification, features, and applications of industrial robots. Spatial descriptions and transformations, forward and inverse kinematics. Jacobian matrix, velocities and static forces, manipulator dynamics and controls. Robot actuators, transmissions, sensors, end effectors, and programming. Prerequisite: MAE 4182 .

MAE 6246. Electromechanical Control Systems. 3 Credits.
State–space representations of dynamic systems; dynamics of linear systems; controllability and observability; linear observers; compensator design by separation principle; linear–quadratic optimal control; Riccati equations; random processes; Kalman filter; applications of optimal stochastic control theory to robotics and earthquake engineering. Prerequisite: approval of department.

MAE 6247. Aircraft Design I. 3 Credits.
Conceptual design methods used in response to prescribed mission and performance requirements, alternate configuration concepts. Configuration general arrangement and empennage sizing. Estimation of aircraft size, weight, and balance; lift, thrust and drag; system level tradeoff and sensitivity studies. Prerequisite: Graduate Standing or MAE 4163. (Spring).

MAE 6249. Spacecraft Design. 3 Credits.
Computer-aided design of spacecraft and satellites to meet specific mission requirements. Environment, propulsion, structure, heat transfer, orbital mechanics, control considerations. Use of modern computer codes for design studies. Prerequisite: MAE 3145 or graduate student standing. (Spring, Every Year).

MAE 6251. Computer-Integrated Manufacturing. 3 Credits.
Automation techniques for processing metals, polymers, and composites. Use of sensing and process modeling in process control. Numerical control and robot applications and limitations. Integration, scheduling, and tool management in the computer-integrated factory. Quality control. Social and economic considerations in CIM. Prerequisite: MAE 3192 .

MAE 6252. Projects in Computer-Integrated Design and Manufacturing. 3 Credits.
Applications of the concepts of computer-integrated manufacturing to group projects, culminating in written and oral presentations. Robot programming, vision-guided assembly, force sensing, fixturing, and end-effector design for practical applications. Factory simulation, part scheduling, and NC program-verification algorithms. Prerequisite: MAE 6251.

MAE 6253. Aircraft Structures. 3 Credits.
Statics of thin-walled beams and panels, force interplay between stiffeners and skin in the analysis and design of stiffened thin-walled structures. Strength and stiffness of locally buckled stiffened structures. Design considerations. Critical evaluation of various design procedures. Prerequisite: approval of department.

MAE 6254. Applied Nonlinear Control. 3 Credits.
Dynamic characteristics of nonlinear systems. State stability and input-output stability. Lyapunov stability theory and invariance principle. Nonlinear control systems, including feedback linearization, back-stepping, sliding mode control, and passivity-based design. Applications to robotics, aircraft, and spacecraft control systems. Geometric controls and hybrid systems. Prerequisite: approval of department.

MAE 6255. Plasma Engineering in Aerospace and Nanotechnology. 3 Credits.
Plasma fundamentals, electromagnetic waves in plasma, plasma–wall interactions, modeling and experimental techniques in plasmas, electrical discharge, plasma propulsion, plasma-based nanotechnology. Prerequisite: MAE 3126.

MAE 6257. Theory of Vibration. 3 Credits.
Damped and undamped natural vibration, response of single- and multiple-degrees-of-freedom systems to steady-state and transient excitations, modal analysis, nonproportional damping and complex modes, variation formulation of equations of motion, discretization of structural systems for vibrational analysis. Prerequisite: approval of department.

MAE 6258. Advanced Vibration Analysis and Control. 3 Credits.
Passive and active vibration control of discrete and continuous systems, dynamic vibration absorbers, random vibrations, failure analysis, modal analysis, nonlinear vibrations. Prerequisites: MAE 3134 and MAE 4182 or graduate standing. (Spring).

MAE 6260. Nanomechanics. 3 Credits.
Introduction to crystallography; interatomic potentials; phonon dispersion relations; molecular dynamics simulation; Nose–Hoover thermostat; coarse grained non-equilibrium molecular dynamics; multiple length/time scale theory of multi-physics; microcontinuum field theories; applications to nano materials/structures. Prerequisite: approval of department.

MAE 6261. Air Pollution. 3 Credits.
Introductory course on the generation, monitoring, and control of air pollution. Atmospheric pollutants; current levels and health problems. Combustion chemistry and mixing. Photochemical processes; smog and measurements. Atmospheric dispersion; inversion and acid rain. Prerequisite: approval of department.

MAE 6262. Energy Systems Analysis I. 3 Credits.
Analysis of energy resources and conversion devices. Statistical data analysis, forecasting, I/O, and net energy analyses, mathematical modeling. Prerequisite: approval of department.

MAE 6263. Advances in Energy Engineering. 3 Credits.
Review of thermodynamics, heat transfer, fluid dynamics, and materials technology used in the energy industries. New energy-efficient technologies in transportation and buildings; renewable energy (wind, solar, and biomass). Climate change and sustainability issues, such as carbon capture, cap and trade, carbon sequestration.

MAE 6270. Theoretical Acoustics. 3 Credits.
Basic acoustic theory in stationary and uniformly moving media; waves in infinite space; sound transmission through interfaces; sound radiation from simple solid boundaries, source and dipole fields; propagation in ducts and enclosures; elements of classical absorption of sound. Prerequisite: APSC 6213, MAE 6221.

MAE 6271. Time Series Analysis. 3 Credits.
Harmonic analysis of random signals; auto- and cross-correlations and spectra; coherence; modern techniques for spectral estimation, including fast Fourier transform, maximum entropy, and maximum likelihood; bias and variability; randomly sampled data; digital filtering; applications. Prerequisite: approval of department.

MAE 6274. Dynamics/Cntrl of Spacecraft. 3 Credits.
Fundamentals of satellite attitude dynamics and passive stabilization. Spacecraft attitude representation, rotational kinematics and kinetics. External torques. Dynamics of gyroscopes. Gravity gradient stabilization. Effect of internal energy dissipation on stability of spinning bodies and methods of despin. Dual spin satellites. Prerequisite: approval of department.

MAE 6275. Dynamics and Control of Aircraft. 3 Credits.
Derivation of equations of motion, Euler transformations and direction cosines, stability derivatives and linearization of equations of motion, stability of linear systems with application to longitudinal and lateral dynamics, Laplace transform techniques, and frequency-response analysis. Departmental approval required prior to registration. (Fall, even years).

MAE 6276. Mechanics of Space Flight. 3 Credits.
Coordinate and time systems. Newton's laws; 2-, 3-, and n-body problems, Lagrange points, gravity-assisted trajectories, variation of parameters and orbit perturbations, non-central gravity effects, drag, sun-synchronous, and formation orbits. Numerical applications using MatLab. Prerequisite: approval of department.

MAE 6277. Spacecraft Attitude Control. 3 Credits.
Control of spinning and three-axis stabilized spacecraft. Elements of linear control theory for single-input, single-output systems and basic feedback control laws. Momentum management and actuator desaturation. Sensors for attitude determination. Application of modern control for multi-input, multi-output systems. Control system simulations using MatLab. (As arranged).

MAE 6280. Thermodynamics. 3 Credits.
Review of First and Second Laws of Thermodynamics and combining the two through exergy; entropy generation minimization and applications. Single phase systems, exergy analyses, multiphase systems, phase diagrams and the corresponding states principle. Prerequisite: approval of department.

MAE 6281. Advanced Thermodynamics. 3 Credits.
Development of classical and quantum statistical mechanics, including Maxwell–Boltzman distributions and microscopic origins of entropy and other thermodynamic variables. Partition functions and micro- and grand-canonical ensembles; Fermi–Dirac, Bose–Einstein, and intermediate statistics. Einstein and Debye models of solids. Prerequisite: MAE 6280 .

MAE 6282. Convective Heat/Mass Transfer. 3 Credits.
Heat and momentum transfer in laminar and turbulent flow. The laminar boundary-layer solution. Similarity and nondimensional parameters. Mass-momentum heat transfer analogy. Convective heat transfer at high velocity. Stability, transition, and turbulence. Free convection. Prerequisite: MAE 6221 .

MAE 6283. Radiative Heat Transfer. 3 Credits.
Basic concepts of heat transfer by thermal radiation starting from Planck's equation for blackbody radiation. Realistic engineering problems are addressed, some involving radiative heat transfer with a variety of surfaces, geometries, and enclosures. Radiative heat flow combined with conduction and convection boundaries. Prerequisite: approval of department.

MAE 6284. Combustion. 3 Credits.
Basic combustion phenomena. Rate processes and chemical kinetics. Chain reaction theory. Detonation, deflagration, diffusion flames, heterogeneous combustion. Experimental measurements. Impact of pollution regulations and alternate fuels. Prerequisite: approval of department.

MAE 6286. Numerical Solution Techniques in Mechanica land Aerospace Engineering. 3 Credits.
Development of finite difference and finite element techniques for solving elliptic, parabolic, and hyperbolic partial differential equations. Prerequisite: APSC 6213.

MAE 6287. Applied Finite Element Methods. 3 Credits.
Review of theory of elasticity. Basic aspects of theory and application of finite element methods. Utilization of MSC/NASTRAN for static, dynamic, linear, and nonlinear analyses of problems in mechanical, aeronautical, and astronautical engineering. Course emphasizes individual hands-on experience with the MSC/NASTRAN code. Prerequisite: approval of department.

MAE 6288. Advanced Finite Element Analysis. 3 Credits.
Review of variational formulation of the finite element method. Finite element analysis of large-strain thermomechanics. Applications to static and dynamic problems in finite elasticity, Fung elasticity (biomechanics), nonlocal theory, active stress in living biological tissues, biological growth, and large-strain plasticity. Recent developments in finite element methods. Same as CE 8330. Prerequisite: approval of department.

MAE 6290. Special Topics in Materials Science. 3 Credits.
Selected subjects of current interest. Arranged by consultation between department faculty and students. Typical topics include experimental methods in materials science and nondestructive inspection of materials. Prerequisite: approval of department.

MAE 6291. Special Topics in Mechanical Engineering. 3 Credits.
Selected subjects of current interest. Arranged by consultation between department faculty and students. Typical topics include tribology, power systems design, solar heating systems, HVAC, and plasticity theory. Prerequisite: approval of department.

MAE 6292. Special Topics in Aerospace Engineering. 3 Credits.
Selected subjects of current interest. Arranged by consultation between department faculty and students. Typical topics include environmental noise control, aeroacoustics, hypersonic flow, and flight vehicle aerodynamics. May be repeated for credit. Prerequisite: approval of department.

MAE 6298. Research. 1-6 Credits.
Basic research projects as arranged. May be repeated for credit.

MAE 6998. MS Thesis Research. 3 Credits.

MAE 6999. MS Thesis Research. 3 Credits.

MAE 8350. Advanced Topics in Materials Science. 3 Credits.
Topics such as surface science that are of current research interest. Selected after consultation between department faculty and students. Prerequisite: approval of department.

MAE 8351. Advanced Topics in Mechanical Engineering. 3 Credits.
Topics such as advanced analytical mechanics, advanced mechanics of continua, and advanced theory of elasticity that are of current research interest. Selected after consultation between department faculty and students. Prerequisite: approval of department.

MAE 8352. Advanced Topics in Aerospace Engineering. 3 Credits.
Topics such as nonsteady flow, physical gas dynamics, turbulence, and nonlinear wave propagation that are of current research interest. Selected after consultation between department faculty and students. Prerequisite: approval of department.

MAE 8998. Advanced Reading & Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy qualifying examination. May be repeated for credit.

MAE 8999. Dissertation Research. 1-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems. The Department of Mechanical and Aerospace Engineering offers the bachelor of science with a major in mechanical engineering degree program to prepare students for work in these fields. The program is accredited by ABET (Accreditation Board for Engineering and Technology).

Visit the program website (http://www.mae.seas.gwu.edu/programs-degrees) for additional information.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
CHEM 1111	General Chemistry I *	
MAE 1001	Introduction to Mechanical and Aerospace Engineering	
MATH 1231	Single-Variable Calculus I *	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing	
Humanities or social sciences elective **		
Second semester		
MAE 1004	Engineering Drawing and Computer Graphics	
MATH 1232	Single-Variable Calculus II *	
MATH 2184	Linear Algebra I	
PHYS 1021	University Physics I *	
Humanities or social sciences elective **		
Third semester		
APSC 2057	Analytical Mechanics I	
APSC 2113	Engineering Analysis I	
MAE 2117	Engineering Computations	
MATH 2233	Multivariable Calculus *	
PHYS 1022	University Physics II *	
Fourth semester		
APSC 2058	Analytical Mechanics II	
CE 2220	Introduction to the Mechanics of Solids	
CSCI 1121	Introduction to C Programming	
ECE 2110	Circuit Theory	
MAE 2131	Thermodynamics	
Fifth semester		
APSC 3115	Engineering Analysis III	
MAE 3126	Fluid Mechanics I	
MAE 3166	Materials Science and Enginrg	
MAE 3191	Mechanical Design	
MAE 3192	Manufacturing Processes and Systems	
Humanities or social sciences elective **		

Sixth semester	
MAE 3120	Methods of Engineering Experimentation
MAE 3134	Linear System Dynamics
MAE 3167W	Mechanics of Materials Lab
MAE 3187	Heat Transfer
MAE 3193	Mechanical Systems Design
Humanities or social sciences elective **	
Seventh semester	
MAE 4149	Thermal Systems Design
MAE 4151	Mechanical Engineering Project
MAE 4182	Electromechanical Control System Design
Technical elective †	
Technical elective	
Technical elective	
Eighth semester	
MAE 4152W	Mechanical Engineering Laboratory
Technical elective †	
Technical elective	
Technical elective	
Humanities or social sciences elective **	
Humanities or social sciences elective **	

*Course satisfies the University General Education Requirement in math, science, and writing.

**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 38); the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list (p. 38); the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list. (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf) Humanities and social sciences electives must include PHIL 2135 Ethics in Business and the Professions.

†All technical electives must be approved by the undergraduate advisor. On a case-by-case basis, technical electives may be chosen from other departments if approved by both the undergraduate advisor and the department chair.

Code	Title	Credits
Technical electives are chosen from MAE courses in the 3000, 4000, and 6000 series, excluding:		
MAE 3171	Patent Law for Engineers	
MAE 4172	Engineering Design and the Patent System	
MAE 6298	Research	
MAE 6998 & MAE 6999	MS Thesis Research and MS Thesis Research	

Visit the program website (http://www.mae.seas.gwu.edu/programs-degrees) for additional information.

BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING, AEROSPACE OPTION

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems. The bachelor of science with a major in mechanical engineering, aerospace option degree program prepares students to work in the aerospace industry or to pursue graduate study in aerospace engineering. It provides a strong foundation in aerodynamics, airplane performance, propulsion, aerospace structures, orbital mechanics, spacecraft dynamics, and aircraft and spacecraft design.

Visit the program website (http://www.mae.seas.gwu.edu/programs-degrees) for additional information.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
CHEM 1111	General Chemistry I [1]	

MAE 1001	Introduction to Mechanical and Aerospace Engineering
MATH 1231	Single-Variable Calculus I [1]
SEAS 1001	Engineering Orientation
UW 1020	University Writing [1]
Humanities or social sciences elective [2]	
Second semester	
MAE 1004	Engineering Drawing and Computer Graphics
MATH 1232	Single-Variable Calculus II [1]
MATH 2184	Linear Algebra I
PHYS 1021	University Physics I [1]
Humanities or social sciences elective [2]	
Third semester	
APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I
MAE 2117	Engineering Computations
MATH 2233	Multivariable Calculus [1]
PHYS 1022	University Physics II [1]
Fourth semester	
APSC 2058	Analytical Mechanics II
ECE 2110	Circuit Theory
CSCI 1121	Introduction to C Programming
MAE 2131	Thermodynamics
CE 2220	Introduction to the Mechanics of Solids
Fifth semester	
MAE 3126	Fluid Mechanics I
MAE 3166	Materials Science and Enginrg
MAE 3191	Mechanical Design
MAE 3192	Manufacturing Processes and Systems (Humanities or Social Sciences Elective)
Humanities or social sciences elective [2]	
Humanities or social sciences elective [2]	
Sixth semester	
MAE 3120	Methods of Engineering Experimentation
MAE 3134	Linear System Dynamics
MAE 3155	Aerodynamics
MAE 3167W	Mechanics of Materials Lab
MAE 3193	Mechanical Systems Design
MAE 3187	Heat Transfer
Seventh semester	
MAE 4151	Mechanical Engineering Project
MAE 4157	Aerodynamics Laboratory
MAE 4182	Electromechanical Control System Design
MAE 3162	Aerospace Structures
Humanities or social sciences elective [2]	
Aerospace elective [3]	
Technical elective [3]	
Eighth semester	
APSC 3115	Engineering Analysis III
MAE 4152W	Mechanical Engineering Laboratory
MAE 6229	Propulsion
Humanities or social sciences elective [2]	
Aerospace elective [3]	
Technical elective [4]	

[1] Course satisfies the university general education requirement in math, science, and writing.

[2] At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 38); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list. At least one humanities course must be selected from the University General Education Requirement list (p. 38); the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list.

[3] Space: In the 5th semester take MAE 3145 and in the 8th semester take MAE 6249 Spacecraft Design. Aero: In the 7th

semester take MAE 4163 Airplane Performance and in the 8th semester take MAE 6247 Aircraft Design I.

[4] All technical electives must be approved by the undergraduate advisor. On a case-by-case basis, technical electives may be chosen from other departments if approved by both the undergraduate advisor and the department chair. Technical electives are chosen from MAE courses in the 3000, 4000, and 6000 series, excluding: MAE 3171 Patent Law for Engineers, MAE 4172 Engineering Design and the Patent System, MAE 6298 Research, MAE 6998 MS Thesis Research and MAE 6999 MS Thesis Research. Visit the program website (http://www.mae.seas.gwu.edu/programs-degrees) for additional information.

BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING, BIOMECHANICAL OPTION

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems. The bachelor of science with a major in mechanical engineering, biomechanical option degree program prepares students to work in the biomedical industry or to pursue graduate study in biomedical engineering. It provides a strong foundation in human anatomy and physiology, biomechanics, biomaterials, and design of biomedical devices.

Visit the program website (http://www.mae.seas.gwu.edu/programs-degrees) for additional information.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
BISC 1005	The Biology of Nutrition and Health [1]	
EXNS 1110	Applied Anatomy and Physiology I	
MAE 1001	Introduction to Mechanical and Aerospace Engineering	
MATH 1231	Single-Variable Calculus I *	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing *	
Second semester		
CHEM 1111	General Chemistry I *	
MAE 1004	Engineering Drawing and Computer Graphics	
MATH 1232	Single-Variable Calculus II *	
MATH 2184	Linear Algebra I	
PHYS 1021	University Physics I *	
Third semester		
APSC 2057	Analytical Mechanics I	
APSC 2113	Engineering Analysis I	
MAE 2117	Engineering Computations	
MATH 2233	Multivariable Calculus *	
PHYS 1022	University Physics II *	
Fourth semester		
APSC 2058	Analytical Mechanics II	
CE 2220	Introduction to the Mechanics of Solids	
CSCI 1121	Introduction to C Programming	
ECE 2110	Circuit Theory	
MAE 2131	Thermodynamics	
Fifth semester		
APSC 3115	Engineering Analysis III	
MAE 3126	Fluid Mechanics I	
MAE 3166	Materials Science and Enginrg	
MAE 3191	Mechanical Design	
EXNS 2113	Kinesiology	
Humanities or social sciences elective [2]		
Sixth semester		
MAE 3120	Methods of Engineering Experimentation	
MAE 3128	Biomechanics I	
MAE 3134	Linear System Dynamics	
MAE 3167W	Mechanics of Materials Lab	
MAE 3193	Mechanical Systems Design	
Humanities or social sciences elective [2]		

Seventh semester	
MAE 4182	Electromechanical Control System Design
MAE 3192	Manufacturing Processes and Systems
MAE 6238	Biomaterials
MAE 4151	Mechanical Engineering Project
Two humanities or social sciences electives [2]	
Eighth semester	
MAE 3187	Heat Transfer
MAE 4129	Biomechanics II
MAE 4152W	Mechanical Engineering Laboratory
Two humanities or social sciences electives [2]	
Technical elective [3]	

[1] Course satisfies the university general education requirement in math, science, and writing.
[2] At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 38); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list (p. 38); the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list. (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf)

[3] Technical electives are chosen from MAE courses in the 3000, 4000, and 6000 series, excluding: MAE 3171 Patent Law for Engineers, MAE 4172 Engineering Design and the Patent System, MAE 6298 Research, MAE 6998 MS Thesis Research and MAE 6999 MS Thesis Research. Visit the program website (http://www.mae.seas.gwu.edu/programs-degrees) for additional information.

BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING, MEDICAL PREPARATION OPTION

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems. The bachelor of science with a major in mechanical engineering, medical preparation option degree program prepares students for application to medical school. Students are prepared to work in research and development or to pursue graduate study in the fields of biomechanics and biotechnology.

Visit the program website (http://www.mae.seas.gwu.edu/programs-degrees) for additional information.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
CHEM 1111	General Chemistry I [1]	
MAE 1001	Introduction to Mechanical and Aerospace Engineering	
MATH 1231	Single-Variable Calculus I [1]	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing [1]	
Humanities or social sciences elective [2]		
Second semester		
CHEM 1112	General Chemistry II [1]	
MAE 1004	Engineering Drawing and Computer Graphics	
MATH 2184	Linear Algebra I	
MATH 1232	Single-Variable Calculus II [1]	
PHYS 1021	University Physics I [1]	
Third semester		
APSC 2057	Analytical Mechanics I	
APSC 2113	Engineering Analysis I	
BISC 1111	Introductory Biology: Cells and Molecules [1]	
MAE 2117	Engineering Computations	
MATH 2233	Multivariable Calculus [1]	
PHYS 1022	University Physics II [1]	
Fourth semester		

APSC 2058	Analytical Mechanics II
BISC 1112	Introductory Biology: The Biology of Organisms [1]
CE 2220	Introduction to the Mechanics of Solids
CSCI 1121	Introduction to C Programming
ECE 2110	Circuit Theory
MAE 2131	Thermodynamics
Fifth semester	
APSC 3115	Engineering Analysis III
CHEM 2151	Organic Chemistry I [1]
CHEM 2153	Organic Chemistry Laboratory I [1]
MAE 3126	Fluid Mechanics I
MAE 3166W	Materials Science and Enginrg,Materials Engineering
MAE 3191	Mechanical Design
Sixth semester	
CHEM 2152	Organic Chemistry II [1]
CHEM 2154	Organic Chemistry Laboratory II [1]
MAE 3120	Methods of Engineering Experimentation
MAE 3134	Linear System Dynamics
MAE 3193	Mechanical Systems Design
MAE 3167W	Mechanics of Materials Lab
Humanities or social sciences elective [2]	
Seventh semester	
MAE 3192	Manufacturing Processes and Systems
MAE 4149	Thermal Systems Design
MAE 4182	Electromechanical Control System Design
MAE 4151	Mechanical Engineering Project
Two humanities orsSocial sciences electives [2]	
Eighth semester	
MAE 3187	Heat Transfer
MAE 4152W	Mechanical Engineering Laboratory
Two humanities or social sciences electives [2]	
Technical Elective [3]	

[1] Course satisfies the university general education requirement in math, science, and writing.

[2] At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 38); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list (p. 38); the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list. (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf)

[3] Visit the program website (http://www.mae.seas.gwu.edu/programs-degrees) for additional information concerning electives.

BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING, PATENT LAW OPTION

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems. The bachelor of science with a major in mechanical engineering, patent law option degree program provides a strong foundation in fundamental principles of patent law and the influences of the U.S. patent system on modern engineering design. Students in this option obtain skills and knowledge that can lead to work as a technical specialist in a patent law firm or in the patent department of an industrial employer. The option provides excellent preparation for pursuit of a law degree that may focus on intellectual property law.

Visit the program website (http://www.mae.seas.gwu.edu/programs-degrees) for additional information.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
CHEM 1111	General Chemistry I [1]	
MAE 1001	Introduction to Mechanical and Aerospace Engineering	
MATH 1231	Single-Variable Calculus I [1]	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing [1]	
Humanities or social sciences elective [2]		
Second semester		
MAE 1004	Engineering Drawing and Computer Graphics	
MATH 2184	Linear Algebra I	
MATH 1232	Single-Variable Calculus II [1]	
PHYS 1021	University Physics I [1]	
Humanities or social sciences elective [2]		
Third semester		
APSC 2057	Analytical Mechanics I	
APSC 2113	Engineering Analysis I	
MAE 2117	Engineering Computations	
MATH 2233	Multivariable Calculus [1]	
PHYS 1022	University Physics II [1]	
Fourth semester		
APSC 2058	Analytical Mechanics II	
CE 2220	Introduction to the Mechanics of Solids	
CSCI 1121	Introduction to C Programming	
ECE 2110	Circuit Theory	
MAE 2131	Thermodynamics	
Fifth semester		
APSC 3115	Engineering Analysis III	
MAE 3126	Fluid Mechanics I	
MAE 3166	Materials Science and Enginrg	
MAE 3191	Mechanical Design	
MAE 3171	Patent Law for Engineers	
Humanities or social sciences elective [2]		
Sixth semester		
MAE 3120	Methods of Engineering Experimentation	
MAE 3134	Linear System Dynamics	
MAE 3187	Heat Transfer	
MAE 3167W	Mechanics of Materials Lab	
MAE 3193	Mechanical Systems Design	
Humanities or social sciences elective [2]		
Seventh semester		
MAE 4149	Thermal Systems Design	
MAE 4182	Electromechanical Control System Design	
MAE 3192	Manufacturing Processes and Systems	
MAE 4151	Mechanical Engineering Project	
Humanities or social sciences elective [2]		
Technical elective [3]		
Eighth semester		
MAE 4152W	Mechanical Engineering Laboratory	
MAE 4172	Engineering Design and the Patent System	
Humanities or social sciences elective [2]		
Technical electives [3]		

[1]Course satisfies the university general education requirement in math, science, and writing.

[2]At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 38); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list (p. 38); the remaining courses must be selected from either the University General Education

Requirement list or the SEAS General Education Requirement list. (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf)

[3] Technical electives are chosen from MAE courses in the 3000, 4000, and 6000 series, excluding: MAE 3171 Patent Law for Engineers, MAE 4172 Engineering Design and the Patent System, MAE 6298 Research, MAE 6998 MS Thesis Research and MAE 6999 MS Thesis Research. Visit the program website (http://www.mae.seas.gwu.edu/programs-degrees) for additional information.

BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING, ROBOTICS OPTION

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems. The bachelor of science with a major in mechanical engineering, robotics option degree program prepares students to work in the robotics industry or to pursue graduate study in robotics engineering. It provides a strong foundation in robotic mechanisms design, analysis, and integration; kinematics, dynamics, and control of robots; mechatronics design; sensing, actuation, and measurement; microprocessors for robotic systems; robotic haptics; and topics on artificial intelligence.

Visit the program website (http://www.mae.seas.gwu.edu/programs-degrees) for additional information.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
CHEM 1111	General Chemistry I [1]	
MAE 1001	Introduction to Mechanical and Aerospace Engineering	
MATH 1231	Single-Variable Calculus I [1]	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing [1]	
Humanities or social sciences elective [2]		
Second semester		
MAE 1004	Engineering Drawing and Computer Graphics	
MATH 2184	Linear Algebra I	
MATH 1232	Single-Variable Calculus II [1]	
PHYS 1021	University Physics I [1]	
Humanities or social sciences elective [2]		
Third semester		
APSC 2057	Analytical Mechanics I	
APSC 2113	Engineering Analysis I	
MAE 2117	Engineering Computations	
MATH 2233	Multivariable Calculus [1]	
PHYS 1022	University Physics II [1]	
Fourth semester		
APSC 2058	Analytical Mechanics II	
CE 2220	Introduction to the Mechanics of Solids	
CSCI 1121	Introduction to C Programming	
ECE 2110	Circuit Theory	
MAE 2131	Thermodynamics	
MAE 3134	Linear System Dynamics	
Fifth semester		
APSC 3115	Engineering Analysis III	
MAE 3126	Fluid Mechanics I	
MAE 3166	Materials Science and Enginrg	
MAE 3191	Mechanical Design	
MAE 3192	Manufacturing Processes and Systems	
Sixth semester		
ECE 2115	Engineering Electronics	
MAE 3120	Methods of Engineering Experimentation	
MAE 3167W	Mechanics of Materials Lab	
MAE 3184	Robotics Lab	
MAE 3187	Heat Transfer	
MAE 3193	Mechanical Systems Design	

Humanities or social sciences elective [2]	
Seventh semester	
MAE 4151	Mechanical Engineering Project
MAE 4182	Electromechanical Control System Design
MAE 4183	Controls Lab
ECE 3220	Intro to Digital Signal Proces
Humanities or social sciences elective [2]	
Humanities or social sciences elective [2]	
Technical elective [3]	
Eighth semester	
MAE 4152W	Mechanical Engineering Laboratory
MAE 4194	Mechatronics Design
MAE 4195	Mechatronics Lab
MAE 6245	Robotic Systems
Humanities or social sciences elective [2]	
Technical elective [3]	

[1] Course satisfies the university general education requirement in math, science, and writing.

[2] At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 38); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list (p. 38); the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list. (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf)

[3] All technical electives must be approved by the undergraduate advisor. On a case-by-case basis, technical electives may be chosen from other departments if approved by both the undergraduate advisor and the department chair.
Technical electives are chosen from MAE courses in the 3000, 4000, and 6000 series, excluding: MAE 3171 Patent Law for Engineers,MAE 4172 Engineering Design and the Patent System, MAE 6298 Research, MAE 6998 MS Thesis Research and MAE 6999 MS Thesis Research. Visit the program website (http://www.mae.seas.gwu.edu/programs-degrees) for additional information.

MINOR IN MECHANICAL ENGINEERING

REQUIREMENTS

Code	Title	Credits
Prerequisites		
The following courses must be completed before beginning the minor program:		
APSC 2113	Engineering Analysis I	
PHYS 1021	University Physics I	
Required		
APSC 2057	Analytical Mechanics I	
APSC 2058	Analytical Mechanics II	
CE 2220	Introduction to the Mechanics of Solids	
MAE 2131	Thermodynamics	
MAE 3126	Fluid Mechanics I	
MAE 3191	Mechanical Design	
or MAE 3187	Heat Transfer	

COMBINED BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING AND MASTER OF SCIENCE IN THE FIELD OF MECHANICAL ENGINEERING

The combined bachelor of science with a major in mechanical engineering and master of science in the field of mechanical engineering degree program (B.S./M.S.) is offered by the School of Engineering and Applied Science's Department of Mechanical and Aerospace Engineering (http://www.mae.seas.gwu.edu).

REQUIREMENTS

Five-Year BS/MS Degree Program

The MAE Department offers a five-year dual degree program for the B.S. and M.S. in mechanical engineering. The five-year program differs from the standard B.S. in mechanical engineering in that:

1. In the seventh and eight semesters, three 3-credit courses are taken at the graduate level. Two of these courses must complete the requirements of the four-year Bachelor of Science curriculum as the required courses or technical electives. One of these 3-credit courses is in excess of the requirements of the four-year Bachelor of Science curriculum.
2. In the ninth and tenth semesters, students take eight 3-credit courses at the graduate level. Alternatively, in the ninth and subsequent semesters (probably extending beyond a total of five years) students take a total of five 3-credit courses and a Master's thesis (6 credits).
3. Courses taken as part of items 1 and 2 above must satisfy the requirements of the Master of Science degree and be chosen with approval from their advisor.

Students must have a 3.4 GPA at the end of the sixth semester to be admitted to the program and must satisfy all requirements for graduation with a Bachelor's degree at the end of the eighth semester to continue in it. All requirements for master's degree students are in effect for the graduate portion of the program. Students apply through the normal GW MAE MS application process during the seventh semester.

MASTER OF SCIENCE IN THE FIELD OF MECHANICAL AND AEROSPACE ENGINEERING

The master of science in the field of mechanical and aerospace engineering degree program offers a a rigorous course of study that helps prepare students for leadership roles in government and industry. Students have the opportunity to work across disciplines in emerging areas of technology. The program is designed to build a solid background on the fundamentals of the related discipline, and at the same time it can be tailored to meet individual needs under the guidance of an academic advisor. Students can tailor their program to meet their interests and goals by choosing from the following focus areas: aerospace engineering; design of mechanical engineering systems; fluid mechanics, thermal sciences, and energy; industrial engineering; solid mechanics and materials science; and structures and dynamics; and robotics, mechatronics, and controls. Thesis and non-thesis options are available.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://www.graduate.seas.gwu.edu/programs/mechanical-and-aerospace-engineering/admissions-requirements) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: non-thesis option—a minimum of 33 credits, including the required focus area curriculum; thesis option—30 credits, including the required focus area curriculum and 6 credits in thesis research.

Aerospace Engineering

Required	
APSC 6212	Analytical Methods in Engineering II
or APSC 6213	Analytical Methods in Engineering III
MAE 6286	Numerical Solution Techniques in Mechanica land Aerospace Engineering
One of the following:	
MAE 6207	Theory of Elasticity I
MAE 6221	Fluid Mechanics
MAE 6276	Mechanics of Space Flight
Electives	
Remaining credits in aeroacoustics, aeronautics, astronautics, propulsion, or space systems elective courses	

Design of Mechanical Engineering Systems

Required	
MAE 6243	Advanced Mechanical Engineering Design
MAE 6251	Computer-Integrated Manufacturing
MAE 6286	Numerical Solution Techniques in Mechanica land Aerospace Engineering
Electives	
Remaining credits in computer-aided design, computer-integrated design and manufacturing, mechanical engineering design, or robotics courses	

Fluid Mechanics, Thermal Sciences, and Energy

Required	
APSC 6213	Analytical Methods in Engineering III
MAE 6221	Fluid Mechanics
MAE 6286	Numerical Solution Techniques in Mechanica land Aerospace Engineering
Electives	
Remaining credits in elective courses	

Industrial Engineering

Required	
EMSE 6755	Quality Control and Acceptance Sampling
EMSE 6770	Techniques of Risk Analysis and Management
MAE 6201	Intro to Manufacturing
MAE 6252	Projects in Computer-Integrated Design and Manufacturing
One of the following:	
MATH 2233	Multivariable Calculus
APSC 3115	Engineering Analysis III
CSCI 1041	Introduction to FORTRAN Programming
CSCI 1121	Introduction to C Programming
CSCI 1131	Introduction to Programming with C
Electives	
Remaining credits in elective courses in two approved three-course sequences, one in the Department of Mechanical and Aerospace Engineering, the other in a cooperating department in SEAS	

Solid Mechanics and Materials Science

Required	
APSC 6213	Analytical Methods in Engineering III
Two of the following:	
MAE 6210	Continuum Mechanics
MAE 6238	Biomaterials
MAE 6239	Computational Nanosciences
Electives	
Remaining credits in elective courses	

Structures and Dynamics

Required	
APSC 6213	Analytical Methods in Engineering III
MAE 6207	Theory of Elasticity I
MAE 6286	Numerical Solution Techniques in Mechanica land Aerospace Engineering
Elecives	
Remaining credits in elective courses	

Robotics, Mechatronics, and Controls

Required	
MAE 6245	Robotic Systems
MAE 6246	Electromechanical Control Systems
One of the following:	
MAE 6240	Kinematic Synthesis
MAE 6242	Advanced Mechanisms
MAE 6243	Advanced Mechanical Engineering Design
Electives	
Remaining credits in elective courses	

DOCTOR OF PHILOSOPHY IN THE FIELD OF MECHANICAL AND AEROSPACE ENGINEERING

Offered through the department of mechanical and aerospace engineering, the Ph.D. program in mechanical and aerospace engineering prepares students for leadership careers in academia, industry and government. Students and faculty work together to explore solutions in areas such as robotics, traditional and additive manufacturing, tissue engineering, energy materials and harvesting, plasma-based systems, fluid dynamics and nanotechnology.

Students choose from the following areas of focus:

- Aerospace engineering
- Design of mechanical engineering systems
- Fluid mechanics, thermal sciences, and energy
- Industrial engineering
- Solid mechanics and materials science
- Structures and dynamics
- Robotics, mechatronics, and controls

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under School of Engineering, Doctoral Program Regulations (http://bulletin.gwu.edu/engineering-applied-science/#seasregulationstext)

Students with an MS degree must take a minimum of 30 credits, of which at least 12 credits are graduate course credits. Students with a BS degree must take a minimum of 54 credits,

of which at least 36 credits are graduate course credits.
In some cases, particularly when the student undertakes a doctoral program in a field other than that in which the earlier degree was earned, the program of study exceeds the minimum number of credits.

No specific courses are required; the student and advisor design the curriculum to meet the student's needs and goals.

Other requirements

- Qualifying examinations: All Ph.D. students are required to take the Doctoral Qualifying Examination (DQE) held in the first two weeks of each semester. The goal of the exam is to determine the student's aptitude and ability to do original and independent research at the doctoral level, to assess the student's ability to review previous work from the literature, and to determine the student's ability to understand and apply fundamental concepts in his/her technical area. A written proposal and an oral presentation of the chosen problem are required. All students should take the exam as early as possible after they complete at least 6 credits of core courses and 6 credits of electives, and maintain an average GPA of at least 3.4. The exam should typically be taken no later than the beginning of their 3rd semester.
- Seminar attendence: prior to graduation, doctoral students must complete the Department of Mechanical and Aerospace Engineering (MAE) seminar attendance requirement, whereby the student must attend at least 80 percent of the MAE seminars offered during any two semesters of the student's enrollment. In order for a seminar to count toward the requirement, the student must be present for the duration of the seminar. To track attendance, the student must obtain a certification signature on the MAE Seminar Attendance Form from an MAE faculty member present at the seminar and submit the completed form to the MAE departmental office at the end of the semester. The student may attempt to fulfill this requirement in as many semesters as needed. This requirement is applicable to doctoral students who matriculate during the 2016-2017 academic year or later.
- Dissertation: During the research phase, each doctoral candidate will be required to give a dissertation research proposal presentation to the Dissertation Committee. The student's research progress will be assessed by the committee and appropriate suggestions for continuing research directions will be solicited from the Committee. After consultation with the research advisor, the final Ph.D. defense can be scheduled, typically at least one year after the research proposal.

Student should contact the department for additional information and requirements

GRADUATE CERTIFICATE IN COMPUTER-INTEGRATED DESIGN IN MECHANICAL AND AEROSPACE ENGINEERING

The graduate certificate in computer-integrated design in mechanical and aerospace engineering program offers an alternative to a master of science degree (M.S.) degree program for professionals who wish to expand their education beyond the bachelor's degree but might not have the time to commit to a full graduate degree program. The graduate certificate also may serve as a path towards the M.S. degree as all certificate courses are transferable to an M.S. program.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
MAE 6220	Applied Computational Fluid Dynamics	
MAE 6243	Advanced Mechanical Engineering Design	
MAE 6246	Electromechanical Control Systems	
MAE 6287	Applied Finite Element Methods	

GRADUATE CERTIFICATE IN ENERGY ENGINEERING AND MANAGEMENT

Offered jointly through the Department of Mechanical and Aerospace Engineering (http://mae.seas.gwu.edu) and the Department of Engineering Management and Systems Engineering (http://emse.seas.gwu.edu), the graduate certificate in energy engineering and management provides a well-rounded education in energy engineering in the technical areas of fluid mechanics, heat transfer, and mathematics, as well as policy oriented education in state-of-the-art renewable energy technologies, energy management, and design for energy efficient tools and buildings. The certificate program is designed to enable graduates to analyze energy consumption patterns and perform energy audits, manage energy generation projects, manage energy utilization and its economic impacts, and analyze energy options to achieve optimal energy efficiency.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit program website (https://www.emse.seas.gwu.edu/graduate-certificates) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
EMSE 6260	Energy Management	
EMSE 6285	Analytical Tools for Energy Management	
MAE 6262	Energy Systems Analysis I	
MAE 6263	Advances in Energy Engineering	

ELLIOTT SCHOOL OF INTERNATIONAL AFFAIRS

Dean R. E. Brigety II
Associate Deans J. Brinkerhoff, E. McCord, H. Harrison, L. Stephenson,

The Elliott School of International Affairs offers undergraduate and graduate programs to prepare individuals to understand and work in an increasingly globalized world. The historical roots of the Elliott School extend back to the establishment of the School of Comparative Jurisprudence and Diplomacy in 1898. In 1966, the School separated from the School of Government, Business, and International Affairs to become an independent unit, the School of Public and International Affairs. In 1987, the name was changed to the School of International Affairs, and in 1988 the School was renamed in honor of Evelyn E. and Lloyd H. Elliott. Lloyd Elliott was the president of George Washington University from 1965 to 1988.

The Elliott School offers the bachelor of arts degree in international affairs, Asian studies, Latin American and hemispheric studies, and Middle East studies; the master of arts degree in the fields of international affairs, Asian studies, European and Eurasian studies, global communication, international development studies, international science and technology policy, international trade and investment policy, Latin American and hemispheric studies, Middle East studies, and security policy studies; the master of international policy and practice degree for mid-career professionals; and the master of international studies degree for students enrolled in master's degree programs at international universities with which the Elliott School has a special partnership.

These programs provide advanced academic and professional training in international affairs as preparation for employment in public, private, and nonprofit sectors. Focusing on major historical and contemporary issues in international affairs, the programs are both interdisciplinary and multidisciplinary, combining courses offered through the School with courses offered by other schools and departments of the University.

REGULATIONS

- **Undergraduate Degree Requirements (p. 701)**
- **Graduate Degree Requirements (p. 702)**
  - Scholarship Requirements (p. 702)
  - Readmission (p. 703)

Undergraduate Degree Requirements

Academic Standing

To earn a bachelor's degree, students must complete 120 credits, meet the University General Education Requirement (p. 38), and have a cumulative grade point average of at least 2.0. Courses in lifestyle, sport, and physical activity do not count toward the degree; some ROTC classes are also excluded. Rules governing Academic Standing are applicable to students enrolled for a full-time program (12 credits or more) during the fall or spring semester.

Scholarship Performance in the Major

All courses indicated as requirements for the major, including courses taken to fulfill the third-year language proficiency requirement, must be completed with a minimum grade of *C*−. If a student receives a grade of *D+, D,* or *D*− in any of these courses, the credit will count toward the degree, but the student must either repeat the course or, with approval of the academic advisor, substitute another course; in either case, the student must earn a minimum grade of *C*−. If the student must repeat the course, credit for the repetition does not count toward the degree, and grades for both the initial course and the repeated course are used to compute the GPA. If the Office of Academic Advising and Student Services (http://elliott.gwu.edu/undergraduate-advising) allows another course to be substituted, the initial course is considered to be an elective. Students are expected to consult the Office of Academic Advising and Student Services in all matters affecting the program of study, such as changes, substitutions, withdrawals, or transfer of credit from other institutions.

Incompletes

Conditions under which the symbol *I* (Incomplete) may be assigned are described under University Regulations (p. 21). Incomplete course work must be completed within the designated time period agreed upon by the instructor, student, and school, but no more than one calendar year from the end of the semester in which the course was taken. All students who receive an Incomplete must maintain active student status during the subsequent semester(s) in which the work of the course is being completed. If not registered in other classes during this period, the student must register for continuous enrollment status. When work for the course is completed, the instructor will complete a grade change form and submit it to the Office of the Registrar (https://registrar.gwu.edu). Beginning with the fall 2014 semester, the final grade will replace the symbol of *I*. If work for the course is not completed within the designated time, the grade will be converted automatically to a grade of *F,* Failure, 0 quality points, and the grade-point average and academic standing recalculated. The *I* cannot be changed by reregistering for the course at GW or by taking its equivalent elsewhere. In cases of well-documented extenuating circumstances, the instructor and student may jointly petition the Office of Academic Advising and Student Services (http://elliott.gwu.edu/undergraduate-advising) for additional time in which to complete the work of the course. Such petitions should be submitted within a year of the assignment of the *I*. Students are not permitted to register for any additional course work if they have more than two Incompletes on their record.

Pass/No Pass Option

A student who has a cumulative grade-point average of 2.5 or better may, with the approval of the Office of Academic Advising and Student Services (http://elliott.gwu.edu/undergraduate-advising), take one course per semester and receive a grade of Pass, *P*, or No Pass, *NP*, which will be recorded on the student's transcript but will not be reflected in the cumulative grade average. A student must sign up for such an option at the Office of Academic Advising and Student Services within the first eight weeks of classes. Under no circumstances may a student change from *P/NP* status to graded status, or vice versa, after the end of the eighth week of the semester. Foreign language courses and required courses in the student's degree program (except those in which the grade of *P* or *NP* is normally assigned) may not be taken on a *P/NP* basis. Freshmen may not elect to take a course on a P/NP basis. A transfer student may not elect to take a course on a *P/NP* basis until the second semester of enrollment in the University. No more than six courses in which the grade of *P* or *NP* is assigned will apply toward the degree, including courses in which the grade of *P* or *NP* is normally given.

Study Abroad

Students are encouraged to study abroad. Those wishing to study abroad must consult their academic advisor and the University's Office for Study Abroad (http://studyabroad.gwu.edu). A maximum of 34 credits may be transferred in from other institutions' study abroad programs. Credits for courses taken abroad through GW Study Centers and GW Summer Abroad do not apply to this maximum. Students must secure prior approval from the Office of Academic Advising and Student Services for any plan of study abroad in order for the credit to apply toward the student's degree requirements. Students must apply to a program from the University's list of approved study abroad programs. A catalogue or other description of the study abroad program must be presented for consideration together with detailed descriptions of the courses to be taken.

Internships

Internships offer students the opportunity to make practical use of the knowledge they acquire in the classroom. Elliott School undergraduates students who have completed at least 24 credits in-residence, have a cumulative grade-point average of at least 2.5, and have no more than one incomplete on their transcript, are eligible to arrange internships for credit or zero-credit, to a total maximum of 6 credits toward the degree. Academic work in the field of the internship is required. A zero-credit internship, which requires no additional academic work outside of the internship itself, is also available. Internships are available in the private, nonprofit, and public sectors. Students must register for internships (even if for zero-credit) through the Office of Academic Advising and Student Services but are responsible for locating their own internships.

Double Majors

Students who complete the requirements of two majors in the Elliott School (such as international affairs and Asian studies) may graduate with a double major. Consult the Office of Academic Advising and Student Services (http://elliott.gwu.edu/undergraduate-advising) to officially declare both majors on the appropriate form.

Students in the Elliott School may declare a second major offered by Columbian College of Arts and Sciences (majors in communication, creative writing & English, journalism & mass communication and political communication are excluded), the School of Engineering and Applied Science, the Milken Institute School of Public Health or the School of Business (finance major only). Permission for the second major must be obtained from the appropriate administrative office of the other school.

Students in Columbian College of Arts and Sciences, the School of Engineering and Applied Science, the Milken Institute School of Public Health and the School of Business may declare a second major in the Elliott School. Students wishing to pursue these options must request approval through the Elliott School's Academic Advising and Student Services. Students must complete all degree requirements for their major in their home school in order to graduate with a second major from the other school.

In all cases, double majors do not result in two degrees. See Double Majors and Double Degrees in the University Regulations (p. 21).

Special Honors

Students who complete a senior thesis or research seminar with a grade of A- or higher, earn a cumulative GPA of 3.7, and complete 60 credit hours in residence at GW will be awarded Special Honors.

Graduate Degree Requirements

Scholarship Requirements

Information on grades and computing the grade-point average is under University Regulations (p. 21). Courses taken to satisfy degree requirements cannot be taken on a *CR/NC* basis, with the exception of some capstone courses.

Graduate students are required to maintain a minimum cumulative grade-point average of 3.0. A student whose grade-point average falls below 3.0 or who receives a grade of F in a course at any point after completing 9 credits is placed on academic probation. This probation extends through the period in which the student next attempts up to 12 credits of work, including prescribed courses. The student's academic advisor will meet with the program director and/or academic dean to review the student's record. The student's account will be put on hold until the student has met with the program director and/or academic dean to discuss the terms

of probation. A student's program may be restricted by the program director if deemed necessary.

During the probation period, the student's performance will be monitored to determine suitability for continued study. The Office of Academic Advising and Student Services will inform the program director and/or academic dean if the student is no longer on probation or is eligible for dismissal. Incomplete grades are not allowed during the probation period and are grounds for dismissal. A student who fails to raise the cumulative grade-point average to 3.0 or above by the end of the period of probation or who is subject to probation for a second time at any point during the academic program is eligible for dismissal. If a student is eligible for dismissal, the academic dean in consultation with the program director will decide whether the student is to be dismissed from the Elliott School.

Readmission

A graduate student who has not been continuously enrolled or on approved leave of absence must file an application for readmission the semester before planning to return to school.

General Requirements for Master of Arts Degree Programs

Programs leading to the master of arts degree require a minimum of 40 credits of graduate course work, which includes a capstone project. By the end of the first semester in residence, candidates for the degree are required to submit to the Office of Academic Advising and Student Services for final approval a plan of study that includes fields, supporting course work, and any other required information as endorsed by the program director. Degrees are awarded after the student has completed the required course work, an acceptable capstone project, and satisfied the foreign language requirement (if relevant).

Students with sufficient academic backgrounds may waive a core course with approval of a designated faculty member from the department concerned. A course waiver does not reduce the number of credits required for the degree. Under special circumstances, upper-level undergraduate courses may be counted toward the master's degree; registration for graduate credit must be approved at the beginning of the course by the program director, the instructor, and the Office of Academic Advising and Student Services. The student who takes an undergraduate course for graduate credit is expected, by arrangement with the instructor, to do work at the graduate level in addition to the regular work of the course. Normally, no more than 9 credits of approved undergraduate course work may be taken for credit toward a graduate degree. Academic credit counted toward a previous degree may not be counted toward the master's degree.

All master's degree candidates must complete degree requirements within five years of their admission to the program. Students who are unable temporarily to continue their studies may request a leave of absence not to exceed one year. Extensions beyond the five-year period may be granted in exceptional circumstances, but the student will be required to register for Leave of Absence each semester.

Students are encouraged, and in some cases required, to take professional skills-based courses (IAFF 6502 Professional Skills I–IAFF 6503 Professional Skills II) and should consult their program guidelines for limits on the number of credits in these courses that can count toward their degree program. The maximum allowed by the Elliott School is 4 credits.

No more than a combined total of 6 graduate credits may be transferred from other accredited institutions or from non-degree status; these may be accepted only under limited conditions of time, grades earned, and relevance to the student's program. Foreign language course credit is not eligible for transfer.

Foreign Language Requirements

In most degree programs, a candidate for the master of arts must demonstrate reading and speaking proficiency in a modern foreign language. All students in regional programs (including those who are not native speakers of English) must demonstrate proficiency in a language appropriate to the study of the specific region. Students should consult their program guidelines for specific requirements, academic credit, and options for fulfilling the language requirement.

Capstone/Thesis Option

Every student must successfully complete a capstone or, with approval of the program director, a thesis near the conclusion of the master's program. For the capstone, the student must have a 3.0 grade-point average and must have completed or registered for 30 credits. If there is a lapse of time between completion of other course work and the capstone, the student must be continuously enrolled during this period. A student who fails to complete successfully the capstone may repeat it with the permission of the dean. If the student fails a second time, no further opportunity to complete the capstone will be permitted and the degree will not be conferred. Details concerning the capstone course vary across programs; students should consult their program guidelines for details.

For most programs, exceptional students may write a thesis, in addition to the capstone, if they qualify by having a minimum 3.5 grade-point average for at least 20 credits of course work in their program and developing a formal thesis proposal approved by their prospective thesis advisor and the program director.

The thesis subject should be selected as early as possible so as to permit effective integration with the student's course work. A student will not be permitted to register for (IAFF 6998 Thesis–IAFF 6999 Thesis) until the thesis subject has been formally submitted to the Office of Academic Advising. The subject must be approved by the member of the full-time faculty under whom the thesis is to be written, a second

member of the faculty who will serve as a reader, and the student's program director. The thesis in its final form must have the approval of the thesis director and one other reader. All theses must be submitted electronically by May 1 prior to the student's final academic year and meet the formatting and other requirements set forth at GW's Electronic Theses and Dissertations Submission website (http://library.gwu.edu/etds).

Payment of tuition for thesis research entitles the candidate, during the period of registration, to the advice and direction of the thesis director and the other reader. In case a thesis is unfinished, the student must maintain continuous enrollment and is allowed one calendar year to complete it. If the preparation of the thesis extends beyond the additional calendar year, the student must register for the entire 6 credits of thesis again and pay tuition as for a repeated course.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in Asian studies (p. 709)
- Bachelor of Arts with a major in international affairs (p. 711)
- Bachelor of Arts with a major in Latin American and hemispheric studies (p. 712)
- Bachelor of Arts with a major in Middle East studies (p. 713)

Minors

- Minors (p. 714)

GRADUATE

Master's programs

- Master of Arts in the field of Asian studies (p. 717)
- Master of Arts in the field of European and Eurasian studies (p. 724)
- Master of Arts in the field of global communication (p. 729)
- Master of Arts in the field of international affairs (p. 734)
- Master of Arts in the field of international development studies (p. 747)
- Master of Arts in the field of international science and technology policy (p. 750)
- Master of Arts in the field of international trade and investment policy (p. 751)
- Master of Arts in the field of Latin American and hemispheric studies (p. 752)
- Master of Arts in the field of Middle East studies (p. 753)
- Master of Arts in the field of security policy studies (p. 754)
- Master of International Policy and Practice (p. 756)
- Master of International Studies (p. 756)

Combined programs

- Dual Master of Arts and Master of Public Health (p. 757)
- Joint Master of Arts and Juris Doctor (p. 757)
- Joint Master of Arts and Master of Business Administration (p. 757)

CERTIFICATES

The Elliott School of International Affairs offers a series of graduate certificates covering topics of specialized interest. The certificate programs are open to all graduate students presently enrolled in the Elliott School, Columbian College of Arts and Sciences, Graduate School of Education and Human Development, School of Business, and Milken Institute School of Public Health. The programs are also open to graduate students from other universities, individuals who have already earned a graduate degree, and individuals with a bachelor's degree and a minimum of eight years of relevant professional work experience. Applicants who have less than eight years of work experience are eligible to apply but must submit the same application materials required of other M.A. degree programs. Transfer credit from non-GW institutions is not accepted into any graduate certificate program. No more than 6 credits of graduate course work taken in any degree or non-degree status within the University, including the Elliott School, may be included in any graduate certificate program. Additional information is available in the Elliott School Graduate Admissions office (http://elliott.gwu.edu/graduate-admissions).

Graduate certificate programs

- Graduate certificate in global gender policy (p. 758)
- Graduate certificate in international science and technology policy (p. 758)
- Graduate certificate in nuclear policy (p. 759)

FACULTY

University Professors M. Barnett, L.A. Etzioni, M. Finnemore, B. Wood

Professors H.L. Agnew, S.M. Alkire, H.G. Askari, M.A. Atkin, W.H. Becker, E. Berkowitz, S. Biddle, A. Black (*Research*), B.L. Boulier, M.D. Bradley, R.E. Brigety, E. Brimmer *(Teaching),* J. Brinkerhoff, A. Brooks, M.E. Brown, N.J. Brown, C.L. Cahill, J. Chaves, B. Chiswick, J.J. Cordes, H.J. Davis, C.J. Deering, B.J. Dickson, R. Eisen, R.M. Entman, H.B. Feigenbaum, J. Ferrer (*Research*), C. Fink (*Practice*), J. Foster, L. Fuerth (*Research*), C. Glaser, E.W. Gnehm, R. Grinker, H.P. Gusterson, H.E. Hale, S. Hamano, J. Hershberg, G. Kaminsky, D.K. Kennedy Jr., D. Khoury, J. Kuipers, M. Laruelle (*Research*), J.H. Lebovic, M.B. Levinger *(Research),* S. Livingston, M. Lynch, R. Maguire (*Practice*), M. Marquardt, C. McClintock, E.A. McCord, A.M. McFarlane, B.D. Miller, M.O. Moore, K.J. Morgan, H.R. Nau, J.E. Nolan, D. Ollapally (*Research*), S. Pace, J. Pelzman, M. Price, S. Rehman, W. Reich, L.P. Ribuffo, F. Robles, P. Rollberg, R.M.

Samaniego, S. Sell, F. Sesno, D. Shambaugh,J. Shambaugh, J. Sherry, S.C. Smith, M. Sodaro, R.H. Spector, J.W. Spencer, R. Steinhardt, R. Sutter, R. Thornton, N.S. Vonortas, P. Wahlbeck, S. Waisman, R. Weiner, S. Wolchik, H. Wolman, J. Yang, A.M. Yezer, A. Zimmerman

Associate Professors S. Aaronson (*Research*), S. Aday, P.M. Alonso-Gortari, M. Atia, M. Ayyagari, S. Balla, H. Berry, J. Blomster, N. Blyden, A. Bowie, G. Brazinsky, Y. Captain-Hidalgo, P. Carrillo, E. Chacko, M.X. Chen, R.W. Click, I. Creppell, A.S. Dent, A. Downes, M. Edberg, D.S. Eglitis, M. Esseesy, H.J. Farrell, I. Feldman, M. Gonglewski, D.A. Grier, H.M. Harrison, B. Hopkins, M. King, S. Lubkemann, M. McAlister, , S. McHale, M. Mochizuki, K. Morgan, D.R. Rain, L.A. Riddle, S. Roberts (*Practice*), R. Robin, S. Robinson,T. Sinclair, J. Spear, M.B. Stein, S. Suranovic, A. Swaine, E.J. Teitelbaum, C. Welt (*Research*), P.D. Williams, J.H. Williams, D. Yang, P.N. Zhang,

Assistant Professors C. Arrington, E. Aviv, P. Bardet, W. Chen, T. Christov, J.F. Daniel, M. Danielson, L. Engel, E. Finkel, R.M. Fishman, E. Grynasviski, I.L. Hanami, L. Hughes, R. Jedwab, S. Kaplan, M. Kelso, J. Kim, E.J. Kramon, R. Lucea, C. Mylonas, E. Saunders, D. Shaw, R.J. Shepherd, Z. Szajnfarber, C. Talmadge, O. Timoshenko, E. Uretsky, A. Ziegfeld

Research Instructors T. Costa, S.R. Marshall, J. Rothenberg, J.E. Vayman

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

IAFF 1005. Introduction to International Affairs: A Washington Perspective. 4 Credits.
Open only to first-year students in the Elliott School. An introduction to the study of international affairs, integrating material designed to orient students to the Elliott School, the University, and the city of Washington. Students who have transferred into the Elliott School should take PSC 1003 instead of this course. Credit may not be earned for both IAFF 1005 and PSC 1003.

IAFF 2040. Basic Topics in International Affairs. 0-3 Credits.
Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Primarily for Elliott School freshmen and sophomores.

IAFF 2090. Latin America: Problems and Promise. 3 Credits.
An interdisciplinary course in Latin American studies designed to introduce undergraduates to the diverse, rich, and complex history, politics, economy, culture, and society of Latin America.

IAFF 2091. East Asia-Past and Present. 3 Credits.
An interdisciplinary course offering a comprehensive and integrated introduction to the civilizations and present problems of East Asia.

IAFF 2092. Russia and Eastern Europe: An Introduction. 3 Credits.
A multidisciplinary introduction to the lands and cultures of the former Soviet Union and Central and Eastern Europe. The main emphasis is on history and politics, with attention also given to economics, trade, geography, military matters, literature, and the media.

IAFF 2093. Africa: Problems and Prospects. 3 Credits.
Aspects of the environment, culture, and politics as they affect the present and anticipated future of Africa.

IAFF 2094. Europe: International and Domestic Interactions. 3 Credits.
A multidisciplinary view of contemporary Europe, including the E.U. states, other states of Eastern Europe, and Turkey. The widening processes of political, judicial, economic, cultural, and security integration. Prerequisite: IAFF 1005, PSC 1001.

IAFF 2190. Special Topics. 3 Credits.

IAFF 2190W. Special Topics. 3 Credits.

IAFF 3155. Spain in the Modern World. 3 Credits.

IAFF 3171. U.S. Foreign Policy Summer Program. 3-4 Credits.
The institutions and ideas that shape U.S. foreign policy, including the U.S. Congress and administration, foreign embassies, international organizations, think tanks, interest groups, and media outlets. A separate section of the course covers issues of reporting on foreign policy issues. The program has special admission criteria.

IAFF 3179. Special Topics in Science and Technology Policy. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3180. Special Topics in Security Policy. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3180W. Spec Topics in Security Policy. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3181. Special Topics in Conflict Resolution. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3182. Special Topics in Foreign Policy. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3183. Special Topics in Development Policy. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3184. Special Topics in Trade and International Economic Policy. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3185. Special Topics in European and Eurasian Studies. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3186. Special Topics in Asian Studies. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3186W. SpecialTopics in Asian Studies. 0-3 Credits.

IAFF 3187. Special Topics in Latin American and Hemispheric Studies. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3188. Special Topics in Middle East Studies. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3189. Special Topics in African Studies. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3190. Special Topics in International Affairs. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3190W. Special Topics. 0-3 Credits.

IAFF 3192. ESIA Undergraduate Scholars Workshop. 1 Credit.
For Elliott School juniors and seniors who have applied to and been accepted into the ESIA Undergraduate Scholars Program. Students fine-tune their research questions, conduct the bulk of their research, draft abstracts, and outline their papers. See http://elliott.gwu.edu/academics/ugrad/scholars/index.cfm for more information.

IAFF 3193W. ESIA UG Scholars Course. 3 Credits.

IAFF 3195. Internship. 0-3 Credits.
Internships in public, private, and nonprofit organizations concerned with international affairs. Students must meet selection criteria, find a sponsoring faculty member, and receive approval from the Elliott School Office of Academic Advising and Student Services. May be repeated for up to 6 credits with permission.

IAFF 3198. Independent Study and Research. 1-3 Credits.
For juniors and seniors with a minimum grade-point average of 3.0. Students must find a sponsoring faculty member and receive approval from the Elliott School Office of Academic Advising and Student Services. May be repeated for credit with permission of the dean.

IAFF 4191. Research Seminar. 3 Credits.
Intensive readings, discussion, research, and writing. Students must meet selection criteria and receive advisor approval. For Elliott School juniors and seniors only. Restricted to For Elliott School juniors and seniors only.

IAFF 4191W. Research Seminar. 3 Credits.
Intensive readings, discussion, research, and writing. Students must meet selection criteria and receive advisor approval. For Elliott School juniors and seniors only.

IAFF 4199. Senior Thesis. 3 Credits.
For Elliott School seniors only. Students must meet selection criteria, find a sponsoring faculty member, and receive approval from the Elliott School Office of Academic Advising and Student Services.

IAFF 5700. Special Topics. 3 Credits.

IAFF 6101. IA Cornerstone. 3 Credits.
Political, economic, and social theories of international relations and their applications to practice.

IAFF 6102. Global Gender Policy. 3 Credits.
An interdisciplinary and comparative approach to examination of policies targeted at achieving gender equality and of the costs of policies that are not gender-specific. Topics include poverty reduction, environmental sustainability, social justice, global and personal security, and prevention of and responses to extreme calamities and crises. How global gender policies are rationalized, adopted, implemented, and assessed. Focus on "what works" and why it works; gaps that remain in achieving global gender equality.

IAFF 6106. Nuclear Weapons. 3 Credits.
The technology and politics associated with nuclear weapons. Strategy and deterrence, force planning and operations, and the prospect of nuclear terrorism.

IAFF 6118. Special Topics in International Affairs. 3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6121. International Development Studies Cornerstone. 3 Credits.
Introduction to the concepts and methods of international development. Open only to M.A. candidates in international development studies.

IAFF 6122. Development Policy and Practice. 3 Credits.
An overview of economic development in developing countries; key challenges of economic growth, poverty alleviation, and development.

IAFF 6136. Gender and Development. 3 Credits.
Theoretical approaches to gender and development and debates over how to promote gender equity and rights across the gender spectrum. Key issues in gender and development and the range of actors who are involved in promoting gender equality. General patterns, lessons with broader applications, and challenges and differences within and between societies.

IAFF 6137. Development Studies Pre-Capstone Workshop. 1 Credit.
Students work in teams to find a suitable client and negotiate a project, with detailed terms of reference and a work plan to be carried out in the spring semester. Open only to M.A. candidates in international development studies.

IAFF 6138. Special Topics in International Development Studies. 0-3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6139. International Development Studies Capstone. 3 Credits.
A project-oriented development course abroad, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Open only to M.A. candidates in international development studies.

IAFF 6141. International Science and Technology Policy Cornerstone. 3 Credits.
Introduction to the study of international science and technology policy; focus on policy issues that arise from interactions between scientific and technological developments and government activity.

IAFF 6142. Technology Creation/Diffusion. 3 Credits.
Examination of the relationship between invention (inception), innovation (first application), and dissemination (diffusion) of technological knowledge; focus on the technological environment prevailing in the major developed market economies.

IAFF 6145. U.S. Space Policy. 3 Credits.
Origins, evolution, current status, and future prospects of U.S. space policies and programs. U.S. civilian, military, and national security space programs and space activities of the U.S. private sector.

IAFF 6146. Space Law. 3 Credits.
The underlying principles of international space law, with emphasis on issues of particular concern as the uses of space increase for exploration, commerce, and security.

IAFF 6148. Special Topics in Space Policy. 3 Credits.
Topic announced in the Schedule of Classes.

IAFF 6151. Environmental Policy. 3 Credits.
Examination of public policies designed to protect the human and physical environment; focus on the ways science and technology can simultaneously create new environmental problems and contribute to their mitigation and prevention.

IAFF 6153. Science, Technology, and National Security. 3 Credits.
The contributions of science and technology to U.S. security in military, intelligence, and homeland security activities.

IAFF 6158. Special Topics in International Science and Technology Policy. 0-3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6159. ISTP Capstone Project. 3 Credits.
A seminar designed to synthesize the skills and knowledge that students have acquired in their graduate study. Open only to M.A. candidates in science and technology policy.

IAFF 6160. Defense Policy and Program Analysis. 3 Credits.
Examination of how national security policy is formulated and translated into a defense budget, program priorities, and force structure. Focus on nuclear forces.

IAFF 6163. Transnational Security. 3 Credits.
Overview of security concerns that transcend state borders, including terrorism, drug trafficking, organized crime, weapons proliferation, migration, and environmental degradation.

IAFF 6165. Fundamentals of Intelligence. 3 Credits.
The institutional structure of the intelligence community; the intelligence production cycle, including tasking, collection, analysis, covert action, and counterintelligence; and relations between the intelligence and policy communities.

IAFF 6167. DefensePolicy&ProgAnalysis II. 3 Credits.
Analysis of the development of national security policy and analytic techniques to derive a defense program and force structure from it. Special attention to general-purpose forces.

IAFF 6169. Homeland Security. 3 Credits.
The central missions of a homeland security agency: domestic security, emergency preparedness, technology policy, timely intelligence, counterintelligence, and preemptive actions. How the U.S. has dealt historically with internal security matters; contemporary approaches to security problems.

IAFF 6171. Introduction to Conflict Resolution. 3 Credits.
Interstate disputes, contemporary civil wars, complex political emergencies, and other forms of organized violence.

IAFF 6173. Security and Development. 3 Credits.
Consideration of the relationship between security and development reflecting the growing interest from the security field in issues that have traditionally been the purview of development, and vice versa.

IAFF 6186. Special Topics in Security Policy Studies. 3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6189. Security Policy Studies Capstone. 3 Credits.
A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Open only to M.A. candidates in security policy studies.

IAFF 6198. Special Topics in International Trade and Investment Policy. 0-3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6199. International Trade and Investment Policy Capstone. 1 Credit.
A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Open only to M.A. candidates in international trade and investment policy.

IAFF 6208. Special Topics in Global Communication. 0-3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6209. Global Communication Capstone. 3 Credits.
A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Open only to M.A. candidates in global communication.

IAFF 6211. MIPP Practicum. 3 Credits.
For Master of International Policy and Practice degree candidates only.

IAFF 6302. Taiwan: Internal Development and Foreign Policy. 3 Credits.
The social, political, and economic development in Taiwan since World War II; Taiwan's foreign affairs.

IAFF 6305. U.S.-South Asia Relations. 3 Credits.
The nature of challenges and opportunities facing the South Asia region and the U.S. policy response. The rise of India as a global actor; relations between India and Pakistan; political transformation in the countries of the region, including Nepal and Sri Lanka.

IAFF 6308. Intl Relations of South Asia. 3 Credits.

IAFF 6318. Special Topics in Asian Studies. 0-3 Credits.
Topics announced in Schedule of Classes.

IAFF 6321. European and Eurasian Studies Cornerstone. 3 Credits.
Survey of current research on Europe and Eurasia. Research paper required. Required of M.A. candidates in European and Eurasian studies; open to others with permission of the instructor.

IAFF 6338. Special Topics in European and Eurasian Studies. 0-3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6339. European and Eurasian Studies Capstone. 3 Credits.
Survey of current research on Europe and Eurasia. Research paper required. Required of M.A. candidates in European and Eurasian studies; open to others with permission of the instructor.

IAFF 6341. Latin American and Hemispheric Studies Cornerstone. 3 Credits.
Multidisciplinary foundation course for the Latin American and hemispheric studies program.

IAFF 6342. Drug Trafficking in the Americas. 3 Credits.
A historical, comparative, and contemporary picture of drug trafficking in the Americas and the anti-narcotics policies to combat this trade.

IAFF 6343. Indigenous Social Movements. 3 Credits.

IAFF 6357. Pre-Capstone Workshop. 1 Credit.

IAFF 6358. Special Topics in Latin American and Hemispheric Studies. 0-3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6359. Latin American and Hemispheric Studies Capstone. 3 Credits.
A project-oriented course, designed to apply the skills and synthesize the knowledge that students have acquired in their graduate study. Open only to M.A. candidates in Latin American and hemispheric studies.

IAFF 6361. Middle East Studies Cornerstone. 1 Credit.
Multidisciplinary foundation course for the Middle East studies program. Introduction to key issues.

IAFF 6362. RegionalSecurity in MiddleEast. 3 Credits.
The nature, elements, and future of security in the Middle East region. Various analytical frameworks are examined to consider the interplay of national interests, ideology, and regionalism. Issues in regional security.

IAFF 6363. PoliticalEconomy/Middle East. 3 Credits.
Current political economy of the Middle East, including an overview of Islamic economic concepts and political organizations.

IAFF 6364. Religion and Society in the Modern Middle East. 3 Credits.
Comparative overview, both historical and current, of religious and social trends in the Middle East.

IAFF 6378. Special Topics in Middle East Studies. 0-3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6379. Middle East Studies Capstone. 3 Credits.
A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Open only to M.A. candidates in Middle East studies.

IAFF 6501. Quant Analysis Int'l Aff Prac. 3 Credits.
Overview of quantitative measurement, data summary, statistical inference, and elementary modeling such as linear regression.

IAFF 6502. Professional Skills I. 1 Credit.
Short courses that focus on developing specialized skills for international affairs professionals. Topics announced in the Schedule of Classes.

IAFF 6503. Professional Skills II. 1 Credit.
Continuation of IAFF 6502. Short courses that focus on developing specialized skills for international affairs professionals. Topics announced in the Schedule of Classes.

IAFF 6504. Intermediate Conversation. 1 Credit.
Short courses designed to develop professional language skills for international affairs students. Specific languages announced in the Schedule of Classes.

IAFF 6505. Elliott School Seminars. 0-3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6515. Graduate Internship in International Affairs. 0 Credits.
Limited to Elliott School M.A. degree candidates. Internship and research paper involving experience at an international organization or with international issues.

IAFF 6516. Independent Study and Research. 1-3 Credits.
Limited to Elliott School M.A. degree candidates. Written permission of instructor required.

IAFF 6517. Independent Study and Research. 1-3 Credits.

IAFF 6521. U.S. Foreign Policy Summer Program. 3-4 Credits.
The institutions and ideas that shape U.S. foreign policy, including the U.S. Congress and administration, foreign embassies, international organizations, think tanks, interest groups, and media outlets. A separate section of the course covers issues of reporting on foreign policy issues.

IAFF 6898. Capstone Workshop. 1 Credit.
The first part of a two-semester project that addresses a concrete policy problem or issue in international affairs. In small teams, students refine the policy question of the capstone project, develop a research strategy, select appropriate research methods, and begin research.

IAFF 6899. Capstone Course. 3 Credits.
Completion of the capstone sequence by conduct of the group's research, completion of the capstone report, and oral presentation of research findings and recommendations. Prerequisites: IAFF 6898.

IAFF 6998. Thesis. 3 Credits.
Open to Elliott School M.A. candidates who have selected the thesis option.

IAFF 6999. Thesis. 3 Credits.
Open to Elliott School M.A. candidates who have selected the thesis option.

UNDERGRADUATE PROGRAMS

Bachelor's programs

- Bachelor of Arts with a major in Asian studies (p. 709)
- Bachelor of Arts with a major in international affairs (p. 711)
- Bachelor of Arts with a major in Latin American and hemispheric studies (p. 712)
- Bachelor of Arts with a major in Middle East studies (p. 713)

Minors

- Minors (p. 714)

BACHELOR OF ARTS WITH A MAJOR IN ASIAN STUDIES

GENERAL REQUIREMENTS

Curriculum Requirements for the First Two Years

Curriculum requirements that Elliott School students should try to address in their freshman and sophomore years are listed below. Consult the Elliott School Undergraduate General Requirements (http://elliott.gwu.edu/undergraduate-programs/requirements) before choosing courses to fulfill these requirements. Information on credit by examination or waiving curriculum requirements is available from academic advisors in the Elliott School.

As a basis for all Elliott School Bachelor of Arts programs, students take:

Code	Title	Credits
IAFF 1005	Introduction to International Affairs: A Washington Perspective	
ECON 1011	Principles of Economics I *	
ECON 1012	Principles of Economics II *	
PSC 1001	Introduction to Comparative Politics *	
HIST 1011	World History, 1500-Present **	
ANTH 1002	Sociocultural Anthropology *	
or GEOG 1001	Introduction to Human Geography	

UW 1020	University Writing *
One course in mathematics ***	
One course in science (lab required) ***	
Humanities/Creative Arts (9 credits of humanities or 6 credits of humanities plus 3 credits of creative arts courses) ***	
Third year proficiency in a modern foreign language ***	

*These courses satisfy many of the University General Education Requirement (p. 38).
** While HIST 1011 satisfies the university general education requirement in humanities, it does not meet the Elliott School's school-specific requirement for humanities/creative arts. A list of courses that fulfill the humanities and creative arts requirements (p. 38) can be found online.
***Additional university- and school-specific general education courses are required for all Elliott School undergraduates. A list of the courses that fulfill the quantitative reasoning, scientific reasoning, humanities and /or creative arts requirements can be found on the Elliott School Undergraduate Programs website (http://elliott.gwu.edu/undergraduate-programs/supporting-courses).

MAJOR REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Elliott School of International Affairs, Undergraduate Degree Requirements (p. 701).

A list of designated courses that fulfill major requirements can be found on the Asian Studies major webpage (http://elliott.gwu.edu/asian-studies-major). With approval of the advisor or program director, pertinent special topics or other courses may be taken in place of those listed.

Required courses for the major:

IAFF 2091	East Asia-Past and Present
ECON 2151	Economic Development
ECON 2169	Introduction to the Economy of China
ECON 2170	Intro to the Economy of Japan
Three courses from a list of approved history and culture courses	
Two approved courses from the following:	
PSC 2369	Comparative Politics of South Asia
PSC 2370	Comparative Politics of China and Northeast Asia
PSC 2371	Politics and Foreign Policy of China
PSC 2373	Comparative Politics of Southeast Asia
PSC 2374	Politics and Foreign Policy of Japan
PSC 2377	Comparative Politics of the Middle East
PSC 2377W	Comparative Politics of the Middle East
PSC 2379	Politics and Foreign Policy of Israel
PSC 2381	Comparative Politics of Middle and Southern Africa
PSC 2383	Comparative Politics of Latin America
PSC 2439	International Political Economy
PSC 2440	Theories of International Politics
PSC 2442	International Organizations
PSC 2442W	International Organizations
PSC 2444	Public International Law
PSC 2446	U.S. Foreign Policy
PSC 2449	International Security Politics
PSC 2449W	International Security Politics
PSC 2461	European-Atlantic Relations
PSC 2468	Post-Soviet Foreign Policy
PSC 2475	International Relations of East Asia
GEOG 3165	Geography of South Asia
One course in Asian literature	
Three upper-division Asia-related courses selected in consultation with the program director	
The program must include a research methods course and a regional foundation course on a region other than the student's major	
Completion of third-year–level language proficiency in an approved Asian language is required	

BACHELOR OF ARTS WITH A MAJOR IN INTERNATIONAL AFFAIRS

GENERAL REQUIREMENTS

Curriculum Requirements for the First Two Years

Curriculum requirements that Elliott School students should try to address in their freshman and sophomore years are listed below. Consult the Elliott School Undergraduate General Requirements (http://elliott.gwu.edu/undergraduate-programs/requirements) before choosing courses to fulfill these requirements. Information on credit by examination or waiving curriculum requirements is available from academic advisors in the Elliott School.

As a basis for all Elliott School Bachelor of Arts programs, students take:

Code	Title	Credits
IAFF 1005	Introduction to International Affairs: A Washington Perspective	
ECON 1011	Principles of Economics I *	
ECON 1012	Principles of Economics II *	
PSC 1001	Introduction to Comparative Politics *	
HIST 1011	World History, 1500-Present **	
ANTH 1002	Sociocultural Anthropology *	
or GEOG 1001	Introduction to Human Geography	
UW 1020	University Writing *	
One course in mathematics ***		
One course in science (lab required) ***		
Humanities/Creative Arts (9 credits of humanities or 6 credits of humanities plus 3 credits of creative arts courses) ***		
Third year proficiency in a modern foreign language ***		

*These courses satisfy many of the University General Education Requirement (p. 38).
** While HIST 1011 satisfies the university general education requirement in humanities, it does not meet the Elliott School's school-specific requirement for humanities/creative arts. A list of courses that fulfill the humanities and creative arts requirements (p. 38) can be found online.
***Additional university- and school-specific general education courses are required for all Elliott School undergraduates. A list of the courses that fulfill the quantitative reasoning, scientific reasoning, humanities and /or creative arts requirements can be found on the Elliott School Undergraduate Programs website (http://elliott.gwu.edu/undergraduate-programs/supporting-courses).

MAJOR REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Elliott School of International Affairs, Undergraduate Programs (p. 701).

A list of designated courses that fulfill major requirements is at the International Affairs major webpage (http://elliott.gwu.edu/international-affairs-major/fundamentals). With approval of the advisor or program director, pertinent special topics or other courses may be taken in place of those listed.

Requirements for the major:

ECON 2180	Survey of International Economics
or ECON 2181	International Trade Theory and Policy
ECON 2182	International Macroeconomic Theory and Policy
One upper-division course from designated lists for each of the following:	
Research methods (from ANTH, ECON, GEOG, IAFF, PSC, PSYC, PUBH, SOC, STAT)	
International and comparative politics (from PSC or IAFF)	
Historical analysis: U.S. foreign policy (from HIST)	
An ANTH or GEOG course	
Demonstrate third-year proficiency in an appropriate modern foreign language by course work or examination	
Two regional foundational courses covering different regions	
15 credits of additional course work in either a functional or regional concentration:	
Functional concentrations are international politics; international economics; comparative political, economic, and social systems; international development; contemporary cultures and societies; conflict resolution; security policy; global public health; international environmental studies	
Regional concentrations are Africa, Asia, Europe and Eurasia, Latin America, Middle East	

BACHELOR OF ARTS WITH A MAJOR IN LATIN AMERICAN AND HEMISPHERIC STUDIES

GENERAL REQUIREMENTS

Curriculum Requirements for the First Two Years

Curriculum requirements that Elliott School students should try to address in their freshman and sophomore years are listed below. Consult the Elliott School Undergraduate General Requirements (http://elliott.gwu.edu/undergraduate-programs/requirements) before choosing courses to fulfill these requirements. Information on credit by examination or waiving curriculum requirements is available from academic advisors in the Elliott School.

As a basis for all Elliott School Bachelor of Arts programs, students take:

Code	Title	Credits
IAFF 1005	Introduction to International Affairs: A Washington Perspective	
ECON 1011	Principles of Economics I *	
ECON 1012	Principles of Economics II *	
PSC 1001	Introduction to Comparative Politics *	
HIST 1011	World History, 1500-Present **	
ANTH 1002	Sociocultural Anthropology *	
or GEOG 1001	Introduction to Human Geography	
UW 1020	University Writing *	
One course in mathematics ***		
One course in science (lab required) ***		
Humanities/Creative Arts (9 credits of humanities or 6 credits of humanities plus 3 credits of creative arts courses) ***		
Third year proficiency in a modern foreign language ***		

*These courses satisfy many of the University General Education Requirement (p. 38).
** While HIST 1011 satisfies the university general education requirement in humanities, it does not meet the Elliott School's school-specific requirement for humanities/creative arts. A list of courses that fulfill the humanities and creative arts requirements (p. 38) can be found online.
***Additional university- and school-specific general education courses are required for all Elliott School undergraduates. A list of the courses that fulfill the quantitative reasoning, scientific reasoning, humanities and /or creative arts requirements can be found on the Elliott School Undergraduate Programs website (http://elliott.gwu.edu/undergraduate-programs/supporting-courses).

MAJOR REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Elliott School of International Affairs, Undergraduate Degree Requirements (p. 701).

A list of designated courses that fulfill major requirements is at the Latin American and Hemispheric Studies major webpage (http://elliott.gwu.edu/latin-american-studies-major). With approval of the advisor or program director, pertinent Special Topics or other courses may be taken in place of those listed.

Required courses for the major:

IAFF 2090	Latin America: Problems and Promise
ECON 2151	Economic Development
or ECON 2185	Economic History and Problems of Latin America
PSC 2383	Comparative Politics of Latin America
or PSC 2484	International Relations of Latin America
GEOG 3161	Geography of Latin America
One from a list of approved history courses	
One from a list of approved anthropology courses	
One approved course in Latin American literature	
Two additional upper-division courses dealing with Latin American and Hemispheric studies and selected in consultation with the program director:	
Two courses from a list of approved international affairs courses	
A research methods course and a regional foundation course on a region other than the student's major	
Completion of third-year–level language proficiency in the following or another approved foreign language:	
SPAN 2006	Advanced Spanish II
or PORT 2006	Applied Portuguese Grammar

BACHELOR OF ARTS WITH A MAJOR IN MIDDLE EAST STUDIES

GENERAL REQUIREMENTS

Curriculum Requirements for the First Two Years

Curriculum requirements that Elliott School students should try to address in their freshman and sophomore years are listed below. Consult the Elliott School Undergraduate General Requirements (http://elliott.gwu.edu/undergraduate-programs/requirements) before choosing courses to fulfill these requirements. Information on credit by examination or waiving curriculum requirements is available from academic advisors in the Elliott School.

As a basis for all Elliott School Bachelor of Arts programs, students take:

Code	Title	Credits
IAFF 1005	Introduction to International Affairs: A Washington Perspective	
ECON 1011	Principles of Economics I *	
ECON 1012	Principles of Economics II *	
PSC 1001	Introduction to Comparative Politics *	
HIST 1011	World History, 1500-Present **	
ANTH 1002	Sociocultural Anthropology *	
or GEOG 1001	Introduction to Human Geography	
UW 1020	University Writing *	
One course in mathematics ***		
One course in science (lab required) ***		
Humanities/Creative Arts (9 credits of humanities or 6 credits of humanities plus 3 credits of creative arts courses) ***		
Third year proficiency in a modern foreign language ***		

*These courses satisfy many of the University General Education Requirement (p. 38).
** While HIST 1011 satisfies the university general education requirement in humanities, it does not meet the Elliott School's school-specific requirement for humanities/creative arts. A list of courses that fulfill the humanities and creative arts requirements (p. 38) can be found online.
***Additional university- and school-specific general education courses are required for all Elliott School undergraduates. A list of the courses that fulfill the quantitative reasoning, scientific reasoning, humanities and /or creative arts requirements can be found on the Elliott School Undergraduate Programs website (http://elliott.gwu.edu/undergraduate-programs/supporting-courses).

MAJOR REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Elliott School of International Affairs, Undergraduate Degree Requirements (p. 701).

A list of designated courses that fulfill major requirements is at the Middle East Studies major webpage (http://elliott.gwu.edu/middle-east-studies-major). With approval of the advisor or program director, pertinent Special Topics or other courses may be taken in place of those listed.

Required courses for the major:

IAFF 2040	Basic Topics in International Affairs (Middle East) (as a foundation course)
Two of the following:	
HIST 2803	The Ancient Near East and Egypt to 322 B.C.
HIST 2804	History of Ancient Israel
HIST 3060	Modern Jewish History
HIST 3801	Topics in Middle Eastern History
HIST 3810	History of the Middle East to 1800
HIST 3811	The Middle East in the 20th Century
Two of the following:	
PSC 2377	Comparative Politics of the Middle East
PSC 2379	Politics and Foreign Policy of Israel
PSC 2476	The Arab-Israeli Conflict
PSC 2478	International Relations of the Middle East
Two of the following:	
REL 1009	The Hebrew Scriptures
REL 2211	Rabbinic Thought
REL 2401	Islam
REL 3414	Islamic Philosophy and Theology
REL 3431	Sufism (Islamic Mysticism)
REL 3475	Islamic Religion and Art
REL 3481	Women in Islam

One of the following:	
ECON 2136	Environmental and Natural Resource Economics
ECON 2151	Economic Development
ECON 2180	Survey of International Economics
ECON 2181 & ECON 2182	International Trade Theory and Policy and International Macroeconomic Theory and Policy
One of the following literature courses:	
ARAB 3501	Arabic and Arab Identity
ARAB 4001	Genres in Modern Arabic Literature
ARAB 4002	Arabic Narratives Through the Ages
HEBR 4001 & HEBR 4002	Advanced Hebrew Literature I and Advanced Hebrew Literature II
Two additional courses related to the Middle East from any discipline, selected in consultation with the program director	
A research methods course and a regional foundation course on a region other than the student's major	
Completion of third-year–level language proficiency in one of the following:	
ARAB 3301	Modern Arabic Literature
ARAB 3302	Media Arabic
ARAB 3311	Business Arabic
HEBR 3301	Modern Hebrew Fiction
or HEBR 3302	The Israeli Media
PERS 3002	Media Persian

MINORS

Elliott School students may take a minor, such as business, economics, or languages, in other schools of the University.

Students from other schools of the University may take a minor in international affairs in the Elliott School. Contact the Office of Academic Advising (http://elliott.gwu.edu/undergraduate-advising) in the Elliott School.

The minor is 18-21 credits, plus 0-8 credits of foreign language, and consists of the requirements listed below.

Foreign Language Requirement

Students must prove first-year proficiency in a modern foreign language by course work or examination (0-8 credits).

A student who thinks they are beyond the first year of a modern foreign language, but cannot demonstrate this by course work at GW, should contact their Elliott School academic advisor (http://elliott.gwu.edu/academics/ugrad/advising/advisors.cfm).

ITAL 1001	Basic Italian I
ITAL 1002	Basic Italian 2
JAPN 1001	Beginning Japanese I
JAPN 1002	Beginning Japanese II
KOR 1001	Beginning Korean I
KOR 1002	Beginning Korean II
PERS 1001	Beginning Persian I
PERS 1002	Beginning Persian II
SLAV 1001	First-Year Russian I
SLAV 1002	First-Year Russian II
SPAN 1001	
SPAN 1002	
ARAB 1001	Beginning Arabic I
ARAB 1002	Beginning Arabic II
ARAB 1201	Intensive Elementary Arabic I
ARAB 1202	Intensive Elementary Arabic II
CHIN 1001	Beginning Chinese I
CHIN 1002	Beginning Chinese II
FREN 1001	Basic French I
FREN 1002	Basic French II
GER 1001	First-Year German I
GER 1002	First-Year German II
HEBR 1001	Beginning Hebrew I
HEBR 1002	Beginning Hebrew II

Advanced Fundamentals and Regional Foundations

- Anthropology or geography (https://elliott.gwu.edu/international-affairs-minor/#anthro) (3 credits)
- Historical analysis: U.S. foreign policy (https://elliott.gwu.edu/international-affairs-minor/#hist) (3 credits)

- International and comparative politics (https://elliott.gwu.edu/international-affairs-minor/#poli) (3 credits)
- International economics (https://elliott.gwu.edu/international-affairs-minor/#econ) (3 or 6 credits)
- Regional foundations (https://elliott.gwu.edu/international-affairs-minor/#regional) (6 credits)

Anthropology or Geography (3 credits)
Students must complete one course in anthropology or geography that is relevant to international affairs.

Note that ANTH 1002 (http://www.gwu.edu/~bulletin/ugrad/anth.html#1002): Sociocultural Anthropology is a prerequisite to most of the ANTH courses, and GEOG 1001 (http://www.gwu.edu/~bulletin/ugrad/geog.html#1001): Human Geography is a prerequisite to many of the GEOG courses shown below:

Select one:

ANTH 2506	Religion, Myth, and Magic
ANTH 3501	Anthropology of Development
ANTH 3502	Cultural Ecology
ANTH 3503	Psychological Anthropology
ANTH 3504	Illness, Healing, and Culture
ANTH 3506	Politics, Ethnicity, and Nationalism
ANTH 3507	Kinship, Family, and Community
ANTH 3508	Art and Culture
ANTH 3513	Anthropology of Human Rights
ANTH 3601	Language, Culture, and Cognition
GEOG 2110	Climate and Human Ecology
GEOG 2125	Transportation Systems and Networks
GEOG 2127	Population Geography
GEOG 2133	People, Land, and Food
GEOG 2134	Energy Resources
GEOG 2137	Environmental Hazards
GEOG 2141	Cities in the Developing World
GEOG 2145	The Cultural Landscape
GEOG 2146	Political Geography
GEOG 2147	Military Geography
GEOG 2148	Economic Geography
GEOG 3132	Environmental Quality and Management
GEOG 3143	Urban Sustainability
GEOG 3810	Planning Cities

Historical Analysis: U.S. Foreign Policy (3 credits)
Students must complete one course pertaining to the history of the United States as it relates to to contemporary international affairs.

Select one:

HIST 2340	US Diplomatic History
HIST 2710	The United States in Global Context, 1898–Present
AMST 2710	The United States in Global Context, 1898–Present
HIST 3035	The United States and the Wars in Indochina, 1945–1975
HIST 3332	History of American Foreign Policy Since World War II
HIST 3333	History of American Foreign Policy Since World War II

International and Comparative Politics (3 credits)
Students must complete one course pertaining to international political issues and theories from either an international relations or comparative politics perspective.

Note that PSC 1001 (http://www.gwu.edu/~bulletin/ugrad/psc.html#1001): Introduction to Comparative Politics or PSC 1003 (http://www.gwu.edu/~bulletin/ugrad/psc.html#1003): Introduction to International Relations is a prerequisite to the courses below:

Select one:

IAFF 3190	Special Topics in International Affairs (International Law)
IAFF 4191	Research Seminar (International Politics and Security Policy)
PSC 2334	Global Perspectives on Democracy
PSC 2337	Development Politics
PSC 2338	Nationalism
PSC 2439	International Political Economy
PSC 2440	Theories of International Politics
PSC 2442	International Organizations

PSC 2444	Public International Law
PSC 2446	U.S. Foreign Policy
PSC 2449	International Security Politics
PSC 2990	Selected Topics (Ethics in International Affairs)
IAFF 2040	Basic Topics in International Affairs (Ethics in International Affairs)

International Economics (3 or 6 credits)
Students must complete one or two courses pertaining to the theory of international economics.

ECON 1011	Principles of Economics I
ECON 1012	Principles of Economics II
ECON 2180	Survey of International Economics

– OR –

ECON 2181	International Trade Theory and Policy
AND	
ECON 2182	International Macroeconomic Theory and Policy

Regional Foundations (6 credits)
Students must take two courses from the lists below to gain an understanding of two regions of the world outside of the United States. The courses must represent two different regions.

Select two regions:
Africa

ANTH 3708	Anthropology of Africa
GEOG 3164	The Geography of Africa
HIST 3501	Topics: Africa
HIST 3540	West Africa to Independence
IAFF 2093	Africa: Problems and Prospects
IAFF 2190W	Special Topics (North Africa and the World)
IAFF 3189	Special Topics in African Studies (Transnational Justice in Africa)
PSC 2381	Comparative Politics of Sub-Saharan Africa
PSC 2482	African International Politics

Academic advisor approval is required for courses not listed above.

Latin America

ANTH 3702	Anthropology of Latin America
ECON 2185	Economic History and Problems of Latin America
GEOG 3161	Geography of Latin America
HIST 3701	Topics in Latin American History (Latin America and the World since 1820)
HIST 3711	History of Latin America II
IAFF 2090	Latin America: Problems and Promise
IAFF 2190W	Special Topics (Latin American Populism)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Political Economy of Latin America)
PSC 2383	Comparative Politics of Latin America
PSC 2484	International Relations of Latin America

Academic advisor approval is required for courses not listed above.

Asia

ANTH 3704	Cultures of Southeast Asia
ANTH 3705	Anthropology of East Asia
GEOG 3165	Geography of South Asia
HIST 3601	Topics: Asian History (Modern Asia: 1750 to present)
HIST 3640	History of Southeast Asia
HIST 3840	History of Central Asia
IAFF 2091	East Asia-Past and Present
IAFF 3186	Special Topics in Asian Studies (Development issues in Southeast Asia; History and Politics of South Asia; Politics and Conflict of South Asia)
IAFF 3190	Special Topics in International Affairs (Human Rights and Democracy in Southeast Asia)
PSC 2369	Comparative Politics of South Asia
PSC 2373	Comparative Politics of Southeast Asia
PSC 2475	International Relations of East Asia

Academic advisor approval is required for courses not listed above.

Europe and Eurasia

IAFF 2092	Russia and Eastern Europe: An Introduction
IAFF 2094	Europe: International and Domestic Interactions
HIST 1121	The War of Ideas in European and International History, 1750–Present
HIST 3126	European Integration: A History
HIST 3168	Divided and United Germany Since 1945
HIST 3178	The Making of the Modern Balkans
HIST 3601	Topics: Asian History
PSC 2330	Comparative Politics of Western Europe
PSC 2331	Comparative Politics of Central and Eastern Europe

Academic advisor approval is required for courses not listed above.

Middle East

ANTH 3703	Cultures of the Pacific
GEOG 3154	Geography of the Middle East and North Africa
HIST 3801	Topics in Middle Eastern History
HIST 3811	The Middle East in the 20th Century
IAFF 2040	Basic Topics in International Affairs (Middle East: An International Affairs Survey)
IAFF 2190W	Special Topics (Arab Politics; Challenges and Change in the Middle East; Politics and Culture in the Middle East)
IAFF 3188	Special Topics in Middle East Studies (Political Islam)
PSC 2377	Comparative Politics of the Middle East
PSC 2478	International Relations of the Middle East

Academic advisor approval is required for courses not listed above.

GRADUATE PROGRAMS

Master's programs

- Master of Arts in the field of Asian studies (p. 717)
- Master of Arts in the field of European and Eurasian studies (p. 724)
- Master of Arts in the field of global communication (p. 729)
- Master of Arts in the field of international affairs (p. 734)
- Master of Arts in the field of international development studies (p. 747)
- Master of Arts in the field of international science and technology policy (p. 750)
- Master of Arts in the field of international trade and investment policy (p. 751)
- Master of Arts in the field of Latin American and hemispheric studies (p. 752)
- Master of Arts in the field of Middle East studies (p. 753)
- Master of Arts in the field of security policy studies (p. 754)
- Master of International Policy and Practice (p. 756)
- Master of International Studies (p. 756)

Combined programs

- Dual Master of Arts and Master of Public Health (p. 757)
- Joint Master of Arts and Juris Doctor (p. 757)
- Joint Master of Arts and Master of Business Administration (p. 757)

MASTER OF ARTS IN THE FIELD OF ASIAN STUDIES

The Elliott School's Asian Studies degree program trains students to navigate the dynamic environment that is Asia, a continent whose diverse populations drive its changing needs and roles in the global arena. The curriculum prepares students to keep pace with a region on the path to sustained economic development as urban migration and international trade are exploding. Graduates of the program are equipped to address complex diplomatic, economic, security, and cultural issues coupled with an unprecedented rate of growth.

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Prerequisite: a bachelor's degree in a related field and at least two years of study of an appropriate Asian language

The multidisciplinary program requires 40 credits including:

9 credits in core courses
9 credits in regional specialization

9 credits in thematic or professional specialization
9 credits in electives
4 credits in capstone course sequence
Foreign language proficiency (http://elliott.gwu.edu/asian-studies/foreign-language)

All Elliott School master's degree students (except MIPP students) are required to complete the capstone. Those students who wish to complete a thesis must do so in addition to the capstone requirement. Students pursuing a thesis need a minimum of a 3.5 GPA and approval from the faculty member they wish to have serve as their thesis director. Thesis students also need to complete at least one research methods course. Thesis credits will be counted as elective or specialization credits with Program Director approval.

As part of the degree requirements, students must select a regional specialization from the following:

- East Asia;
- South Asia; or
- Southeast Asia

Students must select a thematic or professional specialization from the following:

- Thematic specialization includes:
  - History of Modern Asia;
  - Politics and Policy in Asia;
  - International Relations of Asia;
  - Asian Business and Development; or
  - Culture, Art, and Religions of Asia
- Professional specialization includes:
  - Conflict and Conflict Resolution;
  - International Development;
  - International Economics;
  - Political Economy and Business;
  - International Health Policy;
  - International Organization, Diplomacy, and Globalization;
  - International Security Policy
  - Research Methods; or
  - Science, Technology, and International Affairs

Note: Courses selected for the regional specialization cannot overlap with those taken for thematic or professional specializations.

Program Requirements

Code	Title	Credits
9 credits in core courses		
Two of the following:		
HIST 6601	Topics: Asian History	
PSC 6388	Topics in Comparative Politics	
IAFF 6318	Special Topics in Asian Studies (Asian Business and Development)	
One of the following:		
PSC 6475	International Politics of East Asia	
IAFF 6318	Special Topics in Asian Studies (International Relations of South Asia)	
9 credits in a regional specialization chosen from one of the regional specializations below		
Courses selected for the regional specialization cannot overlap with those taken for thematic or professional specializations.		
9 credits in a thematic or professional specialization as detailed below		
Courses taken for the thematic specialization cannot overlap with those taken for the required regional specialization.		
9 credits in electives		
Students may use additional credits for foreign language or background coursework or one-credit skills courses. The Elliott School's skills courses are designed to supplement substantive graduate coursework with practical skills and knowledge that students need to perform effectively in the workplace. A maximum of three one-credit skills courses may be taken in this M.A. program.		
4 credits in capstone course sequence		
IAFF 6898	Capstone Workshop	
IAFF 6899	Capstone Course	
Foreign Language Proficiency		

Students in the M.A. regional studies programs are required to fulfill their foreign-language requirement by passing a reading and speaking proficiency examination administered by the Elliott School at the currently required level of proficiency. All M.A. regional studies students are required to pass both the reading and speaking parts of the language examination; advanced-level language coursework during or prior to enrollment at GW cannot substitute. Foreign-language proficiency examinations will continue to be offered during the fall and spring semesters. Students may take the examination at any point during their enrollment. Effective immediately, students in all programs (including regional studies) no longer have to wait until the completion of 20 credits to take the proficiency examination. Students will have three opportunities to pass the proficiency examination administered by the Elliott School. Failure to pass the exam for a third time will result in dismissal from the program.

Independent Study

If a core course is not offered during a student's time at GW, or if a student wishes to study a topic on which no course are offered at GW, that student may confer with the director of Asian Studies regarding the possibility of pursuing an independent study with a member of GW's faculty.

Regional Specializations

East Asia Specialization

Code	Title	Credits
Required		
At least three of the following:		
ECON 6269	Economy of China I	
ECON 6271	Economy of Japan	
HIST 6611	Readings Seminar: 20th-Century China	
HIST 6621	Readings Seminar: Modern Japanese History	
HIST 6630	Spec Topics in Korean History (Modern Korea)	
IAFF 6186	Special Topics in Security Policy Studies (The Chinese Military)	
IAFF 6302	Taiwan: Internal Development and Foreign Policy	
LAW 6536	Law of Japan *	
LAW 6543	Law of the People's Repub/Chin *	
PSC 6368	Japanese Politics and Foreign Policy	
PSC 6370	Politics of China I	
PSC 6371	Politics of the PRC 2	
PSC 6372	Foreign Policy of the PRC	
PSC 6373	Political Economy of Industrializing Asia	
PSC 6374	Korean Politics	
PSC 6489	Topics in International Relations (U.S. China Relations)	

South Asia Specialization

Code	Title	Credits
Required		
At least three of the following:		
AH 6270	Special Topics in Art History (Modern Contemporary South Asian Art)	
AH 6270	Special Topics in Art History (Textiles and Politics in South Asia)	
ENGL 6560	Postcolonialism	
HIST 6001	Special Topics (Geography and Politics of Afghanistan and South & Central Asia)	
IAFF 6118	Special Topics in International Affairs (Pakistan and the Radical Islamic Threat)	
IAFF 6318	Special Topics in Asian Studies (International Relations of South Asia)	
IAFF 6318	Special Topics in Asian Studies (Politics of Finance in India and China)	
IAFF 6318	Special Topics in Asian Studies (Society, Culture and Politics of South Asia)	
IAFF 6305	U.S.-South Asia Relations	
PSC 6373	Political Economy of Industrializing Asia	
PSC 6388	Topics in Comparative Politics (Stability and Conflict in South Asia)	
PSC 6388	Topics in Comparative Politics (Politics of Development in South Asia)	
REL 6557	India's Great Epics (The Mahabharata)	
REL 6557	India's Great Epics (The Ramayana)	

Southeast Asia Specialization

Code	Title	Credits
Required		

At least three of the following	
IAFF 6138	Special Topics in International Development Studies (Development Issues in Southeast Asia)
HIST 3035	The United States and the Wars in Indochina, 1945–1975
HIST 6641	Modern Southeast Asia
PSC 6373	Political Economy of Industrializing Asia

Thematic Specializations

History of Modern Asia Specialization

Code	Title	Credits
Required		
At least three of the following:		
HIST 6001	Special Topics (Gender and Subjectivity in East Asia)	
HIST 6001	Special Topics (Japan's Empire and Its Legacies)	
HIST 6611	Readings Seminar: 20th-Century China	
HIST 6621	Readings Seminar: Modern Japanese History	
HIST 6630	Spec Topics in Korean History (Modern Korea)	
HIST 6641	Modern Southeast Asia (Geography and Politics of Afghanistan and South & Central Asia)	

Politics and Policy in Asia Specialization

Code	Title	Credits
Required		
At least three of the following:		
A. Domestic Politics, Foreign Policy and Law		
AH 6270	Special Topics in Art History	
ENGL 6560	Postcolonialism	
IAFF 6302	Taiwan: Internal Development and Foreign Policy	
IAFF 6318	Special Topics in Asian Studies (Society, Culture and Politics of South Asia)	
LAW 6536	Law of Japan *	
LAW 6543	Law of the People's Repub/Chin *	
PSC 6368	Japanese Politics and Foreign Policy	
PSC 6370	Politics of China I	
PSC 6371	Politics of the PRC 2	
PSC 6374	Korean Politics	
B. Security and Military Policy		
IAFF 6118	Special Topics in International Affairs (Pakistan and the Radical Islamic Threat))	
IAFF 6186	Special Topics in Security Policy Studies (The Chinese Military)	
PSC 6388	Topics in Comparative Politics (Stability and Conflict in South Asia)	
PSC 6467	Asian Security	

International Relations of Asia Specialization

Code	Title	Credits
Required		
At least three of the following:		
IAFF 6302	Taiwan: Internal Development and Foreign Policy	
IAFF 6305	U.S.-South Asia Relations	
IAFF 6308	Intl Relations of South Asia	
PSC 6467	Asian Security	
PSC 6372	Foreign Policy of the PRC	
PSC 6475	International Politics of East Asia	
PSC 6489	Topics in International Relations (U.S. China Relations)	

Asian Business and Development Specialization

Code	Title	Credits
Required		
At least three of the following:		
ECON 6269	Economy of China I	
ECON 6271	Economy of Japan	
IAFF 6318	Special Topics in Asian Studies	

PSC 6373	Political Economy of Industrializing Asia
PSC 6388	Topics in Comparative Politics (Politics of Development in South Asia)

Culture, Art, and Religions of Asia Specialization

Code	Title	Credits
Required		
At least three of the following:		
AH 6270	Special Topics in Art History (Modern Contemp South Asian Art)	
AH 6270	Special Topics in Art History (Textiles and Politics in South Asia)	
ENGL 6560	Postcolonialism	
REL 6557	India's Great Epics (The Mahabharata)	
REL 6557	India's Great Epics (The Ramayana)	

Professional Specializations

Conflict and Conflict Resolution Specialization

Code	Title	Credits
Required		
IAFF 6171	Introduction to Conflict Resolution	
Electives		
At least two of the following:		
ANTH 6507	Nationalism and Ethnicity	
GEOG 6224	Seminar:Political Geography	
HIST 6822	Nationalism in the Middle East	
IAFF 6118	Special Topics in International Affairs (Theory and Practice of International Negotiation)	
IAFF 6186	Special Topics in Security Policy Studies (Conflict Mitigation and Resolution in Africa)	
IAFF 6186	Special Topics in Security Policy Studies (Food, Globalization, and Conflict)	
IAFF 6186	Special Topics in Security Policy Studies (The Military and Post-conflict Intervention)	
IAFF 6186	Special Topics in Security Policy Studies (Responses to Terrorism)	
IAFF 6186	Special Topics in Security Policy Studies (War to Peace Transition)	
MGT 6215	Conflict Management and Negotiations	
PPSY 6103	Political Violence and Terrorism	
PSC 6349	International Security Politics	
PSC 6351	Civil-Military Relations	
PSC 6388	Topics in Comparative Politics (Nationalism in Former Soviet Republics)	
PSC 6442	Politics and Practice of International Institutions	
PSC 6444	Politics of International Law	
PSC 6476	The Arab-Israeli Conflict	

International Development Specialization

Code	Title	Credits
Required		
IAFF 6122	Development Policy and Practice	
Elective		
At least two of the following:		
A. Anthropology		
ANTH 6301	The Anthropology of Development	
ANTH 6302	Issues in Development	
ANTH 6331	Research Methods in Development Anthropology	
ANTH 6391	Anthropology and Contemporary Problems	
ANTH 6506	Topics in Medical Anthropology	
ANTH 6507	Nationalism and Ethnicity	
ANTH 6591	Topics in Sociocultural Anthropology	
ECON 6291	Methods of Demographic Analysis	
or GEOG 6291	Methods of Demographic Analysis	
or STAT 6291	Methods of Demographic Analysis	
PPPA 6006	Policy Analysis	

B. Environment

EMSE 6200	Policy Factors in Environmental and Energy Management
GEOG 6222	Seminar: Resources and the Environment
GEOG 6223	Seminar: Population and Health
GEOG 6230	Seminar: Environmental Issues in Development
GEOG 6250	Geographical Perspectives on Development
IAFF 6151	Environmental Policy
PPPA 6066	Environmental Policy
PHIL 6281	Environmental Philosophy and Policy

C. Humanitarian Assistance

EMSE 6305	Crisis and Emergency Management
EMSE 6320	International Disaster Management
GEOG 6224	Seminar:Political Geography
PUBH 6401	Comp Regional Determinants
PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6442	Comparative Global Health Systems
PUBH 6503	Introduction to Public Health Communication and Marketing

D. International Development Management

IBUS 6402	Managing in Developing Countries
PPPA 6025	Ethics and Public Values
PPPA 6057	International Development Administration
PPPA 6058	International Development NGO Management
PPPA 6059	International Development Management Processes and Tools
SMPA 6250	Topics in Media Processes and Institutions ((Media in the Developing World)

E. International Education

EDUC 6100	Experimental Courses (Technology and Development in International Education)
EDUC 6601	International and Comparative Education
EDUC 6602	Regional Studies in International Education
EDUC 6610	Programs and Policies in International Education
EDUC 6620	Strategies and Analysis in International Education
EDUC 6640	Selected Topics in International Education
EDUC 6650	Education and National Development

F. Global Health

ANTH 6505	Medical Anthropology
PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6442	Comparative Global Health Systems
PUBH 6401	Comp Regional Determinants

G. Women and Development

ANTH 6501	Gender and Sexuality
GEOG 6223	Seminar: Population and Health
SOC 6273	The Sex Industry
WSTU 6230	Global Feminisms
WSTU 6270	Seminar: Selected Topics (Global/ Domestic Labor Studies)
WSTU 6270	Seminar: Selected Topics (Global Islamic Feminisms)
WSTU 6270	Seminar: Selected Topics (Women and Entrepreneurial Leadership)
WSTU 6270	Seminar: Selected Topics (Women, Development, and Rights)

International Economics Political Economy and Business Specialization

Code	Title	Credits
Required		
At least three of the following		
ECON 6217	Survey of Economics I	
ECON 6283	Survey of International Trade Theory and Policy	
ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy	
ECON 6295	Special Topics (East European Economies in Comparative Perspective)	
IBUS 6201	International Marketing	
IBUS 6202	Regional Strategy for Multinationals	
IBUS 6301	International Business Finance	
IBUS 6302	Seminar: International Banking	
IBUS 6303	External Development Financing	
IBUS 6305	Global Investment Banking	
IBUS 6306	Seminar: International Financial Markets	
IBUS 6307	International Portfolio Management	
IBUS 6401	International Business Strategy	
IBUS 6403	International Business Negotiations	
IBUS 6404	New Global Competitive Framewk	
IBUS 6405	Legal Aspects of International and Multinational Business	
PSC 6336	Political Economy of Developing Areas	
PSC 6373	Political Economy of Industrializing Asia	
PSC 6439	International Political Economy	

International Health Policy Specialization

Code	Title	Credits
Required		
At least three of the following:		
PUBH 6400	Global Health Frameworks	
PUBH 6435	Global Health Program Development and Implementation	
PUBH 6441	Global Health Organizations and Regulations	
PUBH 6442	Comparative Global Health Systems	

International Organization, Diplomacy, and Globalization Specialization

Code	Title	Credits
Required		
At least three of the following:		
ANTH 6505	Medical Anthropology	
LAW 6534	Law of the European Union *	
PSC 6345	Comparative Foreign Policy	
PSC 6346	The Politics of U.S. Foreign Policy	
PSC 6347	U.S. Foreign Policy Traditions	
PSC 6388	Topics in Comparative Politics **	
PSC 6442	Politics and Practice of International Institutions	
PSC 6444	Politics of International Law	

International Security Policy Specialization

Code	Title	Credits
Required		
PSC 6349	International Security Politics	
Electives		
At least two of the following:		
IAFF 6160	Defense Policy and Program Analysis	
IAFF 6163	Transnational Security	
IAFF 6167	DefensePolicy&ProgAnalysis II	
IAFF 6186	Special Topics in Security Policy Studies (Covert Action and National Security)	
IAFF 6186	Special Topics in Security Policy Studies (Globalization and National Security)	
IAFF 6186	Special Topics in Security Policy Studies (National Security Resources)	
IAFF 6186	Special Topics in Security Policy Studies (Space and National Security)	

IAFF 6186	Special Topics in Security Policy Studies (Terrorism and U.S. Foreign Policy)
IAFF 6186	Special Topics in Security Policy Studies (Weapons Proliferation and Nonproliferation)
IAFF 6338	Special Topics in European and Eurasian Studies (NATO and European Security)
IAFF 6338	Special Topics in European and Eurasian Studies (ransatlantic Security Issues in the 21st Century)
IAFF 6501	Quant Analysis Int'l Aff Prac
PSC 6348	Politics of U.S. National Security Policy
PSC 6351	Civil-Military Relations
PSC 6457	Arms Control & Disarmament

Research Methods Specialization

Code	Title	Credits
Required		
At least three of the following:		
GEOG 2104	Introduction to Cartography and GIS	
HIST 6030	History and Its Uses in International Affairs	
HSCI 2115	Intro Biostatistics-Health Sci	
IAFF 6501	Quant Analysis Int'l Aff Prac	
PPPA 6014	Economics in Policy Analysis	
SOC 6232	Qualitative Methodology: Doing Field Research	

Science, Technology, and International Affairs Specialization

Code	Title	Credits
Required		
At least three of the following:		
ECON 6255	Economics of Technological Change	
IAFF 6122	Development Policy and Practice	
IAFF 6142	Technology Creation/Diffusion	
IAFF 6145	U.S. Space Policy	
IAFF 6148	Special Topics in Space Policy (Issues in U.S. Space Policy)	
IAFF 6151	Environmental Policy	
IAFF 6153	Science, Technology, and National Security	
IAFF 6158	Special Topics in International Science and Technology Policy **	

*Law School courses – Students may, with permission of their advisor, include courses in the GW Law School (http://www.law.gwu.edu) in their major field. Enrolling in a Law School course also requires permission of the Law School dean of students. Students should consult the Elliott School Academic Advising & Student Services (http://elliott.gwu.edu/graduate-advising) office before enrolling in Law School courses.

**Special/Selected Topics courses change often; check the schedule of classes (http://my.gwu.edu/mod/pws) for each semester's offerings. Other "Topics" courses not listed here may, with permission of the program director, be used to fulfill program requirements.

*Law School courses – Students may, with permission of their advisor, include courses in the GW Law School (http://www.law.gwu.edu) in their major field. Enrolling in a Law School course also requires permission of the Law School dean of students. Students should consult the Elliott School Academic Advising & Student Services (http://elliott.gwu.edu/graduate-advising) office before enrolling in Law School courses.

**Special/Selected Topics courses change often; check the schedule of classes (http://my.gwu.edu/mod/pws) for each semester's offerings. Other "Topics" courses not listed here may, with permission of the program director, be used to fulfill program requirements.

For more information, visit the program website (http://elliott.gwu.edu/academics/graduate/asian-studies).

MASTER OF ARTS IN THE FIELD OF EUROPEAN AND EURASIAN STUDIES

In the vast geopolitical realm that stretches from the British Isles to Siberia and from the Nordic regions to the Mediterranean, powerful forces are pushing for political, social, and economic change. The European Union (EU) faces the continuing imperative of balancing supranationalism and national sovereignty, while simultaneously deepening its integrative activities and widening its membership.

EU member states and their neighbors confront a host of domestic challenges ranging from economic reform and

social diversity to terrorism and separatism. Russia and other members of the Commonwealth of Independent States stand at different points along the path of transition from communism to new political institutions. At the same time, a web of political, economic, security, and societal connections increasingly links the various parts of Europe and Eurasia with one another, as well as with the United States, the Islamic world, China, and other parts of the global community. In view of these dynamic interactions, it is essential to study Europe and Eurasia together.

The European and Eurasian Studies (EES) master of arts degree program at the Elliott School of International Affairs provides an interdisciplinary approach to understanding these important regions. The EES curriculum combines several required courses with a wide variety of additional courses and optional fields that can be selected to suit an individual student's professional goals and intellectual interests. This multifaceted program encompasses academic approaches to European and Eurasian affairs and develops practical analytical skills that are essential in the professional world of international affairs.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (https://elliott.gwu.edu/european-and-eurasian-studies) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 40 credits, including:

3 credits of cornerstone courses
3 credits of international economics courses
15 credits of core courses
9 credits of professional specialization
1 credit skills workshop
6 credits of electives
3 credits of capstone course sequence
Foreign language proficiency (http://elliott.gwu.edu/european-and-eurasian-studies/foreign-language)

All Elliott School master's degree students (except MIPP students) are required to complete the capstone. Those students who wish to complete a thesis must do so in addition to the capstone requirement. Students pursuing a thesis must have a minimum of a 3.5 GPA and approval from the faculty member whom they wish to serve as their thesis director. Thesis students also need to complete at least one research methods course. Thesis credits are counted as elective or specialization credits with Program Director approval.

As part of the degree requirements, students must select a professional specialization from the following:

- Academics
- European and Eurasian Cultures
- International Economics, Political Economy and Business
- International Education
- International Health Policy and Programs
- International Organization, Diplomacy and Globalization
- International Security Policy
- Science, Technology and International Affairs

Program Requirements

Code	Title	Credits
3 credits of cornerstone courses		
IAFF 6321	European and Eurasian Studies Cornerstone	
3 credits of international economics courses		
One of the following:		
ECON 6280	Survey of International Economics	
ECON 6283	Survey of International Trade Theory and Policy	
ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy	
15 credits of core courses		
At least two courses from each section:		
Section A: Western, Central, Southeastern and Eastern Europe		
HIST 6001	Special Topics (British Atlantic World)	
HIST 6001	Special Topics (Atlantic History)	
HIST 6042	Seminar: World War II	
HIST 6050	Modernization, Imperialism, Globalization	
HIST 6101	Topics: Europe	
HIST 6120	Sem:Early Modern European Hist	
HIST 6121	Rdg/Rsch Sem:Mod European Hist	
HIST 6128	Europe and the World, 1500–Present	
HIST 6133	English People and Institutions	
HIST 6135	British Imperialism	
HIST 6170	Eastern European History I	
HIST 6171	Eastern European History II	
IAFF 6338	Special Topics in European and Eurasian Studies (The European Union)	

IAFF 6338	Special Topics in European and Eurasian Studies (Turkey's Place in Europe)
IAFF 6378	Special Topics in Middle East Studies (Turkish Politics and Society)
IAFF 6505	Elliott School Seminars
PSC 6360	Western European Politics
PSC 6362	Nation-Building in the Balkans
PSC 6361	Politics of European Integration
PSC 6364	Comparative Governments and Politics of Central And Eastern Europe
PSC 6465	The International Politics of Central and Eastern Europe
Section B: Post-Soviet/Post-communist Countries	
EDUC 6602	Regional Studies in International Education
HIST 6001	Special Topics (Central Asian History)
HIST 6001	Special Topics (History of the Russian and Soviet Empires)
HIST 6030	History and Its Uses in International Affairs (only section reserved for EES)
HIST 6180	History of Modern Russia and the Soviet Union
HIST 6185	Sem: Russian & Soviet Thought
HIST 6188	The Soviet Union and the World, 1917–1991
IAFF 6338	Special Topics in European and Eurasian Studies (Nationalism in Russia and Eurasia)
IAFF 6338	Special Topics in European and Eurasian Studies (Ukraine and Georgia: Between Russia and the West)
IAFF 6338	Special Topics in European and Eurasian Studies (Central Asia: Security Politics, Society)
IAFF 6338	Special Topics in European and Eurasian Studies (Politics of Post-Soviet Eurasia)
IAFF 6338	Special Topics in European and Eurasian Studies (History and Politics of the Caucasus)
IAFF 6338	Special Topics in European and Eurasian Studies (Security in Russia and Eurasia)
PSC 6333	Comparative Politics of Russia and Eurasia
PSC 6366	Government and Politics of Russia

9 credits of professional specialization

Three courses selected from one professional specialization field as listed below

Students may design their own field with the approval of the Program Director, or select one of the following fields:

1 credit skills workshop

IAFF 6502/6503	Professional Skills I

6 credits of electives

3 credits of capstone course sequence

IAFF 6339	European and Eurasian Studies Capstone

Foreign Language Proficiency

Students in the regional studies M.A. programs are required to be proficient in a modern foreign language that is used in their region of study to receive the degree. They must fulfill this foreign-language requirement by passing both the reading and the speaking proficiency examinations administered by the Elliott School at a level required by the academic program. Advanced-level language coursework during or prior to enrollment at GW cannot substitute. Foreign-language proficiency examinations will be offered during the fall and spring semesters. Students may take the examination at any point during their enrollment and will have three opportunities to pass the proficiency examination administered by the Elliott School. Failure to pass the exam for a third time will result in dismissal from the program.

NOTE: When a student's native language is not English, and is not a language used in their region of study (for example a student who is a native speaker of Chinese in the Middle East Studies program), that student must still demonstrate proficiency in a modern language used in their region of study by passing the Elliott School language proficiency examination. Students in the European and Eurasian Studies M.A. program may take any major European language other than English.

Professional Specializations

Academics Specialization

Code	Title	Credits
This field is designed for students who plan to pursue a doctoral degree in Economics, History, Political Science or some other discipline. With the advice of the Program Director and other faculty members, students choose three courses that will enhance their qualifications for admission into a Ph.D. program.		

European & Eurasian Cultures Specialization

Code	Title	Credits
Required		
At least three of the following:		
At least two courses must be foreign-language based, not in English. All courses listed below are undergraduate courses and will require extra work for graduate credit, to be arranged with the instructor and the Program Director.		
FREN 3550	Studies in 20th-Century French Literature (in French)	
FREN 3600	Special Topics in French Literature (in French)	
FREN 4600	Special Topics in French Literature (in French)	
FREN 3700	History of French Cinema (in French)	
GER 2161	German Culture–in English I (in English)	
GER 2162	German Culture–in English II (in English)	
GER 3181	History of German Cinema–in English (in English)	
GER 3183	Berlin Before & After the Wall (in English)	
GER 3184	German Thought - in English (in English)	
GER 3186	German Women Writers of the 19th and 20th Centuries (in German)	
GER 4175	Literature of two Germanies (in German)	
ITAL 4560	Modern Italian Novel (in Italian)	
SLAV 2015	Readings in the Russian Press I (in Russian)	
SLAV 2365	20th-Century Russian Literature to World War II (in English)	
SLAV 2366	Russian Literature from World War II to the Present (in English)	
SLAV 2473	20th-Century Russian Prose (in Russian)	
SLAV 2474	20th-Century Russian Poetry (in Russian)	
SLAV 2785	Introduction to Russian Cinema I (in English)	
SLAV 2786	Introduction to Russian Cinema II (in English)	
SPAN 3400	Theatre of Spain and Latin America (in Spanish)	
SPAN 3600	Special Topics (in Spanish)	
SPAN 3700	Cinema of Spain and Latin America (in Spanish)	
SPAN 4540	The Myth of the Two Spains (in Spanish)	

International Economics, Political Economy and Business Specialization

Code	Title	Credits
Required		
At least three of the following:		
ECON 6217	Survey of Economics I	
ECON 6283	Survey of International Trade Theory and Policy	
ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy	
ECON 6295	Special Topics (East European Economies in Comparative Perspective)	
IBUS 6201	International Marketing	
IBUS 6202	Regional Strategy for Multinationals	
IBUS 6301	International Business Finance	
IBUS 6302	Seminar: International Banking	
IBUS 6303	External Development Financing	
IBUS 6305	Global Investment Banking	
IBUS 6306	Seminar: International Financial Markets	
IBUS 6307	International Portfolio Management	
IBUS 6401	International Business Strategy	
IBUS 6403	International Business Negotiations	

IBUS 6404	New Global Competitive Framewk
IBUS 6405	Legal Aspects of International and Multinational Business
PSC 6439	International Political Economy

International Education Specialization

Code	Title	Credits
Required		
At least three of the following:		
EDUC 6601	International and Comparative Education	
EDUC 6602	Regional Studies in International Education	
EDUC 6610	Programs and Policies in International Education	
EDUC 6630	International Experiences	
EDUC 6631	Internship: International Education	
EDUC 6640	Selected Topics in International Education	
EDUC 6650	Education and National Development	

International Health Policy and Programs Specialization

Code	Title	Credits
Required		
At least three of the following:		
PUBH 6264	Quantitative Methods	
PUBH 6400	Global Health Frameworks	
PUBH 6435	Global Health Program Development and Implementation	
PUBH 6441	Global Health Organizations and Regulations	
PUBH 6442	Comparative Global Health Systems	

International Organization, Diplomacy and Globalization Specialization

Code	Title	Credits
Required		
At least three of the following:		
ANTH 6505	Medical Anthropology	
LAW 6534	Law of the European Union	
PSC 6442	Politics and Practice of International Institutions	
PSC 6444	Politics of International Law	
PSC 6345	Comparative Foreign Policy	
PSC 6346	The Politics of U.S. Foreign Policy	
PSC 6347	U.S. Foreign Policy Traditions	
PSC 8388	Selected Topics in Comparative Politics (Theories of Nationalism) *	
PSC 8388	Selected Topics in Comparative Politics (Comparative Social Policy) *	

International Security Policy Specialization

Code	Title	Credits
Required		
At least three of the following:		
IAFF 6160 and IAFF 6167 are strongly recommended		
IAFF 6160	Defense Policy and Program Analysis	
IAFF 6163	Transnational Security	
IAFF 6167	DefensePolicy&ProgAnalysis II	
IAFF 6186	Special Topics in Security Policy Studies (National Security Resources)	
IAFF 6186	Special Topics in Security Policy Studies (Terrorism and U.S. Foreign Policy)	
IAFF 6186	Special Topics in Security Policy Studies (Globalization and National Security)	
IAFF 6186	Special Topics in Security Policy Studies (Space and National Security)	
IAFF 6186	Special Topics in Security Policy Studies (Weapons Proliferation and Nonproliferation)	
IAFF 6186	Special Topics in Security Policy Studies (Covert Action and National Security)	
IAFF 6338	Special Topics in European and Eurasian Studies (Transatlantic Security Issues in the 21st Century)	
IAFF 6338	Special Topics in European and Eurasian Studies (NATO and European Security)	

IAFF 6501	Quant Analysis Int'l Aff Prac
PSC 6348	Politics of U.S. National Security Policy
PSC 6349	International Security Politics
PSC 6351	Civil-Military Relations
PSC 6457	Arms Control & Disarmament

Science, Technology, and International Affairs Specialization

Code	Title	Credits
Required		
At least three of the following:		
ECON 6255	Economics of Technological Change	
IAFF 6121	International Development Studies Cornerstone	
IAFF 6122	Development Policy and Practice	
IAFF 6145	U.S. Space Policy	
IAFF 6151	Environmental Policy	
IAFF 6153	Science, Technology, and National Security	
IAFF 6158	Special Topics in International Science and Technology Policy	
IAFF 6343	Indigenous Social Movements	

For more information including the thesis option (http://elliott.gwu.edu/european-and-eurasian-studies/thesis-option), visit the program website. (http://elliott.gwu.edu/european-and-eurasian-studies)

MASTER OF ARTS IN THE FIELD OF GLOBAL COMMUNICATION

Offered jointly by GW's Elliott School of International Affairs and the Columbian College of Arts and Sciences' School of Media and Public Affairs (http://www.gwu.edu/~smpa) (SMPA), the master of arts in the field of global communication degree program combines the Elliott School's academic excellence in international affairs with SMPA's strengths as a school of communication and journalism. The graduate program trains students to understand the complex global information environment; its implications for governance, security, and business; and how to communicate effectively to global audiences.

A core curriculum focuses on communication, international politics, international economics, and research methods. Required skills courses cover topics such as developing communication strategies, cross-cultural communication, public speaking, and editing. Students also choose one of twelve specializations to build expertise on a major world region or global issue. In the final year, a capstone course tests students' ability to address a real-world problem using the skills and knowledge acquired during their course of study. The rigorous academic program prepares students both intellectually and professionally for exciting careers in the public, private, and nonprofit sectors.

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Prerequisite: a bachelor's degree in a related field, with introductory macro- and microeconomics and at least two years of a modern foreign language

The program requires 40 credits including:

15 credits in core courses
9 credits in specialization
3 credits in skills courses
9 credits in electives
4 credits in capstone course sequence
Foreign language proficiency

All Elliott School master's degree students (except MIPP students) are required to complete the capstone. Those students who wish to complete a thesis must do so in addition to the capstone requirement. Students pursuing a thesis need a minimum of a 3.5 GPA and approval from the faculty member they wish to serve as their thesis director. Thesis students also need to complete at least one research methods course. Thesis credits will be counted as elective or specialization credits with Program Director approval.

Core Courses

15 credits in core courses

SMPA 6210	Media & Foreign Policy
SMPA 6241	Research Design
IAFF 6101	IA Cornerstone
ECON 6280	Survey of International Economics
or ECON 6250	Survey of Economic Development
One of the following:	
SMPA 6202	Media Effects, Public Opinion, and Persuasion
SMPA 6204	Strategic Political Communication

HIST 6030	History and Its Uses in International Affairs

Global Issues Specializations

9 credits in specialization

Specialization determined in consultation with director within either the global issues specialization or the regional focus specialization, all nine credits must taken in one subtopic; the exception is the international development (see below). The following course lists are meant as suggestions only and are not exhaustive.

Communication and Information Technology in International Affairs Specialization

Required

Nine credits from the following:	
ECON 6255	Economics of Technological Change
IAFF 6142	Technology Creation/Diffusion
IAFF 6151	Environmental Policy
IAFF 6153	Science, Technology, and National Security
IAFF 6158	Special Topics in International Science and Technology Policy
IAFF 6501	Quant Analysis Int'l Aff Prac
LAW 6412	Communications Law
LAW 6414	Develpmnt in Telecomm Law
PPPA 6018	Public Policy, Governance, and the Global Market
PSPR 6201	Public Relations Principles and Practices
PSPR 6204	Media Relations in the New Media World
PSPR 6208	Integrated Marketing Communications
SMPA 6250	Topics in Media Processes and Institutions (Information, Media and National Security)
SMPA 6250	Topics in Media Processes and Institutions (Changing Media Technology)
SMPA 6250	Topics in Media Processes and Institutions (International Communication)
SMPA 6250	Topics in Media Processes and Institutions (Electronic Media Policy)
SMPA 6250	Topics in Media Processes and Institutions (Public Affairs and Government Information)

Conflict and Conflict Resolution Specialization

Required

Nine credits from the following:	
ANTH 6507	Nationalism and Ethnicity
GEOG 6224	Seminar:Political Geography
HIST 6822	Nationalism in the Middle East
IAFF 6118	Special Topics in International Affairs (Ethics and International Politics)
IAFF 6118	Special Topics in International Affairs (Nation Building: Theory and Practice)
IAFF 6118	Special Topics in International Affairs (Religion and International Affairs)
IAFF 6118	Special Topics in International Affairs (Reinventing the United Nations)
IAFF 6118	Special Topics in International Affairs (Theory and Practice of International Negotiations)
IAFF 6186	Special Topics in Security Policy Studies (Food, Globalization, and Conflict)
IAFF 6186	Special Topics in Security Policy Studies (Military and Post-Conflict Intervention)
IAFF 6186	Special Topics in Security Policy Studies (Responses to Terrorism)
IAFF 6186	Special Topics in Security Policy Studies (War to Peace Transition)
MGT 6215	Conflict Management and Negotiations
PPSY 6103	Political Violence and Terrorism
PSC 6442	Politics and Practice of International Institutions
PSC 6444	Politics of International Law
PSC 6349	International Security Politics
PSC 6351	Civil-Military Relations
PSC 6476	The Arab-Israeli Conflict

PSC 8388	Selected Topics in Comparative Politics (Nationalism in Former Soviet Republics)
SMPA 6250	Topics in Media Processes and Institutions (Race, Media and Politics)

Global Gender Policy Specialization

Required

Nine credits from the following:	
ANTH 6501	Gender and Sexuality
IAFF 2190W	Special Topics
IAFF 3183	Special Topics in Development Policy (Human Trafficking)
IAFF 6102	Global Gender Policy
IAFF 6122	Development Policy and Practice
IAFF 6136	Gender and Development
PHIL 6238	Feminist Ethics and Policy Implications
PSYC 8275	Women and Health
SMPA 6205	Media, Development, and Globalization
SOC 6265	Women, Welfare & Poverty
SOC 6268	Race, Gender and Class
SOC 6271	Gender and Society
SOC 6273	The Sex Industry
WSTU 6225	Contemporary Feminist Theory
WSTU 6230	Global Feminisms
WSTU 6240	Women and Public Policy
WSTU 6257	Gender and Sexuality
WSTU 6265	Women, Welfare & Poverty
WSTU 6266	Gender & Criminal Justice
WSTU 6268	Race, Gender and Class
WSTU 8275	Women and Health

Global Health Specialization

Required

Nine credits from the following:	
ANTH 6302	Issues in Development
ANTH 6505	Medical Anthropology
ANTH 6591	Topics in Sociocultural Anthropology
ECON 6248	Health Economics
GEOG 6223	Seminar: Population and Health
PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6435	Global Health Program Development and Implementation
PUBH 6437	Global Health Program Evaluation
PUBH 6442	Comparative Global Health Systems
PUBH 6503	Introduction to Public Health Communication and Marketing

International Development Specialization

Required

Nine credits from among any combination of the following subtopics:	
Anthropology	
ANTH 6301	The Anthropology of Development
ANTH 6302	Issues in Development
ANTH 6331	Research Methods in Development Anthropology
ANTH 6391	Anthropology and Contemporary Problems
ANTH 6505	Medical Anthropology
ANTH 6507	Nationalism and Ethnicity
ANTH 6591	Topics in Sociocultural Anthropology
ECON 6291	Methods of Demographic Analysis
GEOG 6291	Methods of Demographic Analysis
STAT 6291	Methods of Demographic Analysis
PPPA 6006	Policy Analysis
PPPA 6002	Research Methods and Applied Statistics
PPPA 6016	Public and Nonprofit Program Evaluation
PSPR 6204	Media Relations in the New Media World

PSPR 6208	Integrated Marketing Communications
SOC 6230	Sociological Research Methods
SOC 6232	Qualitative Methodology: Doing Field Research
Environment	
EMSE 6200	Policy Factors in Environmental and Energy Management
IAFF 6151	Environmental Policy
GEOG 6222	Seminar: Resources and the Environment
GEOG 6223	Seminar: Population and Health
GEOG 6230	Seminar: Environmental Issues in Development
GEOG 6250	Geographical Perspectives on Development
PPPA 6066	Environmental Policy
PHIL 6281	Environmental Philosophy and Policy
Humanitarian Assistance	
EMSE 6305	Crisis and Emergency Management
EMSE 6320	International Disaster Management
GEOG 6224	Seminar:Political Geography
PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6442	Comparative Global Health Systems
PUBH 6503	Introduction to Public Health Communication and Marketing
International Development Management	
IBUS 6402	Managing in Developing Countries
PPPA 6025	Ethics and Public Values
PPPA 6057	International Development Administration
PPPA 6058	International Development NGO Management
PPPA 6059	International Development Management Processes and Tools
PPPA 6016	Public and Nonprofit Program Evaluation
PPPA 6018	Public Policy, Governance, and the Global Market
SMPA 6250	Topics in Media Processes and Institutions (Media in the Developing World)
International Education	
EDUC 6100	Experimental Courses (Technology and Development in International Education)
EDUC 6601	International and Comparative Education
EDUC 6602	Regional Studies in International Education
EDUC 6610	Programs and Policies in International Education
EDUC 6620	Strategies and Analysis in International Education
EDUC 6640	Selected Topics in International Education
EDUC 6650	Education and National Development
Global Health	
ANTH 6505	Medical Anthropology
PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6442	Comparative Global Health Systems
PUBH 6503	Introduction to Public Health Communication and Marketing
Political Economy	
ECON 6250	Survey of Economic Development
ECON 6269	Economy of China I
ECON 6285	Economic Development of Latin America
ECON 6295	Special Topics (Industrial and Technology Policy in Developing Countries)
IBUS 6404	New Global Competitive Framewk
IBUS 6403	International Business Negotiations
PSC 6439	International Political Economy
PSC 6442	Politics and Practice of International Institutions

PSC 8388	Selected Topics in Comparative Politics (Politics of Development)
PSPR 6208	Integrated Marketing Communications
Women and Development	
ANTH 6501	Gender and Sexuality
GEOG 6223	Seminar: Population and Health
SOC 6273	The Sex Industry
WSTU 6230	Global Feminisms
WSTU 6270	Seminar: Selected Topics (Global/ Domestic Labor Studies)
WSTU 6270	Seminar: Selected Topics (Global Islamic Feminisms)
WSTU 6270	Seminar: Selected Topics (Women and Entrepreneurial Leadership)
WSTU 6270	Seminar: Selected Topics (Women, Development, and Rights)

International Economic Affairs Specialization

Required

Nine credits from the following:	
ECON 6250	Survey of Economic Development
ECON 6255	Economics of Technological Change
ECON 6269	Economy of China I
ECON 6271	Economy of Japan
ECON 6285	Economic Development of Latin America
ECON 6295	Special Topics (Economic Analysis of International Trade Law)
ECON 6295	Special Topics (International Economic Integration)
ECON 6295	Special Topics (Industrial and Technology Policy in Developing Countries)
ECON 6295	Special Topics (Economics of the European Union)
ECON 6295	Special Topics (Economics of U.S. Trade Policy)
ECON 6295	Special Topics (Economics of U.S. Trade Law)
ECON 6295	Special Topics (Emerging Market Financial Crises)
IAFF 6138	Special Topics in International Development Studies (U.S Aid and Trade in the Developing World)
IAFF 6318	Special Topics in Asian Studies (Political Economy of South Asia)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Political Economy of Latin America)
IBUS 6301	International Business Finance
IBUS 6302	Seminar: International Banking
IBUS 6303	External Development Financing
IBUS 6306	Seminar: International Financial Markets
IBUS 6404	New Global Competitive Framewk
IBUS 6405	Legal Aspects of International and Multinational Business
PSC 6439	International Political Economy

3 credits in skills courses

IAFF 6502	Professional Skills I
or IAFF 6503	Professional Skills II

In one of the following topics:

Cross Cultural Communication
Developing Communication Strategies
Formal Briefing
Introduction to Editing
Negotiating Skills
Op-Ed Writing Skills
Public Speaking
Writing for International Affairs Professionals

9 credits in electives

Courses relating to international affairs or communication, with approval of the program director.

4 credits in capstone course sequence

IAFF 6898	Capstone Workshop
IAFF 6899	Capstone Course

Alternative capstone option

The traditional capstone model specifically designed for Global Communication student is completed over one semester

through the development of a strategic communication plan for an external client. Students must take an additional professional skills course (total of 4 skills courses) to complete their degree through this option.

Foreign Language Proficiency

Completion of the M.A. in Global Communication requires a demonstrated oral and reading proficiency in a modern foreign language (http://elliott.gwu.edu/global-communication/foreign-language).

Fore more information on areas of specialization in global issues (http://elliott.gwu.edu/global-communication/global-issues) or regional fields (http://elliott.gwu.edu/global-communication/regional-fields), skills courses (http://elliott.gwu.edu/graduate-course-descriptions/professional-skills), or capstone options (http://elliott.gwu.edu/global-communication/capstone) visit the program website (http://elliott.gwu.edu/global-communication).

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS

The Elliott School's master of arts in the field of international affairs degree program is designed to provide students with a broad understanding of the contemporary issues in international affairs as they develop in-depth knowledge of at least one or more areas of specialization. For their concentration, students may choose from among several fields of global issues or one of the regions of the world. Graduates of the program have pursued exciting careers in diplomacy and public service, business, security, conflict resolution, development, and public health.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs). (http://www.gwu.edu/all-graduate-programs)

Visit the program website (https://elliott.gwu.edu/international-affairs-masters) for additional information.

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Prerequisite: a bachelor's degree in a related field, including introductory micro- and macroeconomics and at least two years of undergraduate study of a modern foreign language.

The multidisciplinary program requires 40 credits including:

9-12 credits in core field
12 credits in major field
9-12 credits in electives
3 credits in skills courses
4 credits in capstone course sequence

Foreign language proficiency (http://elliott.gwu.edu/international-affairs-masters/foreign-language)

All Elliott School master's degree students (except MIPP students) are required to complete the capstone. Those students who wish to complete a thesis must do so in addition to the capstone requirement. Students pursuing a thesis need a minimum of a 3.5 GPA and approval from the faculty member they wish to serve as their thesis director. Thesis students also need to complete at least one research methods course. Thesis credits will be counted as elective or specialization credits with Program Director approval.

Program Requirements

Code	Title	Credits
9-12 credits in core field courses		
IAFF 6101	IA Cornerstone	
HIST 6030	History and Its Uses in International Affairs	
Either		
ECON 6280	Survey of International Economics	
And three additional elective or major field credits		
Or		
ECON 6283 & ECON 6284	Survey of International Trade Theory and Policy and Survey of International Macroeconomics and Finance Theory and Policy	
12 credits in either a Global Issues or Regional Focus major field (as outlined below)		
9-12 credits in electives		
May include up to 6 credits of foreign language study, a second field of expertise, or other relevant course work		
Students are strongly encouraged to take IAFF 6501 (or its equivalent)		
3 credits in skills courses		
Skill-based professional workshops (1 credit each)		
4 credits in capstone course sequence		
IAFF 6898 & IAFF 6899	Capstone Workshop and Capstone Course	
Thesis option		

Three credits of electives may be used to pursue a thesis. To propose a thesis, a student must have a GPA of a least a 3.5 after completing 20 credit hours in the M.A. program. The thesis subject must be approved in advance by a faculty member who has agreed to direct the thesis, a second faculty member who will servce as an additional reader, and the Program Director. Thesis requirements are outlined in full in the Graduate Bulletin. Students must take an additional professional skills course (total of 4 skills courses) to complete their degree through this option

Global Issues Major Fields

Conflict and Conflict Resolution Concentration

Code	Title	Credits
Required		
IAFF 6171	Introduction to Conflict Resolution	
Electives		
9 additional credits from the following:		
IAFF 6118	Special Topics in International Affairs (International Law and the Use of Force)	
IAFF 6118	Special Topics in International Affairs (Reinventing the United Nations)	
IAFF 6118	Special Topics in International Affairs (National Security & Humanitarian Law)	
IAFF 6118	Special Topics in International Affairs (US Foreign Policy and International Organizations)	
IAFF 6138	Special Topics in International Development Studies	
IAFF 6186	Special Topics in Security Policy Studies (Conflict Prevention and Early Warning)	
IAFF 6186	Special Topics in Security Policy Studies (Insurgency and Counterinsurgency)	
IAFF 6186	Special Topics in Security Policy Studies (International Peacekeeping)	
IAFF 6186	Special Topics in Security Policy Studies (Politics of Peace Agreements)	
IAFF 6186	Special Topics in Security Policy Studies (Security Challenges in Africa)	
IAFF 6186	Special Topics in Security Policy Studies (Stabilization and Peacebuilding)	
IAFF 6318	Special Topics in Asian Studies (Political and Ethnic Conflict in South Asia)	
PSC 6476	The Arab-Israeli Conflict	
Up to two relevant courses in the GW Law School (requires permission from the Law School dean of students)*		

Global Energy and Environmental Policy Concentration

Code	Title	Credits
Required		
IAFF 6158	Special Topics in International Science and Technology Policy	
ECON 6295	Special Topics	
IAFF 6151	Environmental Policy	
PPPA 6066	Environmental Policy	
Electives		
6 credits from the following:		
ECON 6237	Economics of the Environment and Natural Resources	
EMSE 6260	Energy Management	
EMSE 6290	Climate Change: Policy, Impact	
ENRP 6140	Introduction to Environmental Law	
IAFF 6118	Special Topics in International Affairs (Managing the World's Water)	
IAFF 6138	Special Topics in International Development Studies (Climate Change and Community Development)	
IAFF 6141	International Science and Technology Policy Cornerstone	
IAFF 6186	Special Topics in Security Policy Studies (Environmental Security)	
IAFF 6186	Special Topics in Security Policy Studies (Energy Security)	
IAFF 6198	Special Topics in International Trade and Investment Policy (International Climate Change Policy)	
IAFF 6378	Special Topics in Middle East Studies (Oil: Industry, Economy, Society)	
IAFF 6501	Quant Analysis Int'l Aff Prac	
IBUS 4900	Special Topics (Global Energy)	
LAW 6454	International Environmentl Law	
LAW 6455	Int'l Climate Change Law	

LAW 6460	Envir&Energy Policy Practicum
PUBH 6122	Protecting Public Health and the Environment: Policies, Politics, and Programs
PUBH 6130	Sustainable Energy and the Environment

Global Gender Policy Concentration

Code	Title	Credits
Required		
IAFF 6102	Global Gender Policy	
IAFF 6118	Special Topics in International Affairs (Research Methods in Global Gender Issues if not selected as part of core requirement)	
Or three one-credit skills classes		
IAFF 6502	Professional Skills I	
IAFF 6503	Professional Skills II	
One additional skills class on a variety of topics, with approval of the program director		
No more than a total of four skills courses can be applied to a graduate degree.		
Electives		
6 additional credits from the following:		
ANTH 6501	Gender and Sexuality	
IAFF 6118	Special Topics in International Affairs (Research Methods in Global Gender Issues)	
IAFF 6118	Special Topics in International Affairs (Women, War, and Peace)	
IAFF 6136	Gender and Development	
IAFF 6138	Special Topics in International Development Studies (Gender, Tourism, and Development)	
IAFF 6138	Special Topics in International Development Studies (Gender, Disaster & Policy)	
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)	
IAFF 6138	Special Topics in International Development Studies (Violence, Gender & Humanitarian Assistance)	
PHIL 6238	Feminist Ethics and Policy Implications	
PSYC 8275	Women and Health	
SOC 6271	Gender and Society	
SOC 6273	The Sex Industry	
WSTU 6230	Global Feminisms	
Students may take ONE undergraduate class for graduate credit with permission from the program director, academic advisor, and instructor (who must agree to assign additional work) at the graduate level:		
IAFF 2190W	Special Topics (Women in Global Politics)	
IAFF 3183	Special Topics in Development Policy (Human Trafficking)	

Global Health Concentration

Code	Title	Credits
Required		
PUBH 6400	Global Health Frameworks	
ANTH 6505	Medical Anthropology	
Electives		
9 additional credits from the following:		
GEOG 6223	Seminar: Population and Health	
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6440	Global Health Economics and Finance	
PUBH 6441	Global Health Organizations and Regulations	
PUBH 6435	Global Health Program Development and Implementation	
PUBH 6436	Global Health Program Management and Leadership	
PUBH 6443	Global Health Agreements and Conventions	
PUBH 6480	Public Health in Complex Emergencies	
PUBH 6482	International Food and Nutrition Policy	

International Affairs and Development Concentration

Code	Title	Credits
Required		
One of the following:		
IAFF 6122	Development Policy and Practice	
ECON 6250	Survey of Economic Development	
IAFF 6138	Special Topics in International Development Studies (Poverty Alleviation and Bottom Up Development)	
Electives		
9 additional credits from the following:		
Culture, Society and Development		
ANTH 6301	The Anthropology of Development	
ANTH 6508	Ethics and Cultural Property	
ANTH 6507	Nationalism and Ethnicity	
ANTH 6391	Anthropology and Contemporary Problems (Refugees and Displaced People)	
ANTH 6505	Medical Anthropology	
ANTH 6501	Gender and Sexuality	
IAFF 6138	Special Topics in International Development Studies (Indigenous People and Development)	
IAFF 6138	Special Topics in International Development Studies (Gender and Development)	
ANTH 6591	Topics in Sociocultural Anthropology	
ANTH 6591	Topics in Sociocultural Anthropology	
ANTH 6702	Issues in Latin American Anthropology	
GEOG 6223	Seminar: Population and Health	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Indigenous Social Movements)	
SOC 6273	The Sex Industry	
Economic Development Policy		
ECON 6221	Economics in Policy Analysis	
ECON 6237	Economics of the Environment and Natural Resources	
ECON 6250	Survey of Economic Development	
ECON 6269	Economy of China I	
ECON 6270	Economy of China II	
ECON 6271	Economy of Japan	
ECON 6283	Survey of International Trade Theory and Policy	
ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy	
ECON 6285	Economic Development of Latin America	
ECON 8358	Urban Economics	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Political Economy in Latin America)	
PSC 6373	Political Economy of Industrializing Asia	
Gender and Development		
ANTH 6501	Gender and Sexuality	
GEOG 6223	Seminar: Population and Health	
IAFF 6138	Special Topics in International Development Studies (Gender and Development)	
IAFF 6138	Special Topics in International Development Studies (Gender, Disaster and Policy)	
SOC 6273	The Sex Industry	
WSTU 6230	Global Feminisms	
WSTU 6270	Seminar: Selected Topics (Global/ Domestic Labor Studies)	
WSTU 6270	Seminar: Selected Topics (Gender and Islamic Activism)	
Global Health		
ANTH 6302	Issues in Development	
ANTH 6505	Medical Anthropology	
ANTH 6591	Topics in Sociocultural Anthropology	
GEOG 6223	Seminar: Population and Health	

PUBH 6400	Global Health Frameworks (strongly recommended)
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6440	Global Health Economics and Finance
PUBH 6442	Comparative Global Health Systems
PUBH 6443	Global Health Agreements and Conventions
PUBH 6480	Public Health in Complex Emergencies
PUBH 6482	International Food and Nutrition Policy
Humanitarian Assistance	
ANTH 6505	Medical Anthropology
EMSE 6305	Crisis and Emergency Management
EMSE 6320	International Disaster Management
EMSE 6325	Medical and Public Health Emergency Management
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)
IAFF 6138	Special Topics in International Development Studies (Violence, Gender, Humanitarian Assistance)
LAW 6540	Refugee and Asylum Law **
Institutions and Politics	
PSC 6230	Comparative Govt & Politics 1
PSC 6336	Political Economy of Developing Areas
PSC 6373	Political Economy of Industrializing Asia
PSC 6383	Comparative Politics of Latin America
PSC 6439	International Political Economy
PSC 6442	Politics and Practice of International Institutions
PSC 6476	The Arab-Israeli Conflict
PSC 8334	Democracy and Democratization in Comparative Perspective
PSC 8337	Theories of Political Development
PSC 8388	Selected Topics in Comparative Politics
IAFF 6138	Special Topics in International Development Studies (Development in Africa)
IAFF 6138	Special Topics in International Development Studies (Democracy and Governance Development)
International Business	
IBUS 6404	New Global Competitive Framewk
IBUS 6401	International Business Strategy
IBUS 6402	Managing in Developing Countries
IBUS 6301	International Business Finance
MBAD 6241	Global Perspectives
MGT 6291	Entrepreneurship
International Development Management	
PPPA 6057	International Development Administration
PPPA 6058	International Development NGO Management
PPPA 6059	International Development Management Processes and Tools
PPPA 6016	Public and Nonprofit Program Evaluation
International Education	
EDUC 6601	International and Comparative Education
EDUC 6602	Regional Studies in International Education
EDUC 6610	Programs and Policies in International Education
EDUC 6620	Strategies and Analysis in International Education
EDUC 6640	Selected Topics in International Education
EDUC 6650	Education and National Development
Natural Resources and the Environment	
ECON 6237	Economics of the Environment and Natural Resources
EMSE 6220	Environmental Management
GEOG 6223	Seminar: Population and Health

GEOG 6244	Urban Sustainability
GEOG 6261	Geographical Perspectives on Latin America
IAFF 6138	Special Topics in International Development Studies (Climate Change and Sustainable Development)
IAFF 6151	Environmental Policy
LAW 6454	International Environmentl Law **
PPPA 6066	Environmental Policy
SMPP 6210	Strategic Environmental Management

International Economic Affairs Concentration

Code	Title	Credits
Required		
Students must take ECON 6283 and ECON 6284 to satisfy the core field requirement		
Students must demonstrate proficiency in introductory statistics by having taken a satisfactory undergraduate course an equivalent course at USDA or STAT 1051, 1053, 1111 or IAFF 6501		
At least 6 credits from the following:		
PPPA 6014	Economics in Policy Analysis	
PPPA 6015	Benefit-Cost Analysis	
ECON 6237	Economics of the Environment and Natural Resources	
ECON 6250	Survey of Economic Development	
ECON 6255	Economics of Technological Change	
ECON 6269	Economy of China I	
ECON 6271	Economy of Japan	
ECON 6285	Economic Development of Latin America	
ECON 6292	Topics in International Trade (Economics of U.S. Trade Policy)	
ECON 6292	Topics in International Trade (Technology Trade & the Multinational Firm)	
ECON 6293	Topics in International Finance	
ECON 6295	Special Topics	
ECON 6295	Special Topics	
Electives		
Remaining credits selected from the following:		
IAFF 6142	Technology Creation/Diffusion	
IAFF 6198	Special Topics in International Trade and Investment Policy	
IAFF 6198	Special Topics in International Trade and Investment Policy	
IAFF 6318	Special Topics in Asian Studies	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Migration, Remittances, and Development in Latin America)	
IAFF 6378	Special Topics in Middle East Studies	
IBUS 6202	Regional Strategy for Multinationals	
IBUS 6297	International Management Experience	
IBUS 6301	International Business Finance	
IBUS 6405	Legal Aspects of International and Multinational Business	
PSC 6439	International Political Economy	
Recommended skills courses		
IAFF 6502	Professional Skills I (Analyzing International Economic Data)	
IAFF 6502	Professional Skills I (Developing Trade Policy Options)	
IAFF 6502	Professional Skills I (Financial Statement Analysis)	
IAFF 6502	Professional Skills I (Micro-Enterprise Lending)	
IAFF 6502	Professional Skills I (Nuts and Bolts of U.S. Trade Policy)	
IAFF 6503	Professional Skills II (The Art and Practice of Global Investing)	
IAFF 6503	Professional Skills II (Negotiating Skills)	
IAFF 6503	Professional Skills II (Understanding the U.S. Federal Budget)	
MBAD 6211	Financial Accounting	
MBAD 6234	Financial Management	

Only one MBAD skills course can be used within the International Affairs degree

International Law and Organizations Concentration

Required	
IAFF 6118	Special Topics in International Affairs (International Organizations and International Norm)
IAFF 6118	Special Topics in International Affairs (National Security & Humanitarian Law)
IAFF 6118	Special Topics in International Affairs (Reinventing the United Nations)
IAFF 6118	Special Topics in International Affairs (US Foreign Policy and International Organizations)
IAFF 6138	Special Topics in International Development Studies (Care of Children in Complex Emergencies)
IAFF 6138	Special Topics in International Development Studies (Global Food Security)
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)
IAFF 6186	Special Topics in Security Policy Studies (Non-State Actors)
IAFF 6186	Special Topics in Security Policy Studies (Politics of Peace Agreements)
IAFF 6198	Special Topics in International Trade and Investment Policy (International Climate Change Policy)
IAFF 6338	Special Topics in European and Eurasian Studies (European Union Foreign Policy)
IAFF 6338	Special Topics in European and Eurasian Studies (Transatlantic Relations in the 21st Century)
IAFF 6999	Thesis
LAW 6386	**
LAW 6520	International Law **
LAW 6534	Law of the European Union **
PSC 6439	International Political Economy
PSC 6444	Politics of International Law

International Security Studies Concentration

Code	Title	Credits
Required		
PSC 6349	International Security Politics	
Electives		
9 credits from the following:		
Courses are grouped into issues areas to help guide students in choosing appropriate coursework; students do not necessarily need to select one concentration, however, what is important is that there is a logic and believable narrative to their course choices. Students should consult their major field faculty advisor to help with this determination.		
Transnational Security Issues		
ANTH 6507	Nationalism and Ethnicity	
IAFF 6158	Special Topics in International Science and Technology Policy (Cyber Security)	
IAFF 6163	Transnational Security	
IAFF 6165	Fundamentals of Intelligence	
IAFF 6169	Homeland Security	
IAFF 6186	Special Topics in Security Policy Studies (Civil War, Insurgency and Terrorism)	
IAFF 6186	Special Topics in Security Policy Studies (Environmental Security)	
IAFF 6186	Special Topics in Security Policy Studies (International Organized Crime)	
IAFF 6186	Special Topics in Security Policy Studies (Non-State Actors)	
IAFF 6186	Special Topics in Security Policy Studies (Political Risk Analysis)	
IAFF 6186	Special Topics in Security Policy Studies (Psychology of Stragetic Terrorism)	
IAFF 6186	Special Topics in Security Policy Studies (Responses to Terrorism)	
IAFF 6186	Special Topics in Security Policy Studies (Space and National Security)	
IAFF 6186	Special Topics in Security Policy Studies (Weapons Proliferation and Non-Proliferation)	
IAFF 6342	Drug Trafficking in the Americas	

LAW 6552	Law of War **
PPSY 6103	Political Violence and Terrorism
Intelligence	
IAFF 6138	Special Topics in International Development Studies
IAFF 6165	Fundamentals of Intelligence
IAFF 6163	Transnational Security
IAFF 6186	Special Topics in Security Policy Studies (Defense Trade in the 21st Century)
IAFF 6186	Special Topics in Security Policy Studies (Energy and National Security)
IAFF 6186	Special Topics in Security Policy Studies (Environmental Security)
IAFF 6186	Special Topics in Security Policy Studies (Global Terrorism)
IAFF 6186	Special Topics in Security Policy Studies (Intelligence in the Middle East)
IAFF 6186	Special Topics in Security Policy Studies (International Organized Crime)
IAFF 6186	Special Topics in Security Policy Studies (Responses to Terrorism)
IAFF 6186	Special Topics in Security Policy Studies (Weapons Proliferation and Nonproliferation)
PPSY 6101	Fundamentals of Political Psychology
PPSY 6103	Political Violence and Terrorism
U.S. National Security Policy and Process	
PSC 6348	Politics of U.S. National Security Policy
HIST 6330	Modern U.S. Foreign Policy
IAFF 6118	Special Topics in International Affairs
IAFF 6165	Fundamentals of Intelligence
IAFF 6175	Nuclear Weapons
IAFF 6186	Special Topics in Security Policy Studies (Energy and National Security)
IAFF 6186	Special Topics in Security Policy Studies (National Security Priorities)
IAFF 6186	Special Topics in Security Policy Studies (Political Risk Analysis)
IAFF 6186	Special Topics in Security Policy Studies (Strategic Planning for the 21st Century)
IAFF 6186	Special Topics in Security Policy Studies (Terrorism and U.S. Foreign Policy)
IAFF 6521	U.S. Foreign Policy Summer Program
LAW 6386	National Security Law **
PSC 6346	The Politics of U.S. Foreign Policy
Political Psychology	
PPSY 6101	Fundamentals of Political Psychology
PPSY 6102	Political Psychology Research Methods
PPSY 6103	Political Violence and Terrorism
IAFF 6186	Special Topics in Security Policy Studies (Responses to Terrorism)
IAFF 6186	Special Topics in Security Policy Studies (Political Risk Analysis)
IAFF 6186	Special Topics in Security Policy Studies (Psychology of Strategic Terrorism)
Conflict and Conflict Resolution	
IAFF 6171	Introduction to Conflict Resolution
IAFF 6118	Special Topics in International Affairs (International Law and the Use of Force)
IAFF 6118	Special Topics in International Affairs (Reinventing the United Nations)
IAFF 6173	Security and Development
IAFF 6186	Special Topics in Security Policy Studies (Civil War, Insurgency, and Terrorism)
IAFF 6186	Special Topics in Security Policy Studies (Early Warning and Conflict Prevention)
IAFF 6186	Special Topics in Security Policy Studies (Insurgency and Counterinsurgency)
IAFF 6186	Special Topics in Security Policy Studies (International Peacekeeping)
IAFF 6186	Special Topics in Security Policy Studies (Politics of Peace Agreements)
IAFF 6186	Special Topics in Security Policy Studies (Post Conflict Reconstruction and Stabilization)
IAFF 6186	Special Topics in Security Policy Studies (Responses to Terrorism)

IAFF 6186	Special Topics in Security Policy Studies (Security Challenges in Africa)
IAFF 6186	Special Topics in Security Policy Studies (War and Conflict in Africa)
IAFF 6318	Special Topics in Asian Studies (Political and Ethnic Conflict in South Asia)
Homeland Security	
IAFF 6169	Homeland Security
IAFF 6158	Special Topics in International Science and Technology Policy (Cyber Security)
IAFF 6158	Special Topics in International Science and Technology Policy (Security, Privacy and Technology)
IAFF 6186	Special Topics in Security Policy Studies (Intelligence and Homeland Security)
IAFF 6186	Special Topics in Security Policy Studies (International Organized Crime)
IAFF 6186	Special Topics in Security Policy Studies (National Security Priorities)
IAFF 6186	Special Topics in Security Policy Studies (Political Risk Analysis)
IAFF 6186	Special Topics in Security Policy Studies (Responses to Terrorism)
IAFF 6186	Special Topics in Security Policy Studies (Science, Technology, and National Security)
IAFF 6186	Special Topics in Security Policy Studies (Weapons Proliferation and Nonproliferation)
IAFF 6163	Transnational Security
IAFF 6165	Fundamentals of Intelligence
Strategic Concepts and Military History	
HIST 6040	Topics in Modern Military and Naval History
HIST 6042	Seminar: World War II
HIST 6051	Re-thinking Cold War History
HIST 6330	Modern U.S. Foreign Policy
IAFF 6186	Special Topics in Security Policy Studies (Insurgency and Counterinsurgency)
IAFF 6186	Special Topics in Security Policy Studies (Strategic Planning for the 21st Century)
PSC 6476	The Arab-Israeli Conflict
PSC 8489	Selected Topics in International Politics
Science, Technology, and National Security Policy	
IAFF 6141	International Science and Technology Policy Cornerstone
IAFF 6145	U.S. Space Policy
IAFF 6151	Environmental Policy
IAFF 6158	Special Topics in International Science and Technology Policy (Cyber Security)
IAFF 6158	Special Topics in International Science and Technology Policy (Space and National Security)
IAFF 6175	Nuclear Weapons
IAFF 6186	Special Topics in Security Policy Studies (Science, Technology, and National Security)
IAFF 6186	Special Topics in Security Policy Studies (Energy and Security)
IAFF 6186	Special Topics in Security Policy Studies (New Proliferation Dynamics)
Security and Development	
IAFF 6138	Special Topics in International Development Studies (Care of Children in Complex Emergencies)
IAFF 6138	Special Topics in International Development Studies (Food, Globalization, and Security)
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)
IAFF 6138	Special Topics in International Development Studies (Violence, Gender, and Humanitarian Assistance)
IAFF 6171	Introduction to Conflict Resolution
IAFF 6173	Security and Development
IAFF 6186	Special Topics in Security Policy Studies (Civil War, Insurgency and Terrorism)
IAFF 6186	Special Topics in Security Policy Studies (Early Warning and Conflict Prevention)
IAFF 6186	Special Topics in Security Policy Studies (Insurgency and Counterinsurgency)

IAFF 6186	Special Topics in Security Policy Studies (Post Conflict Reconstruction)
IAFF 6186	Special Topics in Security Policy Studies (War and Conflict in Africa)
IAFF 6198	Special Topics in International Trade and Investment Policy (Corruption, Development & Governance)
IAFF 6318	Special Topics in Asian Studies (Political and Ethnic Conflict in South Asia)
PPSY 6103	Political Violence and Terrorism
PSC 8336	The Political Economy of Developing Areas
PSC 8489	Selected Topics in International Politics (Ethnic Conflict)
Weapons of Mass Destruction	
IAFF 6175	Nuclear Weapons
IAFF 6186	Special Topics in Security Policy Studies (Space and National Security)
IAFF 6186	Special Topics in Security Policy Studies (Weapons Proliferation and Nonproliferation)
Regional Security	
Four courses which focus on the security issues within a region; general policy courses are not applicable. Please consult with the program director/advisor to develop a regional security field.	

Nuclear Policy Concentration

Code	Title	Credits
Required		
IAFF 6106	Nuclear Weapons	
IAFF 6186	Special Topics in Security Policy Studies (Nuclear Proliferation and Non Proliferation)	
IAFF 6186	Special Topics in Security Policy Studies (Nuclear Security Policy)	
IAFF 6186	Special Topics in Security Policy Studies (The Science of Nuclear Materials)	
Other courses not listed above may be substituted with program director approval		

Technology Policy and International Affairs Concentration

Code	Title	Credits
Required		
IAFF 6141	International Science and Technology Policy Cornerstone	
9 additional credits from the following:		
ECON 6255	Economics of Technological Change	
IAFF 6142	Technology Creation/Diffusion	
IAFF 6145	U.S. Space Policy	
IAFF 6151	Environmental Policy	
IAFF 6158	Special Topics in International Science and Technology Policy	
IAFF 6186	Special Topics in Security Policy Studies (Science, Technology and National Security)	
IAFF 6501	Quant Analysis Int'l Aff Prac	

U.S. Foreign Policy Concentration

Code	Title	Credits
Required		
At least one of the following:		
HIST 6330	Modern U.S. Foreign Policy	
IAFF 6521	U.S. Foreign Policy Summer Program	
PSC 6346	The Politics of U.S. Foreign Policy	
PSC 6347	U.S. Foreign Policy Traditions	
PSC 6348	Politics of U.S. National Security Policy	
Electives		
Remaining credits selected from the following:		
ECON 6292	Topics in International Trade	
HIST 6032	Rdg/Rsch Sem:Strategy & Policy	
HIST 6320	Readings/Research Seminar: Recent U.S. History	
HIST 6320	Readings/Research Seminar: Recent U.S. History	
HIST 6321	Readings/Research Seminar: Recent U.S. History	

IAFF 6118	Special Topics in International Affairs (Public Diplomacy)
IAFF 6145	U.S. Space Policy
IAFF 6148	Special Topics in Space Policy (Space and National Security)
IAFF 6158	Special Topics in International Science and Technology Policy (IT Policy)
IAFF 6158	Special Topics in International Science and Technology Policy (Science, Technology, and Energy Policy)
IAFF 6163	Transnational Security
IAFF 6165	Fundamentals of Intelligence
IAFF 6186	Special Topics in Security Policy Studies (National Security Resources)
IAFF 6186	Special Topics in Security Policy Studies (Covert Action and National Security)
IAFF 6186	Special Topics in Security Policy Studies (Insurgency and Counterinsurgency)
IAFF 6186	Special Topics in Security Policy Studies (Responses to Terrorism)
IAFF 6186	Special Topics in Security Policy Studies (Non-Proliferation Dynamics)
IAFF 6186	Special Topics in Security Policy Studies (Science, Technology and National Security)
IAFF 6198	Special Topics in International Trade and Investment Policy
IAFF 6208	Special Topics in Global Communication (Public Diplomacy)
IAFF 6378	Special Topics in Middle East Studies (U.S. Foreign Policy in the Gulf)
IAFF 6378	Special Topics in Middle East Studies (U.S. Security Policy in the Middle East)
IAFF 6505	Elliott School Seminars (Forward Engagement)
PSC 6349	International Security Politics
PSC 6439	International Political Economy

Regional Focus Major Fields

Africa Concentration

Code	Title	Credits
Required		
At least two of the following:		
ANTH 6391	Anthropology and Contemporary Problems	
HIST 6502	Western Representations of Africa	
IAFF 6118	Special Topics in International Affairs (Politics of East Africa and the Horn)	
IAFF 6118	Special Topics in International Affairs (Rising China in Africa)	
IAFF 6138	Special Topics in International Development Studies (Development in Africa)	
IAFF 6186	Special Topics in Security Policy Studies (Security Challenges in Africa)	
IAFF 6186	Special Topics in Security Policy Studies (War and Conflict in Africa)	
PSC 8388	Selected Topics in Comparative Politics	
Electives		
Remaining credits selected from the following:		
ANTH 6301	The Anthropology of Development	
ANTH 6391	Anthropology and Contemporary Problems	
ECON 6250	Survey of Economic Development	
ECON 6237	Economics of the Environment and Natural Resources	
IAFF 6122	Development Policy and Practice	
IAFF 6138	Special Topics in International Development Studies (Climate Change and Sustainable Development)	
IAFF 6138	Special Topics in International Development Studies (Development in Conflict Zones)	
IAFF 6138	Special Topics in International Development Studies (Gender and Development)	
IAFF 6138	Special Topics in International Development Studies (Humanitarian Assistance)	

IAFF 6171	Introduction to Conflict Resolution
IAFF 6186	Special Topics in Security Policy Studies (International Peacekeeping)
IAFF 6186	Special Topics in Security Policy Studies (Politics of Peace Agreements)
IBUS 6402	Managing in Developing Countries
PSC 8489	Selected Topics in International Politics
PSC 8334	Democracy and Democratization in Comparative Perspective
PUBH 6480	Public Health in Complex Emergencies

Asia Concentration

Code	Title	Credits
Required		
Four courses from at least three of the following groups:		
Group 1: History of Modern Asia		
HIST 6001	Special Topics (Gender and Subjectivity in East Asia)	
HIST 6001	Special Topics (Geography and Politics of Afghanistan and South & Central Asia)	
HIST 6601	Topics: Asian History (History, Memory and Violence in Modern Asia: 1850–present)	
HIST 6611	Readings Seminar: 20th-Century China	
HIST 6621	Readings Seminar: Modern Japanese History	
HIST 6630	Spec Topics in Korean History (Modern Korea)	
HIST 6641	Modern Southeast Asia	
Group 2: Politics and Policy in Asia		
A. Domestic Politics, Foreign Policy and Law		
AH 6270	Special Topics in Art History (Textiles and Politics in South Asia)	
ENGL 6560	Postcolonialism	
IAFF 6302	Taiwan: Internal Development and Foreign Policy	
IAFF 6318	Special Topics in Asian Studies (Politics of Finance in India and China)	
LAW 6536	Law of Japan	
LAW 6543	Law of the People's Repub/Chin	
PSC 6336	Political Economy of Developing Areas	
PSC 6368	Japanese Politics and Foreign Policy	
PSC 6370	Politics of China I	
PSC 6371	Politics of the PRC 2	
PSC 6374	Korean Politics	
PSC 6388	Topics in Comparative Politics	
B. Security and Military Policy		
IAFF 6118	Special Topics in International Affairs (Pakistan and the Radical Islamic Threat)	
IAFF 6186	Special Topics in Security Policy Studies (The Chinese Military)	
IAFF 6318	Special Topics in Asian Studies (Political and Ethnic Conflict in South Asia)	
PSC 6467	Asian Security	
PSC 8388	Selected Topics in Comparative Politics (Stability and Conflict in South Asia)	
Group 3: International Relations of Asia		
HIST 6301	Topics: U.S. History	
IAFF 6302	Taiwan: Internal Development and Foreign Policy	
IAFF 6305	U.S.-South Asia Relations	
IAFF 6318	Special Topics in Asian Studies (International Relations of South Asia)	
PSC 6372	Foreign Policy of the PRC	
PSC 6467	Asian Security	
PSC 6475	International Politics of East Asia	
PSC 8489	Selected Topics in International Politics	
Group 4: Asian Business and Development		
ECON 6269	Economy of China I	
ECON 6271	Economy of Japan	
IAFF 6318	Special Topics in Asian Studies (Politics of Finance in India and China)	
PSC 6336	Political Economy of Developing Areas	

PSC 6373	Political Economy of Industrializing Asia
PSC 8388	Selected Topics in Comparative Politics (Politics of Development in South Asia)

Europe, Eurasia, and Russia Concentration

Code	Title	Credits
Required		
At least one course from each group		
Group A. Western, Central and Eastern Europe		
HIST 6042	Seminar: World War II	
HIST 6050	Modernization, Imperialism, Globalization	
HIST 6051	Re-thinking Cold War History	
HIST 6101	Topics: Europe	
HIST 6120	Sem:Early Modern European Hist	
HIST 6121	Rdg/Rsch Sem:Mod European Hist	
HIST 6128	Europe and the World, 1500–Present	
HIST 6133	English People and Institutions	
HIST 6170	Eastern European History I	
HIST 6171	Eastern European History II	
IAFF 6338	Special Topics in European and Eurasian Studies (The European Union)	
IAFF 6338	Special Topics in European and Eurasian Studies (Transatlantic Relations in the 21st Century)	
IAFF 6338	Special Topics in European and Eurasian Studies (European Union Foreign Policy)	
PSC 6360	Western European Politics	
PSC 6361	Politics of European Integration	
PSC 6364	Comparative Governments and Politics of Central And Eastern Europe	
PSC 6465	The International Politics of Central and Eastern Europe	
PSC 8388	Selected Topics in Comparative Politics	
Group B. Russia and Eurasia		
EDUC 6602	Regional Studies in International Education (Education, Transformation, and the Former Soviet Union)	
HIST 6001	Special Topics (Central Asian History)	
HIST 6001	Special Topics (History of the Russian and Soviet Empires)	
HIST 6180	History of Modern Russia and the Soviet Union	
HIST 6185	Sem: Russian & Soviet Thought	
HIST 6188	The Soviet Union and the World, 1917–1991	
IAFF 6138	Special Topics in International Development Studies (Post-Soviet Democracy Development)	
IAFF 6338	Special Topics in European and Eurasian Studies (Turkey's Place in Europe)	
IAFF 6338	Special Topics in European and Eurasian Studies	
IAFF 6338	Special Topics in European and Eurasian Studies (History and Politics of the Caucuses)	
IAFF 6338	Special Topics in European and Eurasian Studies (Security in Russia/ Eurasia)	

Latin America Concentration

Code	Title	Credits
Required		
At least two of the following:		
Any 6000-level Anthropology course approved by the Program Director		
ECON 6285	Economic Development of Latin America	
GEOG 6261	Geographical Perspectives on Latin America	
GEOG 6293	Special Topics	
IAFF 2190W	Special Topics (may be completed for graduate credit with completion of extra work and permission from the major field faculty advisor)	

IAFF 3187	Special Topics in Latin American and Hemispheric Studies (may be completed for graduate credit with completion of extra work and permission from the major field faculty advisor)
IAFF 6341	Latin American and Hemispheric Studies Cornerstone
IAFF 6342	Drug Trafficking in the Americas
IAFF 6343	Indigenous Social Movements
IAFF 6358	Special Topics in Latin American and Hemispheric Studies
PSC 6383	Comparative Politics of Latin America
PSC 6484	International Relations of Latin America
PUBH 6401	Comp Regional Determinants

Middle East Concentration

Code	Title	Credits
Required		
PSC 6377	Comparative Politics of the Middle East	
PSC 6478	International Relations of the Middle East	
Electives		
Six credits from the following:		
ANTH 6707	Issues in Middle East Anthropology	
GEOG 6293	Special Topics	
HIST 6001	Special Topics (History of the Modern Middle East)	
IAFF 6363	PoliticalEconomy/Middle East	
IAFF 6364	Religion and Society in the Modern Middle East	
IAFF 6378	Special Topics in Middle East Studies (Iraq and Iran)	
IAFF 6378	Special Topics in Middle East Studies (Lebanon and Syria)	
IAFF 6378	Special Topics in Middle East Studies (Politics of North Africa)	
IAFF 6378	Special Topics in Middle East Studies (Politics and Religion in Post-Revolutionary Iran)	
IAFF 6378	Special Topics in Middle East Studies (U.S. Policy in the Gulf)	

*Students should consult the Elliott School Academic Advising & Student Services office before enrolling in Law School courses

**Law School course – Students may, with permission of their advisor, include courses in the GW Law School (http://www.law.gwu.edu) in their major field. Enrolling in a Law School course also requires permission of the Law School dean of students. Students should consult the Elliott School Academic Advising & Student Services (http://elliott.gwu.edu/graduate-advising) office before enrolling in Law School courses.

Language Proficiency

Students must demonstrate proficiency in a modern foreign language (http://elliott.gwu.edu/international-affairs-masters/foreign-language). The ability to communicate across cultures in more than one language is both a distinguishing and expected skill of the international affairs professional. Therefore, completion of the M.A. in International Affairs requires a demonstrated oral and reading proficiency in a modern foreign language.

Additional information available on the program website (http://elliott.gwu.edu/international-affairs-masters).

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL DEVELOPMENT STUDIES

The master of arts in the field of international development studies (IDS) degree program prepare students for professional careers in the field of international development through interdisciplinary course work that includes the study of economics, research methods, policy analysis, and management. Students focus their studies by creating their own area of specialization in coordination with their faculty mentor.

The IDS program culminates in a capstone project where students work on a real-world consulting experience with a development organization. In past years, capstone projects have addressed a broad range of topics, including private sector development, rural education, microfinance, HIV/AIDS, environmental conservation, gender-based violence, municipal planning, and many others. Teams have pursued these projects and conducted fieldwork in Africa, Asia, Latin America, and Eastern Europe. Previous capstone reports can be found on the program's capstone website (http://elliott.gwu.edu/international-development-studies/capstone-reports).

In addition to their regular course work, most graduate students in the IDS program are employed full- or part-time in a job or internship directly related to their studies.

Employers include USAID, World Bank, Organization of American States, Peace Corps, IREX, Ashoka, Management Systems International, the Woodrow Wilson Center, Chemonics International, and many others.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://elliott.gwu.edu/international-development-studies) for additional information.

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs)

Prerequisite: a bachelor's degree including introductory microeconomics, a course in statistics, and at least two years of study of a modern foreign language

The multidisciplinary program requires 40 credits including:

10 credits in core courses
12 credits in analytical courses
18 credits in an area of specialization
Foreign language proficiency (http://elliott.gwu.edu/international-development-studies/foreign-language)

The following requirements must be fulfilled:

International Development Studies

Core Courses (10 credits):	
IAFF 6121	International Development Studies Cornerstone
IAFF 6122	Development Policy and Practice
IAFF 6137	Development Studies Pre-Capstone Workshop
IAFF 6139	International Development Studies Capstone
Analytical Courses (12 credits):	
ECON 6250	Survey of Economic Development
A management course selected from the following:	
EDUC 6381	Program Evaluation: Theory and Practice
EDUC 6620	Strategies and Analysis in International Education (Managing International Education Development Projects)
EMSE 6220	Environmental Management
EMSE 6260	Energy Management
EMSE 6285	Analytical Tools for Energy Management
EMSE 6305	Crisis and Emergency Management
EMSE 6310	Information Technology in Crisis and Emergency Management
EMSE 6320	International Disaster Management
EMSE 6325	Medical and Public Health Emergency Management
EMSE 6820	Program and Project Management
GEOG 6293	Special Topics (Water Resources Policy & Management)
IAFF 6138	Special Topics in International Development Studies
IBUS 6297	International Management Experience
IBUS 6402	Managing in Developing Countries
MGT 4101	
MGT 6216	Cross-Cultural Management
PPPA 6031	Governing and Managing Nonprofit Organizations
PPPA 6032	Managing Fund Raising and Philanthropy
PPPA 6057	International Development Administration
PPPA 6058	International Development NGO Management
PPPA 6059	International Development Management Processes and Tools
PPPA 6077	Case Studies in Public Policy
PUBH 6006	Management and Policy Approaches to Public Health
PUBH 6435	Global Health Program Development and Implementation
PUBH 6436	Global Health Program Management and Leadership
PUBH 6437	Global Health Program Evaluation
PUBH 6513	Community Health Management
SMPP 6210	Strategic Environmental Management

A research methods course selected from the following:

ANTH 6331	Research Methods in Development Anthropology
ANTH 6591	Topics in Sociocultural Anthropology
EDUC 6114	Introduction to Quantitative Research
EDUC 6116	Introduction to Educational Statistics
EDUC 8130	Survey Research Methods
EDUC 8131	Case Study Research Methods
EDUC 8140	Ethnographic Research Methods
EDUC 8142	Phenomenological Research Methods
EDUC 8170	Educational Measurement
EDUC 8171	Predictive Designs and Analyses
IAFF 6138	Special Topics in International Development Studies
IAFF 6501	Quant Analysis Int'l Aff Prac
PPPA 6002	Research Methods and Applied Statistics
PUBH 6247	Design of Health Studies
PPPA 6013	Econometrics–Policy Research I
PPPA 6016	Public and Nonprofit Program Evaluation
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 6264	Quantitative Methods
PUBH 6266	Biostatistical Methods
PUBH 6410	Global Health Study Design
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6412	Global Health Quantitative Research Methods
PUBH 6533	Design of Comm Health Surveys
SOC 6230	Sociological Research Methods
SOC 6231	Data Analysis
SOC 6232	Qualitative Methodology: Doing Field Research
SOC 6240	Field Research in Organizational Settings

A policy analysis course selected from the following*:	
*in lieu of a policy analysis course, students can select a second research methods course.	
EDUC 6100	Experimental Courses (Policy Design: Accountability)
EDUC 6371	Education Policy
EDUC 6388	Analysis of Education Policy Issues
EDUC 6610	Programs and Policies in International Education
EDUC 8322	Education Policy Implementation
EDUC 8340	Methods of Policy Analysis in Education
IAFF 6378	Special Topics in Middle East Studies
PPPA 6006	Policy Analysis
PPPA 6014	Economics in Policy Analysis
PPPA 6085	Special Topics in Public Policy
PSC 6346	The Politics of U.S. Foreign Policy
PSC 6349	International Security Politics
PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care
PUBH 6310	Statistical Analysis in Health Policy
PUBH 6315	Intro-Health Policy Analysis
PUBH 6320	Advanced Health Policy Analysis
PUBH 6325	Federal Policymaking and Policy Advocacy
WSTU 6240	Women and Public Policy
Area of Specialization (18 credits):	
18 credits from a self-designed area of specialization, developed in coordination with a faculty advisor	

Language Proficiency

Students must demonstrate proficiency in a modern foreign language (http://elliott.gwu.edu/international-development-studies/foreign-language). The ability to communicate across cultures in more than one language is a distinguishing and expected skill of the international development professional. For that reason, completion of the M.A. in International Development Studies requires demonstrated oral and reading proficiency in a modern foreign language.

Professional Skills Courses

The Elliott School offers a series of one-credit workshops (http://elliott.gwu.edu/graduate-course-descriptions/professional-skills) on a variety of topics and students are encouraged to explore the possibility of taking up to three of these. Offered throughout the academic year, the skills covered provide students with practical skills and knowledge they will need to perform effectively in a variety of work settings.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL SCIENCE AND TECHNOLOGY POLICY

Scientific and technological advances provide the basis of international competitiveness and account for the bulk of national growth and the improvement of the quality of life around the world. The ability to create, adapt, and adopt new technologies defines modern societies. In today's global environment, the need for innovation is essential for solving societal problems and staying ahead of competition. Institutions that set science and technology policy govern and shape developments in information technology, space exploration, and genetic modification, as well as advances in material science.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs). (http://www.gwu.edu/all-graduate-programs)

Visit the program website (https://elliott.gwu.edu/international-science-and-technology-policy) for additional information.

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Prerequisite: a bachelor's degree in a social, life, or physical science, or in engineering

The following requirements must be fulfilled:

Core Field (9 credits):	
IAFF 6141	International Science and Technology Policy Cornerstone
IAFF 6159	ISTP Capstone Project
IAFF 6516	Independent Study and Research
Concentration Field (15 credits):	
At least two of the following:	
IAFF 6142	Technology Creation/Diffusion
IAFF 6145	U.S. Space Policy
IAFF 6146	Space Law
IAFF 6148	Special Topics in Space Policy
IAFF 6151	Environmental Policy
IAFF 6153	Science, Technology, and National Security
IAFF 6158	Special Topics in International Science and Technology Policy
ECON 6255	Economics of Technological Change
Remaining courses selected from existing Elliott School concentration fields or designed by the student with approval of the program director	
Analytical competency requirement (6 credits):	
One or more course from sections A, B, or C	
Section A. Policy Analysis and Public Administration	
PPPA 6051	Governmental Budgeting
PPPA 6053	Financial Management for Public and Nonprofit Organizations
PPPA 6016	Public and Nonprofit Program Evaluation
PPPA 6002	Research Methods and Applied Statistics
Section B. Economic Theory and Concepts	
ECON 6217	Survey of Economics I
ECON 6218	Survey of Economics II
Other relevant courses offered by the Economics Department (e.g. microeconomics, industrial organization, environmental economics, regional economics)	
Section C. Research Methods	
STAT 1053	Introduction to Statistics in Social Science
STAT 1111	Business and Economic Statistics I
STAT 2112	Business and Economic Statistics II
STAT 2118	Regression Analysis
STAT 2183	Intermediate Stat Lab/Packages
PPPA 6013	Econometrics–Policy Research I
PPPA 6014	Economics in Policy Analysis
PSC 6103	Approaches to Public Policy Analysis

In instances where proficiency in a foreign language can be shown to be integral to a student's program of study, it may be used to meet the analytical competency requirement. Students must petition for approval from the Program Director. Courses taken to demonstrate language proficiency may not be included in the 40 credit-hours required for the degree.	
Skills course (1 credit):	
IAFF 6502	Professional Skills I
IAFF 6503	Professional Skills II
Eelective field (9 credits):	
9 credit hours selected to complement the background and interests of the individual student	
Courses composing the elective field may be offered through a different Elliott School program, a department in another college within the University, or a combination of the two.	
Up to 3 credits may be taken as skills courses (IAFF 6502 and IAFF 6503)	

For more information visit the program website (http://elliott.gwu.edu/international-science-and-technology-policy).

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL TRADE AND INVESTMENT POLICY

The master of arts (M.A.) in international trade and investment policy (ITIP) degree program trains students in critical areas of the economics, politics, and history of international trade as well as econometrics. The program provides additional specialized training in international economics or international business. Course work in these fields focuses on U.S. trade policy, the effects of international trade on developing countries, emerging market financial crises, and managing firms in developing countries. The program culminates in a one-semester capstone project (http://elliott.gwu.edu/international-trade-and-investment-policy/capstone) in which students work in small teams on a contemporary policy problem.

The faculty conducts research on international trade, finance, and macroeconomic issues, as well as the politics and history of international economics. These scholars and practitioners bring to the classroom intimate knowledge of international economic affairs garnered from their work as consultants and advisors at renowned financial, trade, policymaking, and government institutions.

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Prerequisite: a bachelor's degree including one semester each of introductory micro- and macroeconomic principles and at least two years of a modern foreign language. Applicants are strongly advised to take an introductory statistics course and an intermediate micro- and macroeconomics sequence before beginning the program.

The following requirements must be fulfilled:

Core field (12 credits):	
Required courses:	
ECON 6283	Survey of International Trade Theory and Policy
ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy
PSC 6439	International Political Economy
Quantitative methods requirement	
One of the following:	
IAFF 6198	Special Topics in International Trade and Investment Policy
PPPA 6013	Econometrics–Policy Research I
ECON 2123	Introduction to Econometrics
DNSC 6274	Statistical Modeling and Analysis
DNSC 6277	Applied Forecasting and Time-Series Analysis for Managers
Major field (12 credits):	
At least four (4) courses from one of the following areas of study:	
Development Economics	
Finance	
International Business	
International Economic Policy Analysis	
Elective course work (15 credits):	
In accounting and finance, economic analysis, history and political science courses focused on a region, foreign language study (up to 6 credits) or special one-credit skills courses (up to 3 credits)	
Capstone course (1 credit):	

IAFF 6199	International Trade and Investment Policy Capstone

A language proficiency requirement (http://elliott.gwu.edu/international-trade-and-investment-policy/foreign-language) in a modern foreign language. The ability to communicate across cultures in more than one language is a distinguishing and expected skill of the international affairs professional. Therefore, completion of the M.A. in International Trade and Investment Policy requires a demonstrated oral and reading proficiency in a modern foreign language.

Students must have completed intermediate micro- and macroeconomics (http://elliott.gwu.edu/international-trade-and-investment-policy/economic-theory) theory courses prior to receiving the International Trade and Investment Policy degree.

For more information including major fields (http://elliott.gwu.edu/international-trade-investment-policy/major-field), visit the program website (http://elliott.gwu.edu/international-trade-investment-policy).

MASTER OF ARTS IN THE FIELD OF LATIN AMERICAN AND HEMISPHERIC STUDIES

The master of arts in Latin American and hemispheric studies (LAHS) degree program offers an interdisciplinary program designed to provide a broad and deep knowledge of context and place based on sound theory and practice. The program prepares students to develop innovative approaches to the enduring problems and emerging challenges of the hemisphere. This training will allow graduates to grapple with an often contradictory blend of political and economic successes and failures throughout the region.

The internationally recognized faculty, drawn primarily from the Washington, D.C. policy community, provides an insider's perspective on key institutions and policies. The program coordinates a series of events that brings leading policymakers from Washington and the world over to engage with students and faculty on issues facing the hemisphere.

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Prerequisite: a bachelor's degree with background course work related to Latin America and at least two years of study of Spanish or another relevant hemispheric language

The following requirements must be fulfilled:

Interdisciplinary cornerstone (3 credits):

IAFF 6341	Latin American and Hemispheric Studies Cornerstone

Core Field (9 credits):

Three of the following:	
ANTH 6702	Issues in Latin American Anthropology
Or another 6000-level anthropology course approved by the advisor	
ECON 6285	Economic Development of Latin America
GEOG 6261	Geographical Perspectives on Latin America
GEOG 6293	Special Topics (Migration and Development)
IAFF 6342	Drug Trafficking in the Americas
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Indigenous Social Movements)
HIST 6701	Topics in Latin American History
PSC 6383	Comparative Politics of Latin America
PSC 6484	International Relations of Latin America
Any Spanish course numbered in the 3400s, 3500s, 4400s, or 4500s that focuses on the literature of Latin America	

Specialized fields (12 credits):

At least two courses in two of the following fields:
Anthropology
Art History, Literature, and Culture
Economic Development
Geography
Global Public Health
History
International Business
Migration
Political Science
Security
Sociology

Courses taken in the Core Field may not be double-counted in a specialized field. Students must receive permission from the Program Director to apply other courses towards a field.

Electives (12 credits):

Approved in advance by the Program Director. May include up to six credits of language course work in Spanish (other foreign languages spoken in Latin America will be considered on a case-by-case basis). They may also include up to 4 credits of one-credit skills courses. Additional courses may also be taken from any of the specialized fields, or in other areas or disciplines where such course would contribute to the student's professional knowledge and development.

Interdisciplinary capstone (4 credits) :

IAFF 6359	Latin American and Hemispheric Studies Capstone (1 credit fall, 3 credits spring)

A language proficiency requirement (http://elliott.gwu.edu/latin-american-studies/foreign-language). The ability to communicate across cultures in more than one language is a distinguishing and expected skill of the international affairs professional. Therefore, completion of the M.A. in Latin American Studies requires a demonstrated oral and reading proficiency in Spanish or Portuguese.

A graduate-level research methods (http://elliott.gwu.edu/latin-american-studies/research-methods) course applicable to the student's area of specialization. We strongly encourage this course be taken within the first three semesters to help prepare students for their capstone in their fourth and final semester.

All Elliott School master's degree students (except MIPP students) are required to complete the capstone. Those students who wish to complete a thesis must do so in addition to the capstone requirement. Students pursuing a thesis need a minimum of a 3.5 GPA and approval from the faculty member they wish to serve as their thesis director. Thesis students also need to complete at least one research methods course. Thesis credits will be counted as elective or specialization credits with Program Director approval.

For more information including the specialized field course (http://elliott.gwu.edu/latin-american-studies/specialized-fields) list visit the program website (http://elliott.gwu.edu/latin-american-studies).

MASTER OF ARTS IN THE FIELD OF MIDDLE EAST STUDIES

The master of arts in Middle East studies degree program combines a rigorous academic foundation with a strong professional orientation. Bridging the theory and practice of international affairs, the program prepares students for careers in government, the private sector, and international and nongovernmental organizations.

The curriculum includes a range of courses covering the history, politics, economics, international relations, and cultures of the societies and nations of the Middle East. In consultation with the program director, each student will develop a program of study that, through a set of core courses, combines a broad overview of the region along with a more specialized field based on the student's specific academic and career interests. In addition, completion of the program requires demonstrated oral and reading proficiency in a language of the Middle East region.

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Prerequisite: a bachelor's degree in a related field with at least two years of study of an appropriate language of the region

The following requirements must be fulfilled:

Cornerstone (1 credit):

IAFF 6361	Middle East Studies Cornerstone

Core Courses (12 credits):

Choose four of the following:	
PSC 6377	Comparative Politics of the Middle East
PSC 6478	International Relations of the Middle East
IAFF 6363	PoliticalEconomy/Middle East
IAFF 6364	Religion and Society in the Modern Middle East
HIST 6001	Special Topics (History of Modern Middle East)
or HIST 6801	Topics in Middle Eastern History
ANTH 6707	Issues in Middle East Anthropology
GEOG 6262	Geographical Perspectives on the Middle East

Professional specialization field (12 credits):

Available fields include:

Conflict and Conflict Resolution

Global Health

International Affairs and Development

International Business	
International Economic Affairs	
International Law and Organizations	
International Security Studies	
Management	
Technology Policy and International Affairs	
U.S. Foreign Policy	
Middle East electives (9 credits):	
Three courses related to the Middle East, selected in consultation with the program director. At least three (3) credits must have a language or humanities aspect. May include only three (3) credits of language study, which must be an advanced, content-based course.	
Capstone (3 credits):	
IAFF 6379	Middle East Studies Capstone
Skills courses (3 credits):	
IAFF 6502	Professional Skills I
or IAFF 6503	Professional Skills II

Foreign Language Proficiency

Students must pass a proficiency examination in a major modern Middle Eastern language. No substitutions are permitted.

- Arabic [Modern Standard Arabic] (taught at GW)
- Persian
- Hebrew (taught at GW)
- Kurdish, or
- Turkish

For more information on professional specializations (https://elliott.gwu.edu/middle-east-studies/professional-specialiaztion), Middle East electives (http://elliott.gwu.edu/middle-east-studies/electives), or foreign language proficiency (http://elliott.gwu.edu/academics/grad/mes/language.cfm) visit the program website (http://elliott.gwu.edu/middle-east-studies).

MASTER OF ARTS IN THE FIELD OF SECURITY POLICY STUDIES

The master of arts in the field of security policy studies (SPS) degree program is policy-oriented, focusing on international security issues, with a particular emphasis on the security challenges for the 21st century and how to respond to them. These challenges include, but are not limited to, weapons of mass destruction proliferation, transnational threats, terrorism, changing regional power dynamics, weak and failing states, international crime, effectively linking security and development, and ensuring U.S. national security.

The curriculum provides a strong grounding in the national security and defense policy making process. Students choose two specific concentrations, which can range from transnational security issues to conflict resolution to defense analysis. Students also have the option of emphasizing a particular region, such as East Asia, the Middle East, or Latin America, by selecting a regional field as one of their two concentrations.

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Prerequisite: a bachelor's degree with coursework in international affairs or other relevant social sciences, including introductory micro- and macroeconomic principles; study of a modern foreign language is preferred.

The following requirements must be fulfilled: 12 credits in required courses, 9 credits in each of two specialized fields, a 3-credit tool requirement, and 4 credits in a capstone sequence.

Required	
PSC 6349	International Security Politics
IAFF 6160	Defense Policy and Program Analysis
HIST 6032	Rdg/Rsch Sem:Strategy & Policy
One of the following:	
ECON 6280	Survey of International Economics
ECON 6283	Survey of International Trade Theory and Policy
ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy
Students are required to have undergraduate-level background coursework in microeconomics and macroeconomics before enrolling in a graduate course. Undergraduate courses will not count toward the master's degree. If you do not have prior coursework, consult with the Program Director on available options.	
Tool requirement	
Language Option	
If the language option is selected, the student can test out either through coursework or by taking a diagnostic exam prior to their first semester. Students who test out in a language have three extra credits to apply to their concentrations.	

Statistics Option	
This option may be fulfilled by demonstrating proficiency, by a grade of B or better, in one of the following graduate-level statistics courses:	
IAFF 6501	Quant Analysis Int'l Aff Prac
IAFF 6198	Special Topics in International Trade and Investment Policy
Skills requirement	
IAFF 6502	Professional Skills I (taken for a total of 3 credits)
or IAFF 6503	Professional Skills II
Capstone sequence	
IAFF 6898	Capstone Workshop
IAFF 6899	Capstone Course

For more information on specializations (http://elliott.gwu.edu/security-policy-studies/specialized-fields), economics requirements (http://elliott.gwu.edu/security-policy-studies/economics), or tool requirements (http://elliott.gwu.edu/security-policy-studies/tool-requirement) visit the program website (http://elliott.gwu.edu/academics/graduate/sps).

Required	
PSC 6349	International Security Politics
IAFF 6160	Defense Policy and Program Analysis
HIST 6032	Rdg/Rsch Sem:Strategy & Policy
Specialized Field I (9 credits):	
Available fields include:	
Conflict and Conflict Resolution	
Defense Analysis	
Energy Security	
Homeland Security Policy	
Intelligence	
Political Psychology	
Regional Security	
Science, Technology, and National Security Policy	
Security and Development	
Strategic Concepts and Military History	
Transnational Security Issues	
U.S. National Security Policy and Process	
Weapons of Mass Destruction	
Specialized Field II (9 credits): Choose from list above	
Economics Requirement (3 credits):	
One of the following:	
ECON 6280	Survey of International Economics
ECON 6283	Survey of International Trade Theory and Policy
ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy
Students are required to have undergraduate-level background coursework in microeconomics and macroeconomics before enrolling in a graduate course. Undergraduate courses will not count toward the master's degree. If you do not have prior coursework, consult with the Program Director on available options.	
Tool Requirement (3 credits):	
Language Option	
If the language option is selected, the student can test out either through coursework or by taking a diagnostic exam prior to their first semester. Students who test out in a language have three extra credits to apply to their concentrations.	
Statistics Option	
This option may be fulfilled by demonstrating proficiency, by a grade of B or better, in one of the following graduate-level statistics courses.	
IAFF 6501	Quant Analysis Int'l Aff Prac
IAFF 6198	Special Topics in International Trade and Investment Policy
Skills courses (3 credits):	
IAFF 6502	Professional Skills I
or IAFF 6503	Professional Skills II
Capstone sequence (4 credits):	
IAFF 6898	Capstone Workshop
IAFF 6899	Capstone Course

MASTER OF INTERNATIONAL POLICY AND PRACTICE

The Elliott School's master of international policy and practice (MIPP) degree program helps international mid-career professionals develop highly marketable analytical and management skills to formulate and advocate policies on key international issues and to negotiate and work effectively in cross-cultural settings. The program also enhances knowledge of international economic, political, and social trends.

The interdisciplinary curriculum combines three core courses with a wide variety of course options that cover relevant national and international policies and provides insight into a wide range of international issues. Courses are selected to suit the student's professional goals and intellectual interests. Most courses are offered in the late afternoon and early evening to accommodate student work schedules, making it ideal for working professionals.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs). (http://www.gwu.edu/all-graduate-programs)

Visit the program website (https://elliott.gwu.edu/international-policy-and-practice) for additional information.

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following requirements must be fulfilled: 27 credits, including 9 credits in required courses and 18 credits in elective courses.

Students are required to have undergraduate-level background coursework in microeconomics and macroeconomics before enrolling in a graduate course. Undergraduate courses do not count toward the master's degree. Students who do not have prior coursework should consult with the Program Director on available options.

Code	Title	Credits
Required		
IAFF 6211	MIPP Leadership Practicum	
One of the following courses in international economics:		
ECON 6250	Survey of Economic Development	
ECON 6280	Survey of International Economics	
ECON 6283	Survey of International Trade Theory and Policy	
ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy	
One of the following foundational courses in international policy, which should support the student's interdisciplinary concentration:		
IAFF 6101	IA Cornerstone *	
IAFF 6102	Global Gender Policy	
IAFF 6122	Development Policy and Practice	
IAFF 6141	International Science and Technology Policy Cornerstone	
IAFF 6171	Introduction to Conflict Resolution	
PSC 6349	International Security Politics	
PSC 6439	International Political Economy *	
PPPA 6057	International Development Administration	
Electives		
18 credits in elective courses selected based on the individual student's needs in consultation with an advisor and the Program Director. These may include up to 3 credits in 1-credit skills-based workshops.		

*Added after publication of the 2016-17 Bulletin.

Students must complete degree requirements within three years of their admission to the program. Students who are temporarily unable to continue their studies may request a leave of absence not to exceed one year. Extensions beyond the three-year period may be granted in exceptional circumstances, but the student will be required to register and pay for Continuous Enrollment.

No transfer credit is accepted into the MIPP program. No more than 6 credits of graduate coursework taken at GW before matriculation in the program, while in degree or nondegree status, including courses taken in the Elliott School, may be included in the MIPP program.

Visit the MIPP program page (http://elliott.gwu.edu/international-policy-and-practice) for additional information, including a complete list of elective courses (http://elliott.gwu.edu/international-policy-and-practice/electives).

MASTER OF INTERNATIONAL STUDIES

The Master of International Studies is a special program open only to students who have completed or are currently enrolled in an approved master's degree program at one of the Elliott School's international partner schools. Master of International Studies students take core courses in economics, history, and political science, plus three courses in an elective field designed with the approval of the program director and a

capstone course. All students must meet the Elliott School language requirement.

Visit the program website (https://elliott.gwu.edu/international-studies-masters) for additional information.

DUAL MASTER OF ARTS AND MASTER OF PUBLIC HEALTH

The Elliott School of International Affairs cooperates with the Milken Institute School of Public Health in offering a dual degree program leading toward the Master of Arts and the Master of Public Health in global health. The dual degree program is offered in all Elliott School fields. The student must be accepted for admission by both the Elliott School and the Milken Institute School of Public Health. Applications should be made separately to each school, with a notice of interest in the combined program. Students may also apply for the dual degree program after they have begun either program.

As part of this program, the Elliott School accepts up to 12 credit hours of course work from the Milken Institute School of Public Health in fulfillment of its degree requirements. The program takes approximately three years of full-time study for completion. Dual degree students may complete the requirements for each degree and receive a diploma for each degree after applying for graduation from each school separately. However, all work on each degree must be completed within five years from the student's entry into that program, unless an extension of time is granted by the respective deans.

JOINT MASTER OF ARTS AND JURIS DOCTOR

The Elliott School of International Affairs cooperates with the Law School in offering a program of study leading to the degrees of Master of Arts and Juris Doctor. A student must be accepted for admission by both the Elliott School and the Law School. Applications should be made separately to each school, with a notice of interest in the combined program. The Law School stipulates that the first year of course work for the Juris Doctor degree must be taken as a unit; students should consult with the Law School's Associate Dean for Student Affairs.

As part of this program, each school accepts up to 12 credit hours of course work from the other school in fulfillment of its degree requirements. The Elliott School M.A. portion of the program may not include a thesis. The joint program takes approximately four years of full-time study for completion. Joint degree students must meet all requirements for both programs and apply for graduation from both schools prior to receiving either diploma. All work for this combined degree program must be completed in five years, unless an extension of time is granted by the respective deans.

JOINT MASTER OF ARTS AND MASTER OF BUSINESS ADMINISTRATION

The Elliott School of International Affairs cooperates with the School of Business in offering a program of study leading to the degrees of master of arts (M.A.) and master of business administration (M.B.A.) with a field of study in international business. The joint degree program is offered in all Elliott School M.A. fields (https://elliott.gwu.edu/graduate-programs), and the M.B.A. is taken with a focus on international business (http://business.gwu.edu/programs/masters-of-business-administration). The student must be accepted for admission by both the Elliott School and the School of Business. Applications should be made separately to each school, with a notice of interest in the combined program. Students may also apply for the joint degree program after they have begun either program.

As part of this program, each school accepts up to 12 credits of course work from the other school in fulfillment of its degree requirements. The joint program takes approximately three years of full-time study for completion. Joint degree students must meet all requirements for each program and apply for graduation from both schools prior to receiving either diploma. All work for this combined degree program must be completed in six years, unless an extension of time is granted by the respective deans.

CERTIFICATE PROGRAMS

The Elliott School of International Affairs offers a series of graduate certificates covering topics of specialized interest. The certificate programs are open to all graduate students presently enrolled in the Elliott School, Columbian College of Arts and Sciences, Graduate School of Education and Human Development, School of Business, and Milken Institute School of Public Health. The programs are also open to graduate students from other universities, individuals who have already earned a graduate degree, and individuals with a bachelor's degree and a minimum of eight years of relevant professional work experience. Applicants who have less than eight years of work experience are eligible to apply but must submit the same application materials required of other M.A. degree programs. Transfer credit from non-GW institutions is not accepted into any graduate certificate program. No more than 6 credits of graduate course work taken in any degree or non-degree status within the University, including the Elliott School, may be included in any graduate certificate program. Additional information is available in the Elliott School Graduate Admissions office (http://elliott.gwu.edu/graduate-admissions).

Graduate certificate programs

- Graduate certificate in global gender policy (p. 758)

- Graduate certificate in international science and technology policy (p. 758)
- Graduate certificate in nuclear policy (p. 759)

GRADUATE CERTIFICATE IN GLOBAL GENDER POLICY

REQUIREMENTS

The following requirements must be fulfilled: 15 credits, including 6 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
Required		
IAFF 6102	Global Gender Policy	
One of the following:		
IAFF 6118	Special Topics in International Affairs (Research Methods in Global Gender Issues)	
IAFF 6502	Professional Skills I (taken for a total of three credits) *	
IAFF 6503	Professional Skills II (taken for a total of three credits)	
Electives		
9 credits from the following:		
ANTH 6501	Gender and Sexuality	
IAFF 6118	Special Topics in International Affairs (Research Methods in Global Gender Issues) **	
IAFF 6136	Gender and Development	
IAFF 6138	Special Topics in International Development Studies (Gender, Tourism, and Development)	
IAFF 6138	Special Topics in International Development Studies (Gender, Disaster & Policy)	
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)	
IAFF 6138	Special Topics in International Development Studies (Violence, Gender & Humanitarian Assistance)	
PHIL 6238	Feminist Ethics and Policy Implications	
PSYC 8275	Women and Health	
SOC 6271	Gender and Society	
SOC 6273	The Sex Industry	
WSTU 6230	Global Feminisms	
Students may take as an elective one of the following undergraduate courses for graduate credit with instructor's permission. The student must perform extra work in the course.		
IAFF 2190W	Special Topics (Women in Global Politics)	
IAFF 3183	Special Topics in Development Policy (Human Trafficking)	
Students may substitute other GW and consortium courses with the approval of the advisor.		
No more than four skills courses can be applied to a graduate certificate.		

*Visit the program website (http://elliott.gwu.edu/graduate-certificates/global-gender-policy) for list of eligible professional skills courses and for additional program information.
**Can only be used as an elective course if not selected as part of core requirement.

GRADUATE CERTIFICATE IN INTERNATIONAL SCIENCE AND TECHNOLOGY POLICY

The graduate certificate in international science and technology policy allows students to understand the role of science and technology in policy-making and how governmental policies, laws, and regulations influence science and technology production from an international perspective. The program is designed for graduate students in related fields or professionals in government, industry, and nonprofits who wish to develop a background in science and technology policy. Students develop basic analytical skills as well as focus on a particular theme, including technology innovation, internet policy, space policy, energy policy, and environmental policy.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs). (http://www.gwu.edu/all-graduate-programs)

Visit the program website (https://elliott.gwu.edu/graduate-certificates/international-science-technology-policy) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: a minimum of 15 credits, including one 3-credit required course and 12 credits in elective courses.

Required	
IAFF 6141	International Science and Technology Policy Cornerstone
At least two science and technology policy courses:	
IAFF 6142	Technology Creation/Diffusion
IAFF 6145	U.S. Space Policy
IAFF 6158	Special Topics in International Science and Technology Policy *
IAFF 6151	Environmental Policy
ECON 6255	Economics of Technological Change
At lease one analytical competency course:	
ECON 6217	Survey of Economics I
ECON 6218	Survey of Economics II
PPPA 6002	Research Methods and Applied Statistics
PPPA 6003	Economics for Public Decision Making
PPPA 6006	Policy Analysis
PPPA 6010	Politics & The Policy Process
PPPA 6014	Economics in Policy Analysis
PPPA 6016	Public and Nonprofit Program Evaluation
PPPA 6060	Policy Formulation and Administration

*Other relevant courses under the listing IAFF 6158 may be offered in particular years. Consult the Center for International Science and Technology Policy for current listings.
Students may take other courses not on the list of suggested courses with the approval of the Office of Student Services. Some of the analytical competency courses have prerequisites that do not count toward the certificate requirements.

Consult the Center for International Science and Technology Policy (http://www.gwu.edu/~cistp) (CISTP) for current listings and for additional information.

GRADUATE CERTIFICATE IN NUCLEAR POLICY

The graduate certificate in nuclear policy provides a foundation of knowledge and analytical skills relevant to contemporary challenges related to nuclear security, deterrence, arms control, nonproliferation, and nuclear energy to students preparing to contribute to these pursuits as practitioners and analysts.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (https://elliott.gwu.edu/graduate-certificates/nuclear-policy) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 15 credits, including a 3-credit core course and 12 credits in elective courses.

Code	Title	Credits
Required		
One of the following:		
IAFF 6106	Nuclear Weapons	
IAFF 6118	Special Topics in International Affairs (Science of Nuclear Materials)	
Electives		
Three of the following:		
IAFF 6118	Special Topics in International Affairs (Nuclear Proliferation and Nonproliferation)	
IAFF 6118	Special Topics in International Affairs (Nuclear Energy)	
IAFF 6118	Special Topics in International Affairs (Nuclear Safeguards and Forensics)	
IAFF 6118	Special Topics in International Affairs (Nuclear Security Policy)	

Students are encouraged to consider relevant courses, such as courses on regional security topics, which may be counted toward required supporting courses with the approval of the certificate advisor.

SCHOOL OF MEDICINE AND HEALTH SCIENCES

Dean J. Akman
Senior Associate Dean for Health Sciences J. Bocchino
Associate Deans M. Corcoran, C. Golden

The George Washington University School of Medicine and Health Sciences (SMHS) is dedicated to improving the health of local, national, and global communities by:

- Educating a diverse workforce of tomorrow's leaders in medicine, science, and health sciences.
- Healing through innovative and compassionate care.
- Advancing biomedical, translational, and health services delivery research with an emphasis on multidisciplinary collaboration.
- Promoting a culture of excellence through inclusion, service, and advocacy.

As a globally recognized academic medical center, GW embraces the challenge of eliminating health disparities and transforming health care to enrich and improve the lives of those we serve.

Health Sciences

GW Health Sciences (http://smhs.gwu.edu/academics/health-sciences) comprises three academic departments: Clinical Research and Leadership (http://smhs.gwu.edu/crl), Physician Assistant Studies (http://smhs.gwu.edu/pas), and Physical Therapy and Health Care Sciences (http://smhs.gwu.edu/pths). SMHS health sciences programs prepare professionals for roles in selected specialties within health care. These programs emphasize the interdependent roles and responsibilities of professionals in health care practice, research, and leadership.

The mission of GW Health Sciences is built upon five tenets:

- Interdisciplinary education provides a foundation for the future of health care delivery and generates collaborative structures and models for benchmarking and improvement.
- Clinical training is a foundation for professional development in clinical practice.
- Community service learning applies to communities broadly and is an important component of education for the transformation of communities of practice, research, and access in health care.
- GW Health Sciences is uniquely positioned to cultivate leadership capacity development within the health sciences, medical, and scientific communities that we serve.
- Scholarship among faculty, staff, and students alike contribute to the process of new knowledge creation and are a foundation for advancing translational science in health care.

Medical Programs

For information about GW medical programs, please refer to the medicine and health sciences website (http://smhs.gwu.edu).

REGULATIONS

- **Admission (p. 760)**
  - International Applicants (p. 761)
  - Unclassified Students (p. 761)
  - Readmission (p. 761)
  - Transfer Credit for Graduate Students (p. 761)
  - Transfer Credit/Advanced Standing for Undergraduates (p. 762)
- **Evaluation of Academic Performance (p. 762)**
- **Academic Standing (p. 763)**
- **Programs of Study (p. 764)**
- **Policies and Definitions (p. 764)**
- **Graduation Requirements (p. 765)**
- **Financial Aid (p. 766)**

Admission

To be considered for admission, applicants must submit a completed application form online, together with all required supporting documentation and a non-refundable application fee.

Bachelor of Science in Health Sciences (B.S.H.S.) programs are designed for upper-division transfer students; applicants are expected to have completed a minimum of 60 credit hours of coursework from a regionally accredited post-secondary institution prior to entry. Applicants to the post-baccalaureate and graduate programs must hold a bachelor's degree from a regionally accredited college or university, with the exception of the Ph.D. and O.T.D. programs which require a master's degree or entry-level professional doctorate. Official transcripts must be submitted from each academic institution attended, regardless of whether credit was earned or is desired. The transcript(s) must indicate a minimum cumulative grade-point average of 2.5 on a scale of 4.0 for undergraduate and post-baccalaureate applicants, and a 3.0 on a scale of 4.0 for graduate students. The applicant must be in good standing and eligible to return to the academic institution most recently attended. Dual degree applicants must have a minimum cumulative grade-point average of 3.3 on a scale of 4.0. With evidence of special promise, an applicant whose academic record falls short of the minimum GPA may be accepted on a conditional basis; see Conditional Admission, below. Students who have been suspended or dismissed academically or will not be considered for admission for at least one year from the date of their last suspension or dismissal.

Applicants should refer to the individual program descriptions for information on prerequisites and supporting documents, since these vary by program. It is the responsibility of applicants to ensure that all required application materials are submitted by the designated deadlines. Unofficial copies, facsimiles, or photocopies of transcripts, certificates, or diplomas will not be accepted. All records become the property of the University and cannot be returned.

Conditional Admission—Admission with conditions to one of the health sciences programs may be offered at the discretion of the Health Sciences Dean's Office and the program director. The terms of admission are outlined in the letter of acceptance from the University. When conditions have been not been met, notification is sent from the the Health Sciences Dean's Office. Students dismissed for not meeting the conditions of their admission from non-clinical programs must sit out one calendar year before re-applying. Readmission is not guaranteed. Students enrolled in clinical programs should consult their program handbook for program-specific dismissal policies and procedures.

Advance Tuition Deposit—Upon notification of acceptance, an advance tuition deposit will be required of students in selected programs, including those re-admitted. The deposit is credited toward tuition and is non-refundable. Payment of the orientation fee, if applicable, must be submitted along with the tuition deposit and is also non-refundable.

International Applicants

The following additional requirements pertain to international applicants:

Required Records—Official copies of all required documentation (transcripts, diplomas, and certificates as well as any other records listing subjects studied, grades received, examinations taken, the results of state examinations, and degrees received) must be submitted in the language in which the institution keeps its official records. If these documents are in a language other than English, they must be accompanied by a certified English translation. In addition, an evaluated copy completed by an acceptable international evaluation service must be submitted regardless of whether or not the official record is in English.

Language Tests—Applicants whose native language is not English or who are not citizens of countries where English is the official language must submit official test scores for either academic IELTS or TOEFL or PTE. The following are the minimum scores for admission consideration.

1. Academic IELTS: an overall band score of 7.0, with no individual band score below 6.0.
2. TOEFL: 600 paper-based or 100 Internet-based.
3. PTE: overall score of 68

The IELTS/TOEFL/PTE requirement may be waived for applicants who hold a bachelor's degree or higher from a regionally accredited U.S. college or university; applicants who hold a bachelor's degree or higher from an international higher education institution must demonstrate through an evaluation that the institution is equivalent to a U.S. regionally accredited college or university, and the language of instruction at the institution where the degree was completed is English. Waivers may exist for citizens of countries where the official language is English, as determined by the GW International Services Office.

Financial Certificate—A Financial Certificate must be completed and submitted with the application for admission by all international students planning to study at the University under the authorization of either a student (F) or exchange visitor (J) visa. Satisfactory completion and submission of the Financial Certificate is required for the issuance of a Form I-20 or IAP-66.

Unclassified Students

A student who wishes to take individual courses in health sciences programs must obtain permission to register as an unclassified student in the School of Medicine and Health Sciences. Application is made to the Office of Admissions, Health Sciences Programs. The Health Sciences Dean's Office, in conjunction with the appropriate department chair and program director, will determine if permission to register will be granted to an unclassified student. Permission to take individual courses, if granted, will generally be limited to a total of 6 credit hours.

Credit earned for courses taken as an unclassified student may be transferred to a degree program at the University if the courses are applicable to the program, have been taken for credit, and have been completed with the minimum grade required in the program. This should not exceed 6 credit hours. Successful completion of course work taken as an unclassified student does not guarantee admission to a degree program.

Readmission

Students who were previously registered in a health sciences program at the University, but who did not register during the immediate preceding semester (summer sessions excluded) and who did not receive an approved leave of absence, must apply for readmission. Students who have attended other academic institutions while not enrolled at this University must have complete official transcripts sent directly to the Office of Admissions, Health Sciences Programs, from each institution attended. Applications for readmission are considered on the basis of regulations and curricula currently in effect.

Transfer Credit for Graduate Students

The University reserves the right to refuse transfer credit in part or in whole or to allow credit provisionally. A maximum of one quarter of the credit hours of graduate coursework required for a degree may be approved for transfer to a graduate program in the Health Sciences. These credits may come from

enrollment in non-degree coursework at GW, or from another degree granting school of GW, or another accredited college or university. Eligible coursework must: (a) graduate-level credit, (b) not applied toward completion of requirements for another degree, and (c) earned with a minimum acceptable grade of a *B* (grades of *B-* and below do not transfer). Requests for transfer credit must be submitted in writing and approved by the program director and the Health Sciences Dean's Office after admission to the program. Students in clinical programs or the Ph.D. program should refer to their program handbook for program-specific transfer credit policies and procedures.

Transfer Credit/Advanced Standing for Undergraduates

Advanced standing may be awarded for appropriate course work completed at other regionally accredited institutions provided minimum grade requirements have been met. The minimum acceptable grade is *C* for course work to be applied toward an undergraduate degree (grades of *C-* and below do not transfer). Advanced standing may also be awarded for non-traditional classroom or clinical experience as determined by the individual programs. The University reserves the right to refuse transfer credit in part or in whole or to allow credit provisionally. Health sciences degree programs vary in the amount of advanced standing they will award. For bachelor's programs, no more than 66 credits will be accepted as advanced standing from a two-year institution.

Degree candidates who are currently enrolled at this institution and plan to take courses at other regionally accredited institutions for transfer credit must first obtain the approval of the program director, department chair, and appropriate dean.

Evaluation of Academic Performance

Faculty members are responsible for evaluating the performance of students in a meaningful, useful, and timely manner and for assigning grades on a basis that is rational, just, and unbiased. The authority for assigning grades rests with academic departments or with faculty in the respective programs. Official grades for course work can be obtained from the Office of the Registrar each semester and are not given out by instructors.

Grades in Undergraduate Degree or Certificate and Post-Baccalaureate Certificate Programs—The following grading system is used: *A*, Excellent; *B*, Good; *C*, Satisfactory; *D*, Low Pass; *F*, Fail. At the discretion of the program and individual faculty, "+" or "-" (plus or minus) grades also may be assigned. Except for courses that specifically state that repetition for credit is permitted, a candidate for an undergraduate degree or undergraduate-level certificate (including post-baccalaureate certificate) at this University may not repeat a course in which a grade of *D* or above was received, unless a petition to do so is approved by the appropriate dean and/or chair upon recommendation of the program director. If a course is repeated, the first grade remains on the student's record and is included in the cumulative GPA. Symbols that may appear on the transcript include *CR*, Credit; *AU*, Audit; *P*, Pass; *NP*, No Pass; *I*, Incomplete; *IPG*, In Progress; *W*, Authorized Withdrawal; *Z*, Unauthorized Withdrawal. These symbols are not considered in determining the GPA.

Grades in Graduate Degree and Certificate Programs—The following grading system is used: *A*, Excellent; *B*, Good; *C*, Minimum Pass; *F*, Fail. At the discretion of the program and individual faculty, "+" or "-" (plus or minus) grades also may be assigned. Except for courses that specifically state that repetition is permitted, a candidate for a graduate degree or certificate at this University may not repeat a course in which a grade of *C* or above was received, unless a petition to do so is approved by the appropriate dean and/or chair upon recommendation of the program director. For graduate courses where a grade of *C-* or below was received, the course must be repeated for credit. If a course is repeated, the first grade remains on the student's record and is included in the cumulative GPA. Symbols that may appear on the transcript include *CR*, Credit; *AU*, Audit; *P*, Pass; *NP*, No Pass; *I*, Incomplete; *IPG*, In Progress; *W*, Authorized Withdrawal; *Z*, Unauthorized Withdrawal. These symbols are not considered in determining the GPA.

Incomplete/In Progress—The symbol of *I* indicates that the instructor has received a satisfactory explanation for the student's inability to complete the required work of the course. The grade may be used only if the student's prior performance in the course has been satisfactory. Any failure to complete the work of a course that is not satisfactorily explained to the instructor before the date when grades must be turned will result in the grade of *F* for the course. Incomplete work must be made up by a date agreed upon by the instructor and the student but no later than the last day of the examination period for the semester immediately following the semester or summer session in which the notation of *I* is assigned. An extension of one additional semester can be requested by the student and may be approved by the program director. When work for the course is completed, the grade earned replaces the symbol *I* on the transcript. An Incomplete that is not changed within the allotted time reverts to an *F*.

The symbol of *IPG* is reserved for courses (such as special projects) in which the final class date extends beyond the official University deadline for submitting grades. Once the course has been completed, the *IPG* will be removed from the transcript and the earned grade recorded.

Unauthorized Withdrawal—The symbol of *Z* is assigned when students are registered for a course that they have not attended or have attended only briefly, and in which they have done no graded work. At the end of the academic year, students' records are reviewed; if there is more than one *Z* per semester, a student's record may be encumbered until released by the student's advisor or academic dean. The symbol *Z* is not a grade, but an administrative notation.

The Grade-Point Average—Scholarship is computed in terms of the grade-point average, based only on the student's record in this University. The grade-point average is computed from grades as follows: *A*, 4.0; *A-*, 3.7; *B+*, 3.3; *B*, 3.0; *B-*, 2.7; *C+*, 2.3; *C*, 2.0; *C-*, 1.7; *D+*, 1.3; *D*, 1.0; *D-*, 0.7; *F*, 0, for each credit hour for which the student has registered in a degree program. In undergraduate courses, grades of *F* will be computed in the grade-point average but will not be considered as fulfilling degree requirements. In graduate programs, final course grades below *C-* are recorded as *F*.

Appeal Procedures for Cases of Alleged Improper Academic Evaluation—Students who believe that a grade or evaluation is unjust or inaccurate may use the following appeal procedures:

1. The student must submit a written appeal to the relevant faculty member within 10 calendar days of the time the grade is posted, with a copy to the program director.

2. Resolution should be sought first at the program and departmental levels. A review shall be conducted by the program director and chair, consulting as appropriate the student and faculty involved.

3. If a mutually satisfactory resolution is not achieved, the student may, within five days of the decision being rendered, submit a written letter of appeal to the Senior Associate Dean for Health Sciences. In considering the student's appeal, the Senior Associate Dean will determine whether or not the grading procedures employed were fair, equitable, objective, and consistent.

4. The Senior Associate Dean for Health Sciences may refer the appeal to the Health Sciences Evaluation Committee chair, who will form a three-person committee to serve as a peer review body. The committee will consist of the director of the program and two other members of the Health Sciences Evaluation Committee who are not involved in the case. Should the chair of the Health Sciences Evaluation Committee be the member of the faculty alleged to have made the improper academic evaluation, the appropriate dean will choose the three members of the peer review body from the members of the Health Sciences Evaluation Committee. If a sufficient number of faculty are not available from within the committee, other faculty from the health sciences programs will be appointed.

5. The peer review body will review the student and course materials in order to render a recommendation to the Senior Associate Dean for Health Sciences. In the event that the peer review body chooses to conduct a hearing, the student may not have legal representation present. Students will be allowed to move forward in didactic coursework until the grade appeal is resolved and a final decision rendered. However, students will not be allowed to move forward in clinical coursework until the grade appeal is resolved and a final decision rendered.

6. The peer review body will advise the Senior Associate Dean for Health Sciences on the outcome of their review and recommendations. Final action rests with the Dean for the School of Medicine and Health Sciences.

Academic Standing

An enrolled student is considered to be in good academic standing by the School of Medicine and Health Sciences provided that he or she is not on academic probation or suspension. The policies outlined below apply to all candidates for health sciences programs. In addition, medical laboratory sciences, physician assistant, physical therapy, and translational health sciences students must comply with policies and procedures outlined in their respective student handbooks.

Warning—An undergraduate whose GPA falls between 2.5 and 2.69, and a graduate student whose GPA falls between 3.0 and 3.2 will receive a warning notification from the program. The warning may be delivered to the student the form of an email. A record of warning notifications will be kept with program records and Health Sciences Student Services.

Academic Probation—A full- or part-time undergraduate degree candidate whose cumulative GPA falls below 2.5 will be placed on academic probation and that status noted on the student's transcript. This probation extends over the period during which the student attempts an additional 12 credits of coursework. While on probation, students will be allowed to register for no more than 12 credits per semester, unless approved by the program director and the appropriate dean.

A full- or part-time graduate degree candidate whose cumulative GPA falls below 3.0 will be placed on academic probation. For full-time students, probation extends for one semester of full-time course work as defined by the program; for part-time students, probation extends during the period in which the student attempts 9 credit hours of course work. While on probation, full-time students may register for no more than a total of 9 credits unless an exception is approved by the program director and the appropriate dean; part-time students may register for a combination of 9 credits, but may not register for additional credits, e.g. a part-time student who attempts 6 credits in one semester would be restricted to 3 credits in the following semester of enrollment.

If the program director and department chair determine that extenuating and valid circumstances exist, a student may be granted an extension of the probationary period. If granted, the student will be notified by the program director outlining conditions to be met by the student. The student must return a statement to the program director by email or postal system mail confirming that he/she has read, understands, and agrees to the conditions.

If the student fails to attain the conditions in the time specified, the student will be suspended (see Suspension, below). If the student succeeds in raising his/her cumulative GPA to the minimum scholarship requirements, academic probation will

be lifted. A student who has been placed on probation more than one time will be recommended for dismissal.

Suspension—Students on probation who have not raised their cumulative GPA within the allowed number of credits (12 for undergraduate and 9 for graduate students) may be suspended. A student suspended for poor scholarship may not register for any course work at the University, even as an auditor. The program director mails or emails a Letter of Suspension notifying the student of suspension.

A student who is suspended for failure to raise the cumulative GPA may apply for readmission after one calendar year. Evidence must be presented to the student's program director, demonstrating that the student is better prepared to pursue academic coursework. Any student suspended twice for poor scholarship will not be readmitted. If the student fails to achieve the minimum GPA at the end of the semester following readmission, the program director may recommend that the student be dismissed and further enrollment prohibited; such a recommendation will be reviewed by the appropriate dean, whose recommendation will be forwarded to the Dean of the School of Medicine and Health Sciences.

Dismissal—Any student who has received one or more failing grades in a single semester, or who has been placed on probation more than one time, may be recommended for dismissal by the program director. If the program recommends dismissal, notice will be sent to the student via email or conventional mail informing him/her that the recommendation for dismissal is being reviewed by the Senior Associate Dean for Health Sciences in consultation with the program director and chair. At the discretion of the Senior Associate Dean, the recommendation may also be forwarded to the Health Sciences Evaluation Committee before sending to the Dean for the School of Medicine and Health Sciences. The final decision about dismissal rests with the Dean for the School of Medicine and Health Sciences. A student who is dismissed from non-clinical programs may apply for readmission after the lapse of one calendar year. Readmission is not guaranteed. Students enrolled in clinical programs should consult their program handbook for program-specific dismissal policies and procedures.

Programs of Study

Students enrolled in undergraduate degree or undergraduate-level certificate programs (including post-baccalaureate certificates) must meet with their academic advisor (in person or electronically) to review a program of study, listing all course work required for the degree or certificate, including applicable transfer credit. Changes to the program of study can be made through petition to the program. Changes may require approval of Senior Associate Dean for Health Sciences.

Transfer Within Health Sciences Programs—To apply for a transfer from one health sciences program to another, a written request must be submitted to the Office of Student Services, Health Sciences Programs, along with the necessary supporting documentation required by the program. To change from certificate to degree program may require an admissions application.

Transfer Outside Health Sciences Programs—No internal transfers are permitted from a health sciences program to another GW school or college. To transfer outside of of the health sciences, a student must follow the full admission processes for the other GW program.

Changes Within Health Sciences Programs—A student may not substitute one course for another without approval of the program director, the department chair, and the appropriate dean. After the deadlines for adding or dropping courses, a student must obtain the permission of the course instructor, the program director, and the appropriate dean to withdraw from a course or to change status from credit to audit or audit to credit.

Adding and Dropping Courses—During the registration period (before the end of the second week of classes) students may add or drop courses using GWeb. After the second week of classes, students who wish to add or drop a course must complete a Registration Transaction Form (http://smhs.gwu.edu/academics/health-sciences/students/forms-policies) and submit the form to the Student Services Office. Adding a course after the second week requires a signature of the instructor or other authorized member of the department.

A course dropped during the first four weeks of classes will not appear on the student's transcript. A course dropped after the fourth week but before the end of the eighth week will be assigned a notation of W (Authorized Withdrawal). Deadlines for a summer or short course may vary.

The deadline for dropping a course without academic penalty is the end of the eighth week of classes. After the end of the eighth week of classes, dropping a course without academic penalty is only possible after the student presents a petition to the Senior Associate Dean for Health Sciences and receives written permission. Deadlines for a summer or short course may vary.

All charges for courses from which the student withdraws are subject to the refund policy listed under Fees and Financial Regulations in this Bulletin. Failure to withdraw by these procedures can result in an extended financial obligation and the recording of a grade of *F* (Failure) or a notation of *Z* (Unauthorized Withdrawal).

Policies and Definitions

Credit—Credit is awarded only after registration for a course and satisfactory completion of the required work, or upon assignment of advanced standing.

Auditing—A student who has been admitted to a health sciences program may register as an auditor in a class only with the permission of the instructor, the faculty advisor, and the appropriate dean. An auditor receives no academic credit

and is not required to take active part in the class or to pass examinations. A student who takes a course as an auditor may not repeat it later for credit. The regular program tuition rate is charged for audited courses.

Attendance—Students may attend only those classes for which they are officially registered. Regular attendance is expected. A student suspended for any cause may not attend classes during the period of suspension. Students are held responsible for all of the work of the courses in which they are registered, and all absences must be excused by the instructor before provision is made to make up the work missed.

Transcripts of Record—Official transcript of student records are issued by the Office of the Registrar and may be requested through GWeb by any student or former student who has paid all charges, including any outstanding student loan installments, due the University at the time of the request. A fee is charged for each transcript. Partial transcripts are not issued.

Continuous Enrollment—Once entered in a degree or certificate program, a student is expected to be continuously enrolled and actively engaged in fulfilling the requirements each semester of the academic year until such time as the degree is conferred or certificate completed. Students who break continuous enrollment at the University and do not request and receive a leave of absence (see below) must apply for readmission and, if granted, are subject to the requirements and regulations then in force. Students who plan to attend other institutions and apply credit earned toward graduation from this University must first obtain written approval from the program director and the appropriate dean.

Leave of Absence—A student who must interrupt active pursuit of the degree or certificate may petition the appropriate dean, through the program director, for a leave of absence for a specified period of time, generally limited to one calendar year. If the petition is approved, the student must register for leave of absence in each fall and spring semester, following regular registration procedures. The request should be made using the Petition Request Form (http://smhs.gwu.edu/academics/health-sciences/students/forms-policies). Students who discontinue their studies without being granted a leave of absence and students granted leaves who do not return to active study at the close of the period of approved absence must apply for readmission and are subject to the regulations and requirements then in force. The right to use University facilities is suspended while the leave is in effect.

Policy Regarding Students Called to Active Military Duty—Any student who is a member of a military reserve unit or the National Guard and is activated or called to active duty early in a semester or summer session automatically will be entitled to a full refund of all tuition and fees that he or she has paid toward the expenses of that academic term. If the notification of the call to active duty comes after the mid-term examinations or after other substantial graded work has been completed, the student will have the option of either taking a full refund of tuition and fees or taking an Incomplete in his or her courses with the privilege of returning to complete all required coursework at some future date without payment of any further tuition and fee charges. It is the responsibility of the student to present evidence of his or her activation to the Health Sciences Student Services and the Office of Student Accounts and to request the appropriate refund.

Should a degree student called up for active duty find it necessary to interrupt active pursuit of the degree he or she may petition the Senior Associate Dean for Health Sciences for a leave of absence for a specified period of time, generally limited to one calendar year. Deans are encouraged to grant any request to extend the leave of absence for longer than the customary period should military service require an absence of more than one year.

All students on active duty will be automatically exempted from the request for a $50 voluntary library contribution without requiring any communication from them or their initials on the bill.

Right to Change Rules and Programs—The University reserves the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine. The right is reserved by the University to make changes in programs without notice whenever circumstances warrant such changes. For the most up to date requirements, rules, and fees contact the Health Sciences Dean's Office (http://smhs.gwu.edu/academics/health-sciences).

Complete Withdrawal From the University—A student who wishes to withdraw from all courses, and the university must complete a Complete Withdrawal Form (http://registrar.gwu.edu) and submit it to the Office of the Registrar. The deadline for complete withdrawal from all courses without academic penalty is the end of the eighth week of classes, with the exception of summer and short courses, which may have different deadlines. Complete withdrawal after the eighth week requires a petition to the appropriate dean. A student who wishes to withdraw from one or all courses, but not the university, should submit a Registration Transaction Form. A student who wishes to withdraw from the University upon completion of currently registered courses should notify their program director and Health Sciences Student Services.

All charges for courses from which the student withdraws are subject to the refund policy listed under Fees and Financial Regulations in this Bulletin. Failure to complete a Complete Withdrawal Form can result in an extended financial obligation and the recording of grades of *F* (Failure) or notations of *Z* (Unauthorized Withdrawal).

Graduation Requirements

Degrees are conferred in January, May, and August. Degree-seeking students graduating from health sciences may

participate in the commencement ceremony held each year in May.

To be recommended for graduation by the faculty, students must have met admission requirements; have completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree; have filed an application for graduation prior to the published deadline; and be free from all indebtedness to the University. Registration, either for course work or for continuous enrollment, is required for the semester or summer session at the close of which the degree is to be conferred.

Applications for graduation must be filed by October 1 for fall graduation, February 1 for spring graduation, and July 1 for summer graduation.

Undergraduate Residence Requirements– Bachelor of Science in Health Sciences programs follow the Residence Requirement under University Regulations (http://bulletin.gwu.edu/university-regulations).

Graduate and Doctoral Residence Requirements– Graduate and doctoral programs may set higher residency requirements; students should consult the program office or program handbook, if applicable.

Honors—Bachelor's degrees with honors are awarded to students whose academic records give evidence of particular merit. The student's grade-point average determines the level of honors as follows: *cum laude*, 3.4-3.59; *magna cum laude*, 3.6-3.79; *summa cum laude*, 3.8-4.0. The grade-point average includes all course work completed at GW and is not rounded off. To be eligible for an honors designation, a student must complete at least 60 hours of coursework at GW.

The grade-point average is calculated by the Office of the Registrar, and the honors designation is entered on the transcript and the diploma of those students who earn an honors designation. If honors are entered in the commencement program, honors status will be determined on the basis of work completed by the end of the seventh term and entered only for those students who have completed seven-eighths of the credit hours required for the degree. Honors indicated on the diploma are calculated on the basis of all course work completed. The diploma and transcript are the official indication that a degree was conferred and honors awarded.

Certificate Completion—Students planning to complete a certificate by the end of a semester must submit a certificate completion form (http://registrar.gwu.edu/certificate-completion) by April 1 for spring semester, July 1 for summer semester, and December 1 for fall semester. Students completing a certificate are not recognized at the university commencement and are not issued tickets to the ceremony.

Financial Aid

The George Washington University financial assistance for undergraduate students is described in *Financial Aid Sourcebook* from The George Washington University Office of Student Financial Assistance (http://financialaid.gwu.edu). Undergraduate aid consists of two basic types: awards for academic achievement or talent without reference to financial circumstances (merit scholarships) and scholarships, grants, loans, and employment based on academic achievement and demonstrated financial need. All undergraduate gift aid (institutional scholarships and grants, and federal grants) requires that the recipient be working on the first undergraduate degree and be registered for a full-time course load at GW. Students are limited to eight semesters of institutional aid. Institutional aid is not available for online programs nor graduate programs. Loans and resident assistantships not based on financial need are available.

Several offices on campus provide information on financial assistance for graduate and certificate students. Information about funding opportunities is provided by the Office of Graduate Student Assistantships and Fellowships (http://www.gwu.edu/~fellows). Forms and information on federal loans for graduate students can be obtained from the Office of Student Financial Assistance. (http://financialaid.gwu.edu) Information on the Federal Work-Study Program, cooperative education opportunities, and on- and off-campus employment is available from the GW Career Center (http://careerservices.gwu.edu). Gift aid (scholarships, grants, fellowships, assistantships, etc.) is taxable to the extent that it exceeds the allowable costs of tuition, fees, and required books and supplies or is dedicated to other costs, such as room and board. Federal grants may be taxable if, together with other gift assistance, they exceed the allowable costs. In the case of a student who is awarded tuition scholarships, grants, or awards from more than one source, the combined amount cannot exceed tuition charges; institutional aid will be adjusted to this limit.

In general, consideration for financial aid is restricted to students in good academic standing who meet the minimum grade-point average for particular awards and are not financially encumbered by any other University office. Applications for institutional or federal aid cannot be processed if the relevant tax returns have not been filed in accordance with the IRS Code. Documents submitted as part of aid applications become the property of the University and cannot be returned. Federal regulations require that the University report suspected cases of fraud or misrepresentation to the appropriate federal, state, and local authorities.

Information on financial aid is accurate at the time each Bulletin is prepared for press. Future changes in federal regulations or institutional policies may alter the application requirements or program guidelines.

UNDERGRADUATE

Associate's programs

- Associate in Science in the field of health sciences (p. 769)
- Associate in Science in the field of health sciences laboratory technology (p. 770)

Bachelor's programs

- Bachelor of Science in Health Sciences with a major in bioinformatics (p. 771)
- Bachelor of Science in Health Sciences with a major in clinical health sciences (p. 772)
- Bachelor of Science in Health Sciences with a major in clinical management and leadership (p. 773)
- Bachelor of Science in Health Sciences with a major in clinical research administration
- Bachelor of Science in Health Sciences in the field of cytotechnology (p. 775)**(military contract)**
- Bachelor of Science in Health Sciences with a major in emergency medical services management
- Bachelor of Science in Health Sciences with a major in health intervention and disaster response
- Bachelor of Science in Health Sciences with a major in medical informatics (p. 778)
- Bachelor of Science in Health Sciences with a major in medical laboratory science

Combined programs

- Bachelor of Science in Health Sciences and Master of Science in Health Sciences in the field of clinical management and leadership
- Bachelor of Science in Health Sciences in the field of clinical management and leadership and Master of Science in Health Sciences in the field of health care quality
- Bachelor of Science in Health Sciences and Master of Science in Health Sciences in the field of clinical research administration
- Bachelor of Science in Health Sciences in the field of clinical research administration and Master of Science in Health Science in the field of regulatory affairs
- Bachelor of Science in Health Sciences in the field of emergency medical services management and Master of Science in Health Sciences in the field of clinical management and leadership

Minors

- Minor in anatomy (p. 785)
- Minor in blood banking for medical laboratory science (p. 785)
- Minor in chemistry for medical laboratory science (p. 785)
- Minor in clinical research administration (p. 785)
- Minor in emergency health services
- Minor in health sciences (p. 786)
- Minor in hematology for medical laboratory science (p. 786)
- Minor in microbiology for medical laboratory science (p. 786)

GRADUATE

Master's programs

- Master of Science in Health Sciences in the field of clinical management and leadership (p. 787)
- Master of Science in Health Sciences in the field of clinical microbiology (p. 788)
- Master of Science in Health Sciences in the field of clinical research administration
- Master of Science in Health Sciences in the field of clinical and translational research
- Master of Science in Health Sciences in the field of emergency medical services leadership
- Master of Science in Health Sciences in the field of health care quality (p. 790)
- Master of Science in Health Sciences in the field of immunohematology and biotechnology (p. 792)
- Master of Science in Health Sciences in the field of integrative medicine (p. 792)
- Master of Science in Health Sciences in the field of medical laboratory science (p. 793)
- Master of Science in Health Sciences in the field of molecular diagnostic science (p. 793)
- Master of Science in Health Sciences in the field of regulatory affairs (p. 795)
- Master of Science in Health Sciences in the field of physician assistant (p. 794)
- Master of Science in Health Sciences in the field of translational microbiology (p. 795)

Dual degree program

- Master of Science in Health Sciences in the field of physician assistant and Master of Public Health (Milken Institute School of Public Health) (p. 796)

Military contract programs

- Master of Science in Health Sciences in the field of immunohematology (p. 791)

Doctoral programs

- Doctor of Philosophy in the field of translational health sciences (p. 799)
- Doctor of Physical Therapy (p. 800)
- Advanced Practice Clinical Doctorate in Occupational Therapy (p. 801)

CERTIFICATES

Post-baccalaureate certificates

- Post-baccalaureate certificate in medical laboratory science (p. 804)
- Post-baccalaureate certificate in blood banking for medical laboratory science (p. 802)
- Post-baccalaureate certificate in chemistry for medical laboratory science (p. 803)
- Post-baccalaureate certificate in hematology for medical laboratory science (p. 804)
- Post-baccalaureate certificate in microbiology for medical laboratory science (p. 805)
- Post-baccalaureate certificate in pre-medicine (p. 805)

Graduate certificates

- Graduate certificate in clinical research administration (p. 805)
- Graduate certificate in clinical and translational research (p. 806)
- Graduate certificate in clinical research practice (p. 806)
- Graduate certificate in health care quality (p. 806)
- Graduate certificate in integrative medicine (p. 807)
- Graduate certificate in regulatory affairs (p. 807)

Undergraduate certificate (military contract)

- Undergraduate certificate in the field of health sciences laboratory science (p. 803)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

- Anatomy & Regenerative Biology (ANAT) (p. 1027)
- Clinical Management Leadership (CML) (p. 1073)
- Clinical Research and Administration (CRA) (p. 1074)
- Emergency Health Services (EHS) (p. 1194)
- Health Care Quality (HCQ) (p. 1245)
- Health Sciences (HSCI) (p. 1247)
- Medical Laboratory Science (MLS) (p. 1349)
- Occupational Therapy (OT) (p. 1367)
- Pharmacogenomics (PHRG) (p. 1369)
- Physician Assistant (PA) (p. 1379)
- Physical Therapy (PT) (p. 1376)
- Regulatory Affairs (RAFF) (p. 1442)
- Translational Health Sciences (THS) (p. 1483)

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- Bachelor of Science in Health Sciences with a major in medical laboratory science

Combined programs

- Bachelor of Science in Health Sciences and Master of Science in Health Sciences in the field of clinical management and leadership
- Bachelor of Science in Health Sciences in the field of clinical management and leadership and Master of Science in Health Sciences in the field of health care quality
- Bachelor of Science in Health Sciences and Master of Science in Health Sciences in the field of clinical research administration
- Bachelor of Science in Health Sciences in the field of clinical research administration and Master of Science in Health Science in the field of regulatory affairs
- Bachelor of Science in Health Sciences in the field of emergency medical services management and Master of Science in Health Sciences in the field of clinical management and leadership

Minors

- Minor in anatomy (p. 785)

- Minor in blood banking for medical laboratory science (p. 785)
- Minor in chemistry for medical laboratory science (p. 785)
- Minor in clinical research administration (p. 785)
- Minor in emergency health services
- Minor in health sciences (p. 786)
- Minor in hematology for medical laboratory science (p. 786)
- Minor in microbiology for medical laboratory science (p. 786)

ASSOCIATE IN SCIENCE IN THE FIELD OF HISTOTECHNOLOGY

This program provides formal training for histopathology technicians who are assigned to a medical treatment facility (MTF). The course combines didactic classroom instruction, hands-on experience and clinical rotations in an MTF. The instruction also assists graduates in preparing for the histotechnician (HT) certification examination. Instruction is presented in the following major areas: introduction to histotechnology, basic scientific information, specimen processing for histological study, routine technical procedures, special stains for histologic study, anatomy and tissue identification, autopsy procedures, cytopreparatory techniques, immunohistochemistry, practical histotechnician training, and clinical practicum.

REQUIREMENTS

The following requirements must be fulfilled: 63 credits, including 18 credits in general education courses, and 45 credits from courses in the major. The general education requirements may be completed by taking coursework at GW or another regionally accredited institution.

General Education (18 Credits)

6 credits English composition

3 credits college mathematics

3 credits social sciences

3 credits humanities

3 credits chemistry

Courses in the Major (45 credits)

MLS 1040 - Introduction to Histotechnology

MLS 1041 - Basic Scientific Information

MLS 1042 - Specimen Processing for Histological Study

MLS 1043 - Routine Technical Procedures

MLS 1044 - Special Stains for Histological Study

MLS 1045 - Anatomy and Tissue Identification

MLS 1046 - Autopsy Procedures

MLS 1047 - Cytopreparatory Techniques

MLS 1048 - Immunohistochemistry

MLS 1049 - Practical Histotechnician Training

MLS 1050 - Histo Clinical Practicum

ASSOCIATE IN SCIENCE IN THE FIELD OF HEALTH SCIENCES

The associate in science (A.S.) in health sciences (http://smhs.gwu.edu/military-affiliated-programs/health-sciences) is a degree completion program restricted to current and former Army 18D, Navy IDCs, Air Force IDMTs, and Army or Navy MLTs. Additional military occupations may be reviewed for consideration.

Visit the program website (http://smhs.gwu.edu/military-affiliated-programs/health-sciences/admissions) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 69 credits, including 44 credits in advanced standing, 19 credits in general education, and 6 credits in health sciences courses.

Code	Title	Credits
44 credits of advanced standing		
Advanced standing for military courses will be noted on the student's record and applied towards the associate's degree during the first semester of the student's enrollment in the program.		
19 credits of general education including:		
3 credits of English composition		
3 credits of mathematics or statistics		
3 credits of humanities		
6 credits of social sciences		
4 credits of natural or physical science		

For students who have not completed all general education coursework prior to entering the program, GW offers via distance learning all courses needed to satisfy this requirement. Those planning to apply to B.S.H.S. programs are strongly encouraged to take unfulfilled general education coursework at GW by taking the recommended courses shown below.

6 credits of health sciences courses		

Code	Title	Credits
General education courses offered by GW		
For students who have not completed all general education course requirements prior to enrollment, the following course offered by GW are recommended:		
English composition		
HSCI 2100	Writing and Composition in the Health Sciences	
Mathematics or statistics		
HSCI 2115	Intro Biostatistics-Health Sci	
HSCI 2117	Introduction to Statistics for Health Sciences	
Humanities		
HSCI 2107	Health Care in Literature	
Social sciences		
HSCI 2103	Health Policy and the Health Care System	
HSCI 2111	Dev/Health Care Professions	

Code	Title	Credits
Required GW health sciences distance learning courses		
Two of the following:		
HSCI 2101	Psychosocial Aspects of Health and Illness	
HSCI 2102	Pathophysiology	
HSCI 2105	Current Issus in Bioethics	

Transfer of credits

For an assessment on the transferability of your previous coursework contact the program office (http://smhs.gwu.edu/crl/programs/chs/curriculum/as). To be eligible for transfer, courses must be:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

ASSOCIATE IN SCIENCE IN THE FIELD OF HEALTH SCIENCES LABORATORY TECHNOLOGY

Admission to the associate in science (A.S.) in health science laboratory technology (HSLT) (http://smhs.gwu.edu/military-affiliated-programs/as-mlt) program is restricted to students who have completed the MLT I: certificate in health sciences laboratory technology (http://smhs.gwu.edu/military-affiliated-programs/cert-mlt) at GW, within the past five years. The program offers Army and Navy medical laboratory technicians (MLTs) the opportunity to enhance their skills, obtain the credentials to pursue advanced study, and be eligible for promotion within the military.

Visit the military affiliated programs website (http://smhs.gwu.edu/military-affiliated-programs) for more information.

REQUIREMENTS

The following requirements must be fulfilled: 75 credits, 60 of which are awarded for completion of the MLT I: certificate in health sciences laboratory technology (http://smhs.gwu.edu/military-affiliated-programs/cert-mlt), and 15 credits in general education courses. The general education requirements may be completed by taking coursework at GW or another regionally accredited institution.

Code	Title	Credits
15 credits of general education including:		
3 credits of English composition		
3 credits of college algebra or statistics or higher		
3 credits of social sciences		
3 credits of humanities		
3 credits of biology or chemistry		
Recommended general education courses at GW that fulfill these requirements:		
English composition		
HSCI 2100	Writing and Composition in the Health Sciences	
Statistics		
HSCI 2115	Intro Biostatistics-Health Sci	
HSCI 2117	Introduction to Statistics for Health Sciences	
Social sciences		

HSCI 2101	Psychosocial Aspects of Health and Illness
HSCI 2103	Health Policy and the Health Care System
Humanities	
HSCI 2105	Current Issus in Bioethics
HSCI 2107	Health Care in Literature
Biology or Chemistry	
MLS 2000	Biology for Health Sciences
MLS 2001	Chemistry for Health Sciences

Transferring credits

For an assessment on the transferability of your previous coursework, please contact the program office (http://smhs.gwu.edu/crl/programs/military/as-mlt). Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN BIOINFORMATICS

Bioinformaticists use computers to analyze, organize, and visualize biological data in ways that increase the understanding of this data and lead to new discoveries. Graduates of this program will be well-qualified for many rewarding careers, including those in bioinformatics software development, biomedical research, biotechnology, comparative genomics, genomics, molecular imaging, pharmaceutical research and development, proteomics, and vaccine development.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
60 credits of general education including:		
3 credits English composition		
3 credits humanities		
6 credits social science		
8 credits biology with lab		
8 credits of general or inorganic chemistry with lab		
4 credits of organic chemistry with lab or 4 credits of genetics with lab		
8 credits in computer science (or related coursework in programming languages)		
4 credits in calculus		
3 credits in statistics		
13 credits in elective courses. Additional courses in biology, chemistry, computer science, mathematics, and/or statistics are recommended.		
Required		
HSCI 2105	Current Issus in Bioethics	
HSCI 2112W	Writing in the Health Sciences	
HSCI 4106	Intro to Epidemiology for HS	
HSCI 4112W	Rsrch/Wrtng in Health Sciences	
INFR 3101	Introduction to Bioinformatics	
INFR 3102	Scripting	
INFR 3103	Genomics	
INFR 4120	Bioinformatics Algorithms	
INFR 4121	High Performance Computing	
INFR 4122	Advanced Scripting	
INFR 4123	Statistical Genetics	
INFR 4203	Seminar in Computational Biology	
6 credits from the following (may be repeated for credit):		
INFR 4204	Bioinformatics Internship	
INFR 4205	Bioinformatics Research Project	
Electives		
9 credits from the following:		
INFR 3104	Human Genetics	
HSCI 3105	Biochemistry	
HSCI 3106	Microbiology for Health Sciences	
HSCI 3117	Principles of Biostatistics for Health Sciences	

9 credits from the following:	
INFR 4101	Introduction to Medical Informatics
INFR 4102	Survey of Medicine for Informaticians
INFR 4104	Medical Informatics Terminology & Standards
INFR 4105	Consumer Health Informatics
INFR 4106	Population Health for Medical Informatics

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN CLINICAL HEALTH SCIENCES

The bachelor of science in health sciences (B.S.H.S.) with a major in clinical health sciences degree program is available only to active-duty Navy IDCs, Army 18Ds, and Air Force IDMTs. Coast Guardsmen who completed a Navy IDC School may be eligible, depending on their current duty assignment.

This distance learning program offers active-duty Navy IDCs, Army Special Forces Medical Sergeants (18Ds), and Air Force Independent Medical Technicians (IDMTs) a way to formalize their specialized military training with a GW degree. All courses are offered online in a flexible, asynchronous format allowing students to pursue their degree, regardless of time zone, station, or overseas assignment. The clinical rotations are arranged by students in their current duty station or location.

Visit the program website (https://smhs.gwu.edu/medical-laboratory-sciences/programs/bshs/curriculum) for additional information.

REQUIREMENTS

The BSHS with a major in Clinical Health Sciences (http://smhs.gwu.edu/crl/military) is a degree completion program that requires successful completion of **120 credit hours**, divided into three degree components.

The following requirements must be fulfilled:

Code	Title	Credits
Advanced standing and electives (60 credits):		
During the first semester the student is enrolled in the program, advanced standing for eligible military courses will be noted on the student's record and applied towards the bachelor's degree.		
General education (24 credits):		
3 credits of English composition		
4 credits of natural or physical science with lab		
8 credits of mathematics, science, or statistics		
6 credits of social sciences		
3 credits of humanities		

If a student still needs general education coursework, GW offers online coursework for some of these requirements.

Code	Title	Credits
Recommended coursework at GW (for those missing general education requirements)		
General education		
English composition		
HSCI 2100	Writing and Composition in the Health Sciences	
Humanities		
HSCI 2107	Health Care in Literature	
Social sciences		
HSCI 2103	Health Policy and the Health Care System	
HSCI 2111	Dev/Health Care Professions	
HSCI 4103	Health Care Law/Regulation	
Science or statistics		
HSCI 2117	Introduction to Statistics for Health Sciences	
MLS 2000	Biology for Health Sciences	
MLS 2001	Chemistry for Health Sciences	

Code	Title	Credits
At least 36 credits of GW coursework including:		
Foundation courses		
HSCI 2101	Psychosocial Aspects of Health and Illness	
HSCI 2102	Pathophysiology	
HSCI 2105	Current Issus in Bioethics	
HSCI 2112W	Writing in the Health Sciences	

HSCI 2130	Primary Care Skills Practicum *
HSCI 2131	Adult Primary Care Practicum *
HSCI 2133	Specialized Clinicl Experience *
HSCI 3117	Principles of Biostatistics for Health Sciences
HSCI 4102	HumanPhysiology/ExtremeEnviro
HSCI 4112W	Rsrch/Wrtng in Health Sciences
MLS 4141	Immunology and Serology
Capstone	
One of the following	
CML 4144	Seminar/Health Sci Leadership
EHS 4101	Humanitarian Relief Ops
Electives	
One of the following selected in consultation with advisor	
EHS 2211	Intro to Telemedicine
HSCI 2103	Health Policy and the Health Care System
HSCI 2108	Quality Improvement in Health Care
HSCI 2110	Disease Prev/Health Promotion
HSCI 2114	Healthcare/Developing Nations
HSCI 4106	Intro to Epidemiology for HS

*Must be completed while on active-duty. Students arrange rotations at their current duty stations. All rotations require a MD or PA preceptor.

HSCI 2103 Health Policy and the Health Care System cannot be double-counted for a general education requirement and an elective; it may only be used to complete one requirement.

Transferable Coursework (84 credit hour maximum)

For an assessment on the transferability of your previous coursework, please contact the program office. Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a C or better (C- grades do not transfer)

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN CLINICAL MANAGEMENT AND LEADERSHIP

The bachelor of science in health sciences with a major in clinical management and leadership degree program is designed for working health science professionals who may be seeking career advancement, future graduate study, enhanced performance in a current position, or simply to broaden knowledge and skills. Courses focus on communication skills, leadership and group effectiveness, administrative functions, operations and information management, consumer needs, and the changing face of health care.

REQUIREMENTS

The Bachelor of Health Sciences with a major in the field of clinical management and leadershi (http://smhs.gwu.edu/crl/programs/cml)p is a degree completion program that requires successful completion of 120 credits, 60 of which must be completed at GW. Up to 60 credits of course work may be transferable from course work taken elsewhere.

The following requirements must be fulfilled:

Code	Title	Credits
60 credits of general education and advanced standing:		
3 credits of English composition		
4 credits of natural or physical science with lab		
6 credits of social sciences		
3 credits of humanities		
44 credits of advanced standing*		
* Additional academic coursework. Non-traditional credit sources may be considered on a case-by-case basis (i.e. military coursework, credit-by-exam, and non-college based health programs).		
Requirements for the major:		
At least 60 credits of GW coursework including:		
CML 2140	Mgt of HR in Health Sci Org	
CML 2141	Planning&Mktg/Health Sciences	
CML 2142	Financial Mgt/Health Sciences	
CML 2143	Current Issues/Hlth Sci Mgt	
CML 4144	Seminar/Health Sci Leadership	

HSCI 2103	Health Policy and the Health Care System
HSCI 2104	Management of Health Science Services
HSCI 2105	Current Issus in Bioethics
HSCI 2107	Health Care in Literature
HSCI 2108	Quality Improvement in Health Care
HSCI 2112W	Writing in the Health Sciences
HSCI 2113	Informatics in the HSci
HSCI 2117	Introduction to Statistics for Health Sciences
HSCI 4103	Health Care Law/Regulation
HSCI 4105	Case Studies in Health Care
HSCI 4106	Intro to Epidemiology for HS
HSCI 4112W	Rsrch/Wrtng in Health Sciences
Three courses selected from the following (advisor approval is required):	
HSCI 2101	Psychosocial Aspects of Health and Illness
HSCI 2102	Pathophysiology
HSCI 2110	Disease Prev/Health Promotion
HSCI 2111	Dev/Health Care Professions
HSCI 3117	Principles of Biostatistics for Health Sciences

Transferring credits

Up to 60 credits may be transferrable from courses taken elsewhere. For an assessment on the transferability of your previous coursework, please contact the program office. Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN CLINICAL RESEARCH ADMINISTRATION

Offered in a distance learning format, the bachelor of science in health sciences with a major in clinical research administration prepares health sciences professionals to work in a vast and expanding field that involves the processes by which products (drugs, devices, biologics) and treatment protocols are developed for improving patient care.

REQUIREMENTS

The bachelor of science in the health sciences with a major in clinical research administration (http://smhs.gwu.edu/crl/programs/cra) is a degree completion program that requires successful completion of **120 credits,** 60 credits of which must be completed at GW. Up to 60 credits of coursework may be transferable from coursework taken elsewhere.

The following requirements must be fulfilled:

Code	Title	Credits
60 credits of general education and advanced standing including:		
3 credits of English composition		
4 credits of natural or physical science with lab		
6 credits of social sciences		
3 credits of humanities		
44 credits of advanced standing*		
* Additional academic coursework. Non-traditional credit sources may be considered on a case-by-case basis (i.e. military coursework, credit-by-exam, and non-college based health programs).		
Requirements for the major:		
At least 60 credits of GW coursework including:		
CRA 2101	Basics of Clinical Research	
CRA 2102	Processes of Clinical Research	
CRA 2103	Good Clinical Practices	
CRA 2104	Business of Clinical Research	
CRA 2105	Topics in Clinical Research	
CRA 2107	Intro Monitoring Clin. Trials	
HSCI 2102	Pathophysiology	

HSCI 2103	Health Policy and the Health Care System
HSCI 2105	Current Issus in Bioethics
HSCI 2107	Health Care in Literature
HSCI 2112W	Writing in the Health Sciences
HSCI 2113	Informatics in the HSci
HSCI 3117	Principles of Biostatistics for Health Sciences
HSCI 4103	Health Care Law/Regulation
HSCI 4105	Case Studies in Health Care
HSCI 4106	Intro to Epidemiology for HS
HSCI 4112W	Rsrch/Wrtng in Health Sciences
Electives	
3 courses from the following with advisor approval:	
CML 2143	Current Issues/Hlth Sci Mgt
HSCI 2104	Management of Health Science Services
HSCI 2108	Quality Improvement in Health Care
HSCI 2110	Disease Prev/Health Promotion
HSCI 2117	Introduction to Statistics for Health Sciences

Transferring credits

Up to 60 credits of coursework may be transferable from coursework taken elsewhere. For an assessment on the transferability of your previous coursework, please contact the program office. Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN CYTOTECHNOLOGY

Established between GW and the Medical Education Training Campus (METC), the bachelor of science in health sciences with a major in cytotechnology degree program (http://smhs.gwu.edu/military-affiliated-programs/cytotechnology) is restricted to pre-selected military service members.

This contract program provides GW educational services to eligible active duty U.S. Army service members, including:

- Academic advising for students who have outstanding prerequisites for eligibility.
- Application and registration services.
- Academic record maintenance.
- Conferral of a bachelor of science in health sciences degree to students upon successful completion of 126 credits in the required program.

REQUIREMENTS

The following requirements must be fulfilled: 126 credits including 49 credits in general education, 27 credits in advanced standing and electives and 50 credits in distance education clinical laboratory sciences and health sciences courses. The B.S.H.S. in cytotechnology is a one-year program.

The BSHS in Cytotechnology is a 126 credit hour degree program divided into three components: general education (49 credit hours), advanced standing and electives (27 credit hours), and distance education clinical laboratory sciences and health sciences courses (50 credit hours). The BSHS in Cytotechnology is a one-year program.

General education (49 credits)

- Biology* (20 credits)
- Chemistry* (8 credits)
- College Algebra, Statistics, or higher (3 credits)
- Humanities or Social Sciences (12 credits)
- English Composition (6 credits)

*Students with the MLT Certificate will have these transfer credits applied to fulfill all of the biology, chemistry, and elective requirements for the degree program.

Electives (27 credits)

Previously earned college-level coursework will be evaluated for transfer as elective credit. Acceptable transfer coursework must be:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a C or better (C- grades do not transfer)

Code	Title	Credits
Major courses		
Clinical laboratory coursework		
MLS 4101	Introduction to Cytotechnology	
MLS 4102	Gynecologic Cytology	

MLS 4103	Abnormal Gynecologic Cytology
MLS 4104	Pulmonary Cytology
MLS 4105	Cytology of the Gastrointestinal Tract, Liver, and Pancreas
MLS 4106	Urogenital System Cytology
MLS 4107	Body Cavity Fluid Cytology
MLS 4108	Fine Needle Aspiration
MLS 4109	Cytotechnology Clinical Practicum
MLS 4110	Independent Study in Cytotechnology
GW coursework - completed through GW distance education coursework	
HSCI 2112	Writing in the Health Sciences
MLS 4151	Molecular Diagnostics

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN EMERGENCY MEDICAL SERVICES MANAGEMENT

Emergency Medical Services (EMS) is a challenging and rapidly emerging discipline at the intersection of traditional EMS, public health, public safety, and health care. The bachelor of science in health sciences in emergency medical services management (EMSM) is designed to prepare students for leadership positions in the field that will improve the quality of out-of-hospital care domestically and internationally.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
60 credits of general education and advanced standing including:		
3 credits of English composition		
4 credits of natural or physical science with lab		
6 credits of social sciences		
3 credits of humanities		
44 credits of advanced standing*		

* Additional academic coursework. Non-traditional credit sources may be considered on a case-by-case basis (i.e. military coursework, credit-by-exam, and non-college based health programs).

Requirements for the major:	
At least 60 credits of GW coursework including:	
CML 2140	Mgt of HR in Health Sci Org
CML 2142	Financial Mgt/Health Sciences
EHS 2174	Foundations of Emergency Health Services Systems
EHS 2175	Community Risk Management and Safety in EHS
EHS 4110	Operations Mgt in EHS Systems
EHS 4111	Leadership Concepts in EHS
EHS 4112	Special Ops and Disaster Mgt
EHS 4144	Seminar in EHS Leadership
HSCI 2103	Health Policy and the Health Care System
HSCI 2104	Management of Health Science Services
HSCI 2105	Current Issus in Bioethics
HSCI 2108	Quality Improvement in Health Care
HSCI 2112W	Writing in the Health Sciences
HSCI 2117	Introduction to Statistics for Health Sciences
HSCI 4103	Health Care Law/Regulation
HSCI 4106	Intro to Epidemiology for HS
HSCI 4112W	Rsrch/Wrtng in Health Sciences
Three elective courses from the following (advisor approval is required):	
EHS 2211	Intro to Telemedicine
EHS 4101	Humanitarian Relief Ops
HSCI 2101	Psychosocial Aspects of Health and Illness
HSCI 2102	Pathophysiology
HSCI 2110	Disease Prev/Health Promotion
HSCI 2111	Dev/Health Care Professions

HSCI 3117	Principles of Biostatistics for Health Sciences
HSCI 4102	HumanPhysiology/ExtremeEnviro
HSCI 4105	Case Studies in Health Care

Transferring credits

Up to 60 credits of coursework may be transferable from coursework taken elsewhere provided it is:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN HEALTH INTERVENTION AND DISASTER RESPONSE

Offered in a distance learning format, the bachelor of science in health sciences (B.S.H.S.) in health intervention and disaster response is available to active-duty and veteran service members from the civil affairs medic community or related healthcare fields and to civilians in the health care fields with international experience and interest. All courses are offered online in a flexible, asynchronous format allowing students to pursue their degree, regardless of time zone, station, or overseas assignment.

Drawing heavily from both civilian and military challenges and successes experienced during natural as well as man-made disaster and crisis events, both domestically and internationally, the program allows civil affairs medics to build on their existing academic, military, and training experiences. Students are called upon to work individually as well as collaboratively in the development of broadened view of and holistic approach to delivery of aid and relief to the individuals, families, and communities affected by catastrophic events.

REQUIREMENTS

The bachelor of science in health sciences with a major in health intervention and disaster response (http://smhs.gwu.edu/crl/programs/hidr) is a distance learning degree completion program that requires successful completion of 120 credits, 60 of which must be completed at GW. Up to 60 credits of coursework may be transferred from coursework taken elsewhere.

The following requirements must be fulfilled:

Code	Title	Credits
60 credits of general education and advanced standing including:		
3 credits of English composition		
4 credits of natural or physical science with lab		
6 credits of social sciences		
3 credits of humanities		
44 credits of advanced standing*		
Required		
At least 60 credits of GW courses including		
CML 2143	Current Issues/Hlth Sci Mgt	
EHS 2211	Intro to Telemedicine	
EHS 4101	Humanitarian Relief Ops	
HSCI 2101	Psychosocial Aspects of Health and Illness	
HSCI 2102	Pathophysiology	
HSCI 2104	Management of Health Science Services	
HSCI 2105	Current Issus in Bioethics	
HSCI 2110	Disease Prev/Health Promotion	
HSCI 2112W	Writing in the Health Sciences	
HSCI 2113	Informatics in the HSci	
HSCI 2114	Healthcare/Developing Nations	
HSCI 2117	Introduction to Statistics for Health Sciences	
HSCI 4102	HumanPhysiology/ExtremeEnviro	
HSCI 4106	Intro to Epidemiology for HS	
HSCI 4112W	Rsrch/Wrtng in Health Sciences	
MLS 4114	Clinical Microbiology	
MLS 4115	Parasitology and Mycology	
MLS 4141	Immunology and Serology	
Elective		
Three of the following with advisor approval:		
CML 2142	Financial Mgt/Health Sciences	

EHS 2175	Community Risk Management and Safety in EHS
EHS 4112	Special Ops and Disaster Mgt
HSCI 2103	Health Policy and the Health Care System
HSCI 2111	Dev/Health Care Professions
HSCI 3117	Principles of Biostatistics for Health Sciences
HSCI 4105	Case Studies in Health Care

*Additional academic coursework. Non-traditional credit sources may be considered on a case-by-case basis (i.e., military coursework, credit-by-exam, and non-college based health programs).

Transferring credits

Up to 60 credits of coursework may be transferable from coursework taken elsewhere. For an assessment on the transferability of your previous coursework, please contact the program office. Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN MEDICAL INFORMATICS

The bachelor of science in health sciences (B.S.H.S.) in the field of medical Informatics helps prepare students for rewarding careers such as health data analysts, system evaluators, and annotators. The emerging field of medical informatics serves as the bridge between human–computer interactions in the health care space and focuses on how data collected in these settings can be leveraged to improve patient safety, outcomes, and quality. Full- and part-time programs of study are available.

REQUIREMENTS

The bachelor of health sciences (B.S.H.S.) with a major in the field of medical informatics (https://smhs.gwu.edu/medical-informatics) is a degree completion program that requires successful completion of 120 credits, 60 of which must be completed at GW. Up to 60 credits of course work may be transferable from course work taken elsewhere.

The following requirements must be fulfilled:

General education and advanced standing (60 credits)

- 3 credits English composition
- 3 credits humanities
- 6 credits social science (psychology recommended)
- 4 credits biology with lab (anatomy and physiology with lab also acceptable)
- 3 credits in statistics
- 41 credits of electives (experience/coursework in programming languages is highly recommended. Additional biology, computer science, math, and cognitive science courses also recommended.)

Code	Title	Credits
Required GW courses		
HSCI 2105	Current Issus in Bioethics	
HSCI 2108	Quality Improvement in Health Care	
HSCI 2112W	Writing in the Health Sciences	
HSCI 3117	Principles of Biostatistics for Health Sciences	
HSCI 4106	Intro to Epidemiology for HS	
HSCI 4112W	Rsrch/Wrtng in Health Sciences	
INFR 4101	Introduction to Medical Informatics	
INFR 4102	Survey of Medicine for Informaticians	
INFR 4103	Programming for Informaticians	
INFR 4104	Medical Informatics Terminology & Standards	
INFR 4105	Consumer Health Informatics	
INFR 4106	Population Health for Medical Informatics	
INFR 4107	Clinical Decision Support	
INFR 4108	Information Extraction for Medical Informatics	
INFR 4109	Evaluation Methods in Medical Informatics	
INFR 4110	Biomedical Data Science	
INFR 4197	Medical Informatics Internship	
or INFR 4198	Medical Informatics Research Project	
Electives		

9 credits from the following:	
INFR 4197	Medical Informatics Internship
INFR 4198	Medical Informatics Research Project
HSCI 2101	Psychosocial Aspects of Health and Illness
HSCI 2102	Pathophysiology
HSCI 2103	Health Policy and the Health Care System
HSCI 4103	Health Care Law/Regulation

Transferable Coursework (60 credit maximum)

For an assessment on the transferability of your previous coursework, please contact the program office. Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a C or better (C- grades do not transfer)

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN MEDICAL LABORATORY SCIENCE

Medical laboratory sciences combines medicine, basic sciences, and clinical sciences. Professionals in the field investigate and determine the causes of disease, using the latest biomedical instruments and molecular techniques to perform both routine and complex testing. The bachelor of science in health sciences (B.S.H.S.) with a major in medical laboratory science (MLS) is a degree completion program that is offered in two formats: distance learning or a hybrid of distance learning and on-campus study:

- B.S.H.S. in Medical Laboratory Science—Fully Online: (http://smhs.gwu.edu/medical-laboratory-sciences/programs/bshs/fully-online-mlt/mlt-mls-bshs-medical-laboratory-science-fully-online) Offered entirely via distance learning, the B.S.H.S. in MLS is for students who have successfully completed a medical laboratory technician (MLS) program and are currently certified MLTs.
- B.S.H.S. in Medical Laboratory Science—Blended: (http://smhs.gwu.edu/medical-laboratory-sciences/programs/bshs/curriculum)The blended B.S.H.S. in MLS is for students who have completed 60 credits towards an associate's degree or who have earned an associate's degree along with the required prerequisite science and general education courses.

This program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) (http://bulletin.gwu.edu/medicine-health-sciences/undergraduate-programs/bshs-medical-laboratory-science/%20http://www.naacls.org).

Visit the program website (http://smhs.gwu.edu/medical-laboratory-sciences/programs/bshs) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 120 credits, including a minimum of 60 credits in required courses completed at GW and up to 60 transfer credits in courses taken elsewhere. Eligible students admitted through approved SMHS Guaranteed Admission Agreements (http://smhs.gwu.edu/academics/health-sciences-programs/guaranteed-admission-agreements) partnerships must complete a minimum of 52 required credits at GW; eligibility is reviewed on a case-by-case basis.

Code	Title	Credits
60 credits of general education and advanced standing, including:		
3 credits in English composition		
8 credits in biology with lab*		
8 credits general or inorganic chemistry with lab*		
4 credits in microbiology with lab*		
3 credits in organic chemistry or biochemistry*		
3 credits in college mathematics (college algebra, statistics or higher)		
3 credits in humanities		
6 credits in social sciences		
22 credits of advanced standing**		
Requirements for the major		
HSCI 2112W	Writing in the Health Sciences	
HSCI 4112W	Rsrch/Wrtng in Health Sciences	
MLS 4115	Parasitology and Mycology	
MLS 4123	Clinical Microbiology I	
MLS 4124	Clinical Microbiology II	
MLS 4128	Hematology I	
MLS 4129	Hematology II	
MLS 4141	Immunology and Serology	

MLS 4145	Clinical Biochemistry I
MLS 4146	Clinical Biochemistry II
MLS 4158	Laboratory Management and Operations
MLS 4150	Immunohematology
MLS 4151	Molecular Diagnostics
MLS 4159	Capstone Seminar
Additional requirements for students in the fully online B.S.H.S. program	
HSCI 2102	Pathophysiology
HSCI 2105	Current Issus in Bioethics
MLS 4136	Clinical Experience I
MLS 4137	Clinical Experience II
MLS 4138	Clinical Experience III
MLS 4139	Clinical Experience IV
One of the following:	
HSCI 2101	Psychosocial Aspects of Health and Illness
HSCI 2107	Health Care in Literature
HSCI 4106	Intro to Epidemiology for HS
Additional requirements for students in the hybrid B.S.H.S. program	
MLS 4160	Blood Bank Practicum
MLS 4161	Clinical Biochemistry Practicum
MLS 4162	Hematology Practicum
MLS 4164	ClinicalMicrobiology Practicum
MLS 4165	Urinalysis Practicum
MLS 4166	Coagulation Practicum
9 credits from the following:	
MLS 4214	Clinical Microbiology I Laboratory
MLS 4215	Clinical Parasitology and Mycology Laboratory
MLS 4224	Clinical Microbiology II Laboratory
MLS 4228	Hematology I Laboratory
MLS 4229	Hematology II Laboratory
MLS 4250	Immunohematology Laboratory
MLS 4251	Molecular Diagnostics Laboratory
MLS 4245	Clinical Biochemistry I Laboratory
MLS 4255	Clinical Biochemistry II Laboratory

*Medical laboratory technicians (MLTs) may receive transfer credit for biological sciences, general microbiology, general chemistry, and organic chemistry/biochemistry courses.
**Additional academic coursework. Non-traditional credit sources may be considered on a case-by-case basis (i.e. military coursework, credit-by-exam, and non-college based health programs). Students should have previous coursework in ethics and cultural or global perspectives.

DUAL BACHELOR OF SCIENCE IN HEALTH SCIENCES AND MASTER OF SCIENCE IN HEALTH SCIENCES IN CLINICAL RESEARCH ADMINISTRATION

Clinical Research Administration continues to evolve into a more global and complex set of integrated research and business processes. The online dual degree programs provide students with the knowledge, abilities, and vision to move health sciences organizations effectively into the future. For professionals who need to complete a bachelor's program but are also thinking about graduate study, the online dual degree program is a perfect fit! This multi-level dual degree program offers academically qualified individuals a seamless and accelerated pathway for completing both the online bachelor of science in health sciences and the online master of science in health sciences programs.

REQUIREMENTS

This multi-level online dual degree program offers academically qualified individuals a seamless and accelerated pathway for completing both the Bachelor of Science in Health Sciences (BSHS) in Clinical Research Administration and the Master of Science in Health Sciences (MSHS) in Clinical Research Administration (CRA) (http://smhs.gwu.edu/crl/programs/cra). Undergraduate and graduate degrees will be conferred sequentially, with the BSHS awarded upon completion of 120 credits (nine of which are taken for graduate credit). The MSHS is awarded following completion of an additional 27 credits of graduate course work.

BSHS in Clinical Research Administration

The BSHS with a major in Clinical Research Administration is a degree completion program that requires successful completion of 120 credits, divided into three degree

components, 60 credits of which must be completed at GW. Up to 60 credits of course work may be transferable from course work taken elsewhere.

Code	Title	Credits
The following requirements must be fulfilled:		
60 credits of general education and advanced standing including:		
3 credits of English composition		
4 credits of natural or physical science with lab		
6 credits of social science		
3 credits of humanities		
44 credits of advanced standing*		
*Additional academic coursework. Non-traditional credit sources may be considered on a case-by-case basis (i.e. military coursework, credit-by-exam, and non-college based health programs).		

Code	Title	Credits
Requirements for the major:		
At least 60 credits of GW coursework including:		
Health sciences distance education courses		
CRA 2101	Basics of Clinical Research	
CRA 2102	Processes of Clinical Research	
CRA 2103	Good Clinical Practices	
CRA 2104	Business of Clinical Research	
CRA 2105	Topics in Clinical Research	
CRA 2107	Intro Monitoring Clin. Trials	
HSCI 2102	Pathophysiology	
HSCI 2103	Health Policy and the Health Care System	
HSCI 2105	Current Issus in Bioethics	
HSCI 2107	Health Care in Literature	
HSCI 2112W	Writing in the Health Sciences	
HSCI 2113	Informatics in the HSci	
HSCI 3117	Principles of Biostatistics for Health Sciences	
HSCI 4103	Health Care Law/Regulation	
HSCI 4105	Case Studies in Health Care	
HSCI 4106	Intro to Epidemiology for HS	
HSCI 4112W	Rsrch/Wrtng in Health Sciences	
Graduate strategic leadership courses		
HSCI 6223	Topics -Health Care Leadership	
HSCI 6240	Issues & Trends in Health Syst	
CRA 6201	Critical Analysis Clin Rsch	

MSHS in Clinical Research Administration

The MSHS in Clinical Research Administration requires successful completion of an additional **27 credit hours** of graduate coursework, including 6 credit hours in research.

Code	Title	Credits
Clinical research administration courses		
CRA 6202	Medicines Development	
CRA 6203	Partnerships with Human Subjects	
CRA 6204	The Clinical Research Industry	
CRA 6210	MedicalWriting/ClinicalResrch	
CRA 6275	Ldrshp&Change in ClinRschAdmin	
Graduate research courses		
HSCI 6263	Biostatistics Transl Research	
HSCI 6264	Epidemiology Translational Res	
Graduate strategic leadership courses		
HSCI 6241	The Health Care Enterprise	
Elective course (one from the following)		
CRA 6208	International Clinical Rsrch	
CRA 6209	Monitoring Clinical Research (Strategic leadership courses)	

Credit for HSCI 6223, HSCI 6240, and CRA 6201 is applied to both the BSHS and MSHS degrees.

Transferring credits

Up to 60 credits of coursework may be transferable from coursework taken elsewhere. For an assessment on the transferability of your previous coursework, please contact the

program office. Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

DUAL BACHELOR OF SCIENCE IN HEALTH SCIENCES IN CLINICAL MANAGEMENT AND LEADERSHIP AND MASTER OF SCIENCE IN HEALTH SCIENCES IN HEALTH CARE QUALITY

This multi-level dual degree program offers academically qualified individuals a seamless and accelerated pathway for completing both the bachelor of science in health sciences (B.S.H.S.) in clinical management and leadership and the master of science in health sciences (M.S.H.S.) in health care quality. Undergraduate and graduate degrees are conferred sequentially, with the B.S.H.S. awarded upon completion of 120 credits (9 of which are taken for graduate credit). The M.S.H.S. is awarded following completion of an additional 27 credits of graduate coursework.

REQUIREMENTS

This multi-level dual degree program (http://smhs.gwu.edu/crl/programs/cml/curriculum/cml-hcq-dual-degree) offers academically qualified individuals a seamless and accelerated pathway for completing both the Bachelor of Science in Health Sciences (BSHS) in Clinical Management and Leadership (http://smhs.gwu.edu/crl/programs/cml) and the Master of Science in Health Sciences (MSHS) in Health Care Quality (http://smhs.gwu.edu/crl/programs/health-care-quality). Undergraduate and graduate degrees will be conferred sequentially, with the BSHS awarded upon completion of 120 credits (nine of which are taken for graduate credit). The MSHS is awarded following completion of an additional 27 credits of graduate coursework.

BSHS in Clinical Management & Leadership

The BSHS with a major in Clinical Management and Leadership is a degree completion program that requires successful completion of **120 credit hours**, divided into three degree components, 60 credits of which must be completed at GW. Up to 60 credits of coursework may be transferable from coursework taken elsewhere.

Code	Title	Credits
The following requirements must be fulfilled:		
60 credits of general education and advanced standing including:		
3 credits of English composition		
4 credits of natural or physical science with lab		
6 credits of social sciences		
3 credits of humanities		
44 credits of advanced standing*		

*Additional academic coursework. Non-traditional credit sources may be considered on a case-by-case basis (i.e. military coursework, credit-by-exam, and non-college based health programs).

Code	Title	Credits
Requirements for the major:		
At least 60 credits of GW coursework including:		
Health Sciences Distance Education Courses		
CML 2140	Mgt of HR in Health Sci Org	
CML 2141	Planning&Mktg/Health Sciences	
CML 2142	Financial Mgt/Health Sciences	
CML 2143	Current Issues/Hlth Sci Mgt	
CML 4144	Seminar/Health Sci Leadership	
HSCI 2103	Health Policy and the Health Care System	
HSCI 2104	Management of Health Science Services	
HSCI 2105	Current Issus in Bioethics	
HSCI 2107	Health Care in Literature	
HSCI 2108	Quality Improvement in Health Care	
HSCI 2112W	Writing in the Health Sciences	
HSCI 2113	Informatics in the HSci	
HSCI 2117	Introduction to Statistics for Health Sciences	
HSCI 4103	Health Care Law/Regulation	
HSCI 4105	Case Studies in Health Care	
HSCI 4106	Intro to Epidemiology for HS	
HSCI 4112W	Rsrch/Wrtng in Health Sciences	

Graduate Research and Leadership Courses	
HSCI 6223	Topics -Health Care Leadership (*)
HSCI 6263	Biostatistics Transl Research (*)
Health Care Quality Field	
HCQ 6200	Introduction to Health Care Quality (*)

MSHS in Health Care Quality

The MSHS in Health Care Quality requires successful completion of an additional **27 credit hours** of graduate coursework, including 6 credit hours in research.

Code	Title	Credits
Research Core		
HSCI 6263	Biostatistics Transl Research (*)	
HSCI 6264	Epidemiology Translational Res	
Professional Core		
HSCI 6223	Topics -Health Care Leadership (*)	
HSCI 6241	The Health Care Enterprise	
Health Care Quality Field		
HCQ 6200	Introduction to Health Care Quality (*)	
HCQ 6201	Building a Quality Culture	
HCQ 6202	Health Care Quality Landscape	
HCQ 6203	Quality Improvement Science	
HCQ 6204	Health Care Quality Analysis	
HCQ 6205	Patient Safety Systems	
HCQ 6275	Leadership and Change	
CML 6203	Health Info Quality & Outcomes	

Course taken as an undergraduate and applied to both the BSHS and MSHS curriculum.

Transferring credits

Up to 60 credits of coursework may be transferable from coursework taken elsewhere. For an assessment on the transferability of your previous coursework, please contact the program office. Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

DUAL BACHELOR OF SCIENCE IN HEALTH SCIENCES IN CLINICAL RESEARCH ADMINISTRATION AND MASTER OF SCIENCE IN HEALTH SCIENCES IN REGULATORY AFFAIRS

Offered in a distance learning format, the dual bachelor of science in health sciences in clinical research administration and master of science in health sciences in regulatory affairs degree programs provides students with the knowledge, abilities, and vision to move health sciences organizations effectively into the future.

REQUIREMENTS

This multi-level online dual degree program offers academically qualified individuals a seamless and accelerated pathway for completing both the Bachelor of Science in Health Sciences (B.S.H.S.) in Clinical Research Administration (C.R.A.) (http://smhs.gwu.edu/crl/programs/cra) and the Master of Science in Health Sciences (M.S.H.S.) in Regulatory Affairs (R.A.F.F.) (http://smhs.gwu.edu/crl/programs/regulatory-affairs/curriculum). Undergraduate and graduate degrees are conferred sequentially, with the B.S.H.S. awarded upon completion of 120 credits (9 of which are taken for graduate credit). The MSHS is awarded following completion of an additional 27 credits of graduate coursework.

B.S.H.S. in Clinical Research Administration

The B.S.H.S. with a major in clinical research administration is a degree completion program that requires successful completion of 120 credits, divided into three degree components, 60 credits of which must be completed at GW. Up to 60 credits of coursework earned elsewhere may be transferable.

Code	Title	Credits
The following requirements must be fulfilled:		
60 credits of general education and advanced standing including:		
3 credits in English composition		
4 credits in natural or physical science with laboratory experience		
6 credits in the social sciences		
3 credits in the humanities		

44 credits of advanced standing*

* Additional academic coursework. Non-traditional credit sources may be considered on a case-by-case basis (i.e. military coursework, credit by examanination, and non-college based health programs).

Code	Title	Credits
Requirements for the major:		
At least 60 credits of GW coursework including:		
Health sciences distance education courses		
CRA 2101	Basics of Clinical Research	
CRA 2102	Processes of Clinical Research	
CRA 2103	Good Clinical Practices	
CRA 2104	Business of Clinical Research	
CRA 2105	Topics in Clinical Research	
CRA 2107	Intro Monitoring Clin. Trials	
HSCI 2102	Pathophysiology	
HSCI 2103	Health Policy and the Health Care System	
HSCI 2105	Current Issus in Bioethics	
HSCI 2107	Health Care in Literature	
HSCI 2112W	Writing in the Health Sciences	
HSCI 2113	Informatics in the HSci	
HSCI 3117	Principles of Biostatistics for Health Sciences	
HSCI 4103	Health Care Law/Regulation	
HSCI 4105	Case Studies in Health Care	
HSCI 4106	Intro to Epidemiology for HS	
HSCI 4112W	Rsrch/Wrtng in Health Sciences	
Graduate strategic leadership courses		
HSCI 6223	Topics -Health Care Leadership (*)	
HSCI 6240	Issues & Trends in Health Syst (*)	
Regulatory affairs field		
RAFF 6201	Introduction to Global Regulatory Affairs (*)	

M.S.H.S. in Regulatory Affairs

The M.S.H.S. in regulatory affairs requires successful completion of an additional 27 credits of graduate coursework, including 6 credits in research.

Code	Title	Credits
Research core		
HSCI 6263	Biostatistics Transl Research	
HSCI 6264	Epidemiology Translational Res	
Professional core		
HSCI 6223	Topics -Health Care Leadership (*)	
HSCI 6240	Issues & Trends in Health Syst (*)	
HSCI 6241	The Health Care Enterprise	
Regulatory affairs field		
RAFF 6201	Introduction to Global Regulatory Affairs (*)	
RAFF 6202	Regulatory Drug Biologics	
RAFF 6203	Regulatory Device Diagnostics	
RAFF 6204	Clinical Research for Regulatory Affairs	
RAFF 6205	Regulatory Affairs Compliance	
RAFF 6275	Leadership inRegulatoryAffairs	
Elective courses in clinical management and leadership		
one from the following		
CML 6274	Health Economics and Finance	
CRA 6203	Partnerships with Human Subjects	
CRA 6208	International Clinical Rsrch	
CRA 6209	Quality and Risk Management	
CRA 6210	MedicalWriting/ClinicalResrch	
HCQ 6201	Building a Quality Culture	

*Course taken as an undergraduate and applied to both the B.S.H.S. and M.S.H.S. curriculum.

Transferring credits: Up to 60 credits of coursework taken elsewhere may be transferable. For an assessment on the transferability of previous coursework, contact the program office. Coursework is evaluated for transfer using the following criteria:

- College-level

- Academic in nature
- Completed at a regionally accredited institution
- Earned with a minimum grade of *C* (credits earned with a grade of *C-* do not transfer)

DUAL BACHELOR OF SCIENCE IN HEALTH SCIENCES IN EMERGENCY HEALTH SERVICES MANAGEMENT AND MASTER OF SCIENCE IN HEALTH SCIENCES IN CLINICAL MANAGEMENT AND LEADERSHIP

The dual bachelor of science in health sciences in emergency health services management (p. 776) and master of science in health sciences in clinical management and leadership (http://bulletin.gwu.edu/medicine-health-sciences/graduate-programs/ms-clinical-management-leadership) is a combined degree program that allows students to count a specified number of credits toward both programs. The dual degrees are typically granted in a shorter period of time and at lower cost than if both programs were pursued separately. Visit the program website (http://smhs.gwu.edu/crl/programs/ems) for additional information.

MINOR IN ANATOMY

The Department of Anatomy and Regenerative Biology (http://smhs.gwu.edu/anatomy) in the School of Medicine and Health Sciences (http://smhs.gwu.edu) offers courses required for the 12-credit minor in human anatomy.

Code	Title	Credits
ANAT 2130	Human Embryology	
ANAT 2150	Human Microscopic Anatomy	
ANAT 2160	Human Functional Neuroanatomy	
ANAT 2181	Human Gross Anatomy	

MINOR IN BLOOD BANKING FOR MEDICAL LABORATORY SCIENCE

REQUIREMENTS

Requirements for blood banking in the medical laboratory science minor consists of 16 credits, including a 4-credit practicum course.

Code	Title	Credits
Required		
MLS 4141	Immunology and Serology	
MLS 4150	Immunohematology	
MLS 4151	Molecular Diagnostics	
MLS 4158	Laboratory Management and Operations	
MLS 4160	Blood Bank Practicum	

MINOR IN CLINICAL RESEARCH ADMINISTRATION

REQUIREMENTS

Students must complete the required coursework with a 2.5 GPA or better. The minor requires successful completion of 15 credits.

Required	
CRA 2101	Basics of Clinical Research
CRA 2102	Processes of Clinical Research
CRA 2103	Good Clinical Practices
HSCI 2105	Current Issus in Bioethics
Elective (choose one with advisor approval)	
CRA 2104	Business of Clinical Research
HSCI 2103	Health Policy and the Health Care System

MINOR IN CHEMISTRY FOR MEDICAL LABORATORY SCIENCE

REQUIREMENTS

The minor in chemistry for medical laboratory science consists of 19 credits, including a 4 credit practicum course.

Code	Title	Credits
Required		
MLS 4141	Immunology and Serology	
MLS 4151	Molecular Diagnostics	
MLS 4145	Clinical Biochemistry I	
MLS 4146	Clinical Biochemistry II	
MLS 4158	Laboratory Management and Operations	

MLS 4161	Clinical Biochemistry Practicum

MINOR IN EMERGENCY HEALTH SERVICES

REQUIREMENTS

The minor in emergency health services requires successful completion of at least 15 credits. Students must complete the required course work with a 2.5 GPA or better.

Code	Title	Credits
Required		
EHS 1040	Emergncy Medical Tech-Basic *	
EHS 1041	EMT - Basic Lab *	
EHS 2174	Foundations of Emergency Health Services Systems	
EHS 2175	Community Risk Management and Safety in EHS	
Electives		
At least five credits from the following:		
EHS 1002	CPR & First Aid	
EHS 2107	Theory&Prac ofRsch/ClinclSetng	
EHS 2108	Emergncy Med Clinical Scribe	
EHS 2110	EmergDeptCritCareAsses&Proced.	
EHS 2162	Intro Princpls/Tactical Med	
EHS 2211	Intro to Telemedicine	
EHS 4110	Operations Mgt in EHS Systems	
EHS 4112	Special Ops and Disaster Mgt	

*For students who have EMT-Basic Certification, a minimum of 4 credits in elective courses may be substituted for EHS 1040 and EHS 1041 with the approval of the program.

MINOR IN HEALTH SCIENCES

REQUIREMENTS

The minor in health sciences consists of 15 credits of approved health sciences courses. A minimum GPA of 2.5 in the required course work is required.

Required		
HSCI 2101	Psychosocial Aspects of Health and Illness	
HSCI 2102	Pathophysiology	
HSCI 2103	Health Policy and the Health Care System	
HSCI 2105	Current Issus in Bioethics	
Elective		
Selected in consultation with academic advisor		
HSCI 4103	Health Care Law/Regulation	
or HSCI 4105	Case Studies in Health Care	

MINOR IN HEMATOLOGY FOR MEDICAL LABORATORY SCIENCE

REQUIREMENTS

The following requirements must be fulfilled: 16 credits in required courses, including practica.

Code	Title	Credits
Required		
MLS 4128	Hematology I	
MLS 4129	Hematology II	
MLS 4141	Immunology and Serology	
MLS 4151	Molecular Diagnostics	
MLS 4158	Laboratory Management and Operations	
MLS 4162	Hematology Practicum	
MLS 4166	Coagulation Practicum	

MINOR IN MICROBIOLOGY FOR MEDICAL LABORATORY SCIENCE

REQUIREMENTS

The minor in microbiology for medical laboratory sciences minor consists of 19 credits, including a 4 credit practicum course.

Code	Title	Credits
Required		
MLS 4115	Parasitology and Mycology	

MLS 4123	Clinical Microbiology I
MLS 4124	Clinical Microbiology II
MLS 4141	Immunology and Serology
MLS 4151	Molecular Diagnostics
MLS 4158	Laboratory Management and Operations
MLS 4164	ClinicalMicrobiology Practicum

GRADUATE PROGRAMS

Master's programs

- Master of Science in Health Sciences in the field of clinical management and leadership (p. 787)
- Master of Science in Health Sciences in the field of clinical microbiology (p. 788)
- Master of Science in Health Sciences in the field of clinical research administration
- Master of Science in Health Sciences in the field of clinical and translational research
- Master of Science in Health Sciences in the field of emergency medical services leadership
- Master of Science in Health Sciences in the field of health care quality (p. 790)
- Master of Science in Health Sciences in the field of immunohematology and biotechnology (p. 792)
- Master of Science in Health Sciences in the field of integrative medicine (p. 792)
- Master of Science in Health Sciences in the field of medical laboratory science (p. 793)
- Master of Science in Health Sciences in the field of molecular diagnostic science (p. 793)
- Master of Science in Health Sciences in the field of regulatory affairs (p. 795)
- Master of Science in Health Sciences in the field of physician assistant (p. 794)
- Master of Science in Health Sciences in the field of translational microbiology (p. 795)

Dual degree program

- Master of Science in Health Sciences in the field of physician assistant and Master of Public Health (Milken Institute School of Public Health) (p. 796)

Military contract programs

- Master of Science in Health Sciences in the field of immunohematology (p. 791)

Doctoral programs

- Doctor of Philosophy in the field of translational health sciences (p. 799)
- Doctor of Physical Therapy (p. 800)
- Advanced Practice Clinical Doctorate in Occupational Therapy (p. 801)

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF CLINICAL MANAGEMENT AND LEADERSHIP

The master of science in health sciences in the field of clinical management and leadership program prepares clinicians for leadership positions in all sectors of the health care delivery system. The program was developed to enhance the depth of knowledge in management and leadership skills of professionals from various clinical disciplines.

The distance learning format provides a convenient option for self-disciplined and self-directed students to pursue a degree and prepare for professional advancement while continuing with their work and other commitments. All courses are offered in a flexible, asynchronous format to meet the needs of busy professionals.

Students take courses focused on leadership and change, human resource development, financial management, and marketing of clinical services. Graduates of the program will have the capacity and competence to be successful in mid- and upper-level management positions.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 6 credits in graduate research courses, 9 credits in strategic leadership courses, 18 credits in clinical management and leadership courses, and a 3-credit elective course.

Code	Title	Credits
Required:		
Graduate research		
HSCI 6270	Resear Meth Hlth Prof I	
HSCI 6271	Rsch Meth Hlth Prof II	
Strategic leadership		
HSCI 6223	Topics -Health Care Leadership	
HSCI 6240	Issues & Trends in Health Syst	
HSCI 6241	The Health Care Enterprise	
Clinical management and leadership		
CML 6202	Human Resource Development	
CML 6203	Health Info Quality & Outcomes	

CML 6204	Marketing Clinical Services
CML 6205	CaseStudies/ClinicIMgt&Ldrshp
CML 6274	Health Economics and Finance
CML 6275	Ldrshp&Change in Clinical Mgt
Elective:	
One of the following:	
HSCI 6263	Biostatistics Transl Research
HSCI 6264	Epidemiology Translational Res

Transfer credits

Up to six credits of previously earned graduate-level coursework may be accepted as transfer credit. Contact the program office for the full policy and guidelines. Official transfer credit evaluations are conducted for admitted students only.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF CLINICAL MICROBIOLOGY

The master of science in health sciences in the field of clinical microbiology degree program, which is offered in a distance learning format, provides students with clinical microbiology and laboratory science course work, a hands-on microbiology practicum that will prepare students for a diagnostic microbiology laboratory position, and eligibility for national certification examinations in clinical microbiology. The program includes additional graduate course work to prepare students for careers in research institutions, public health laboratories, biotechnology firms, pharmaceutical companies, or governmental agencies.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits in required courses.

Code	Title	Credits
Required		
HSCI 6263	Biostatistics Transl Research	
HSCI 6264	Epidemiology Translational Res	
MLS 4164	ClinicalMicrobiology Practicum	
MLS 6115	Advanced Clinical Parasitology and Mycology	
MLS 6123	Advanced Clinical Microbiology I	
MLS 6124	Advanced Clinical Microbiology II	
MLS 6141	Advanced Immunology and Serology	
MLS 6151	Advanced Molecular Diagnostics	
MLS 6158	Advanced Laboratory Management and Operations	
MLS 6216	Microbial Pathogenesis	
MLS 6217	Medical Biotechnology	
MLS 6244	Research Ethics & Integrity	
HSCI or MLS elective selected in consultation with the advisor.		

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF CLINICAL RESEARCH ADMINISTRATION

The master of science in health sciences in the field of clinical research administration is designed to prepare health sciences professionals to participate in the science and business of the development process. Our rigorous curriculum focuses on regulatory requirements, ethical issues, processes for product development, the business of clinical research and scientific method processes. The distance education format, offered online, provides a convenient option for self-disciplined and self-directed students to pursue the program and prepare for professional advancement while maintaining their work and other commitments.

Upon completion of the graduate CRA program, the Program Student Learning Outcomes are:

- Apply effective leadership and management practices to effectively lead and/or manage inter-disciplinary teams/projects by applying critical thinking and problem solving skill sets
- Demonstrate a solid grasp of the clinical, regulatory and business requirements in the planning and conduct of a clinical trial.
- Demonstrate research design principles through integrating scientific, medical, regulatory and commercial requirements and creating clinical development plan sections that provide for benefit to risk assessments in the development of a new investigational product.
- Discuss the importance of assuring data integrity in a clinical trial and in the preparation of various clinical/regulatory documents.
- Formulate strategies to address ethical and cultural considerations for effective and compliant domestic or international clinical trial conduct, in relation to key areas

such as human subjects' protection, subject recruitment/retention, data integrity and risk assessment.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

REQUIREMENTS

The MSHS in the field of clinical research administration (CRA (http://smhs.gwu.edu/crl/programs/cra)) requires successful completion of 36 credits, including: 18 credits in clinical research administsration, 9 credits of strategic leadership courses, 6 credits of graduate research coursework, and a 3-credit elective course.

Required	
Clinical research administration courses	
CRA 6201	Critical Analysis Clin Rsch
CRA 6202	Medicines Development
CRA 6203	Partnerships w/Human Subjects
CRA 6204	The Clinical Research Industry
CRA 6210	MedicalWriting/ClinicalResrch
CRA 6275	Ldrshp&Change in ClinRschAdmin
Strategic leadership courses	
HSCI 6223	Topics -Health Care Leadership
HSCI 6240	Issues & Trends in Health Syst
HSCI 6241	The Health Care Enterprise
Graduate research courses	
HSCI 6263	Biostatistics Transl Research
HSCI 6264	Epidemiology Translational Res
Elective	
One of the following	
CRA 6208	International Clinical Rsrch
CRA 6209	Monitoring Clinical Research

Transfer credits

Up to six credits of previously earned graduate-level coursework may be accepted as transfer credit. Please contact the program office for the full policy and guidelines.

Official transfer credit evaluations are conducted only for admitted students.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF CLINICAL AND TRANSLATIONAL RESEARCH

The master of science in health sciences in the field of clinical and translational research program provides graduates with the knowledge to lead broad interdisciplinary research initiatives. Students develop an effective approach to research that integrates basic, biomedical, clinical, community health services, and health policy research.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (http://smhs.gwu.edu/clinical-translational-research/programs) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits in required courses, including 27 credits in required courses and 9 credits in elective courses.

Up to 6 credits of previously earned graduate-level coursework may be accepted as transfer credit. Official transfer credit evaluations are conducted only for admitted students.

Code	Title	Credits
Required		
Clinical research courses		
CRA 6201	Critical Analysis Clin Rsch	
CRA 6205	Clinical Investigation	
Graduate research courses		
HSCI 6263	Biostatistics Transl Research	
HSCI 6264	Epidemiology Translational Res	
HSCI 6273	Bioinformatics for Genomics	
Translational research courses		
HSCI 6261	Fdtn in Clinical/Trans.Rsrch	
HSCI 6285	Principles of Collaboration and Team Science	
HSCI 6265	Grantsmanship in Trans Res	
HSCI 6275	Transdisciplinary Rsrch Prop.	
Electives		

9 credits selected in consultation with academic advisor.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF EMERGENCY MEDICAL SERVICES LEADERSHIP

The master of science in health sciences in the field of emergency medical services leadership program is intended to develop leadership competencies necessary for a successful career in emergency medical services (EMS). The combination of courses is designed to build expertise in leadership, creative problem-solving, team-building, clinical decision-making, and management. Through the EMS programs at GW, students:

- Develop interdisciplinary management and leadership skills necessary to manage administrative-level responsibilities within a local, regional, state, or federal EMS agency;
- Acquire the necessary tools and skills to assume the roles and responsibilities within a multidisciplinary team;
- Leverage regulatory guidelines, organizational strategies, and resources when providing emergency medical services within a community or special population;
- Analyze processes and evaluation practices to support an EMS culture of safety;
- Build a broad foundation from which to assess and respond to trends in emergency medical services and health sciences;
- Demonstrate proficiency in written communication skills necessary to perform as a professional within the field of emergency medical services and to progress to graduate-level work.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 6 credits in research coursework, 9 credits in strategic leadership courses, and 21 credits in the field of emergency medical services.

Up to 6 credits of previously earned graduate-level course work may be accepted as transfer credit. Official transfer credit evaluations are conducted for admitted students only.

Code	Title	Credits
Required		
Graduate research courses		
HSCI 6263	Biostatistics Transl Research	
HSCI 6264	Epidemiology Translational Res	
Strategic leadership courses		
HSCI 6223	Topics -Health Care Leadership	
HSCI 6240	Issues & Trends in Health Syst	
HSCI 6241	The Health Care Enterprise	
Emergency medical services courses		
EHS 6201	Response /High Impact Emergenc	
EHS 6203	Legal&RegltryOblig/Emer Svcs	
EHS 6210	EMS Systems Design and Analysis	
EHS 6274	Health Economics and Finance	
EHS 6275	Ldrshp&Change/EmergSvcsMgt	
HSCI 6212	Teaching Strategies in the Health Professions	
HSCI 6213	Curriculum Development in the Health Professions	

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF HEALTH CARE QUALITY

The master of science in health sciences in the field of health care quality program is designed to meet an emerging demand for quality and patient safety specialists who have the capacity and competence to grow and sustain a culture of continuous improvement at all levels and within every sector of the health care delivery system. The program helps prepare graduates for quality and patient safety leadership, management, and research positions within health care organizations or policy agencies. Upon completion of this program, students will be able to:

- Develop, implement, and evaluate quality and patient safety improvement initiatives;
- Cultivate strategies to lead organizational change toward a quality-focused culture;
- Translate national quality expectations into daily operations;
- Apply processes and tools to measure, analyze, and interpret quality improvement data;
- Design and implement information technology systems to support quality assurance;
- Conduct research to drive clinical and operational decision-making.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

REQUIREMENTS

The following requirements must be fulfilled: 36 credits in required courses.

Up to 6 credits of previously earned graduate-level coursework may be accepted as transfer credit. Official transfer credit evaluations are conducted only for admitted students.

Code	Title	Credits
Required		
Graduate research courses		
HSCI 6263	Biostatistics Transl Research	
HSCI 6264	Epidemiology Translational Res	
Professional courses		
CML 6203	Health Info Quality & Outcomes	
HSCI 6223	Topics -Health Care Leadership	
HSCI 6241	The Health Care Enterprise	
Health care quality courses		
HCQ 6200	Introduction to Health Care Quality	
HCQ 6201	Building a Quality Culture	
HCQ 6202	Health Care Quality Landscape	
HCQ 6203	Quality Improvement Science	
HCQ 6204	Health Care Quality Analysis	
HCQ 6205	Patient Safety Systems	
HCQ 6275	Leadership and Change	

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF IMMUNOHEMATOLOGY

The master of science (M.S.) in health sciences in the field of immunohematology (http://smhs.gwu.edu/crl/programs/military/immunohematology) degree program is a military contract program and open only to service members enrolled in the Military Specialist in Blood Banking Technology program at Walter Reed Army Medical Center, which is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP). The goal of the program is to prepare individuals to be competitive for careers in management, research and education in the area of immunohematology.

The M.S. program includes all aspects of blood transfusion medicine at the graduate level, including research methods, current topics in transfusion medicine, immunology, biochemistry, and genetics of all blood cell markers, as well as the indications, contraindications, and function of all blood components and therapeutic procedures. In addition to this didactic material, practical training in the areas of compatibility testing, donor collection, viral marker testing, component production and distribution, apheresis, education and research methods, histocompatibility testing, progenitor cell preservation, and quality assurance is also provided. Research in an area of immunohematology, culminating in a research project, is an integral part of the program.

REQUIREMENTS

The following requirements must be fulfilled: 55 credits in required courses.

Code	Title	Credits
Required:		
HSCI 6263	Biostatistics Transl Research	
HSCI 6297	Indpendnt Study/Health Profess (taken for 1 credit)	
MLS 6141	Advanced Immunology and Serology	
MLS 6151	Advanced Molecular Diagnostics	
MLS 6158	Advanced Laboratory Management and Operations	
MLS 6203	Clinical Immunohematology I	
MLS 6204	Clinical Immunohematology II	
MLS 6207	Clinicl Pract: Blood Banking I	
MLS 6208	Clinicl Pract: Blood BankingII	
MLS 6209	Clinicl Pract:Blood BankingIII	
MLS 6211	Hematopoiesis &Blood Pathophys	
MLS 6212	Organiz & Mgt of Blood Banks	
MLS 6213	Seminar in Immunohematology	
MLS 6214	Specialized Practicum	
MLS 6245	Current Topics in Medical Laboratory Science	
MLS 6246	Capstone Project	

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF IMMUNOHEMATOLOGY AND BIOTECHNOLOGY

The master of science in health sciences in the field of immunohematology and biotechnology degree program is designed to provide certified blood bankers with a strong foundation in Immunohematology as well as molecular biology and biotechnology. Students develop the theoretical knowledge and practical skills for transfusion medicine research positions within hospital labs or blood centers or to become supervisors or mangers in a blood banking laboratory.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (http://smhs.gwu.edu/medical-laboratory-sciences/programs/mshs/curriculum/immunohematology-biotechnology) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 35 credits, including 29 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
HSCI 6263	Biostatistics Transl Research	
HSCI 6297	Indpendnt Study/Health Profess	
MLS 6141	Advanced Immunology and Serology	
MLS 6158	Advanced Laboratory Management and Operations	
MLS 6213	Seminar in Immunohematology	
MLS 6217	Medical Biotechnology	
MLS 6218	Genetics	
MLS 6219	Molecular Biology	
MLS 6244	Research Ethics & Integrity	
MLS 6245	Current Topics in Medical Laboratory Science	
MLS 6246	Capstone Project	
Electives		
Two of the following:		
HSCI 6223	Topics -Health Care Leadership	
HSCI 6240	Issues & Trends in Health Syst	
HSCI 6270	Resear Meth Hlth Prof I	
HSCI 6271	Rsch Meth Hlth Prof II	
MLS 6216	Microbial Pathogenesis	
MLS 6242	Molecular Pathology	
MLS 6243	Education & Assessment in MLS	

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF INTEGRATIVE MEDICINE

The online master of science in health sciences (M.S.H.S.) in the field of integrative medicine (INTM) degree program provides a curriculum that represents the most progressive, scientifically rigorous, and forward thinking platform for medical wellness. Students develop a foundation and explore various intersections of INTM that contribute to patient wellness. Biostatistics and epidemiology courses provide an opportunity for students to collaborate with professionals from various disciplines, exploring philosophies and practices of translational research in human health. Through a series of practical application courses, students develop patient care plans, conduct case analyses, and evaluate practice standards to demonstrate competence of integrative medicine practice. Additional research course work provides graduates requisite skills needed to participate in evidence-based research of clinical practice and outcomes research as part of a larger INTM network.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits in required courses.

Code	Title	Credits
Required		
HSCI 6241	The Health Care Enterprise	
HSCI 6263	Biostatistics Transl Research	
HSCI 6264	Epidemiology Translational Res	
INTM 6201	Foundations in Integrative Medicine	
INTM 6202	Self Care Methods in Integrative Medicine	
INTM 6203	Nutritional Metabolism and Environmental Exposure	
INTM 6204	Metabolic Networks in Integrative Medicine	

INTM 6205	Clinical Genomics, Proteomics, & Metabolomics
INTM 6206	Legal and Medical Ethics in Integrative Medicine
INTM 6210	Practical Application of Integrative Medicine I
INTM 6211	Practical Application of Integrative Medicine II
INTM 6212	Clinical Research in Integrative Medicine

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF MEDICAL LABORATORY SCIENCE

The master of science in health sciences in the field of medical laboratory science (MLS) program, offered in a distance learning format, is a non-clinical program open only to students who are currently MLT or MLS/MT/CLS certified, specialist certified (e.g., SBB), or with subject technologist certification.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (http://smhs.gwu.edu/medical-laboratory-sciences/programs/mshs/curriculum/medical-laboratory-sciences) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 15 credits in courses in the field and a mentored research project, 6 credits in strategic leadership courses, 12 credits in graduate research courses, and one 3-credit elective course.

Up to 6 credits of previously earned graduate-level coursework may be accepted as transfer credit. Official transfer credit evaluations are conducted only for admitted students.

Code	Title	Credits
Required		
Medical laboratory science courses		
MLS 6242	Molecular Pathology	
MLS 6243	Education & Assessment in MLS	
MLS 6244	Research Ethics & Integrity	
MLS 6245	Current Topics in Medical Laboratory Science	
MLS 6246	Capstone Project	
Strategic leadership courses		
HSCI 6223	Topics -Health Care Leadership	
HSCI 6241	The Health Care Enterprise	
Graduate research courses		
HSCI 6263	Biostatistics Transl Research	
HSCI 6264	Epidemiology Translational Res	
HSCI 6270	Resear Meth Hlth Prof I	
HSCI 6271	Rsch Meth Hlth Prof II	
Elective		

3 credits selected, in consultation with program advisor, from distance learning graduate courses in medical laboratory sciences, clinical management and leadership, health care quality, regulatory affairs and clinical research administration.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF MOLECULAR DIAGNOSTIC SCIENCE

The master of science in health sciences in the field of molecular diagnostic science program, offered in a distance learning format, prepares students with the theoretical knowledge and practical skills for positions in diagnostic clinical laboratories, public health laboratories, biotechnology companies, government agencies, law enforcement agencies, and research institutes. In addition, students who complete this program are eligible to take the Molecular Biology Board of Certification examination offered by the American Society for Clinical Pathology (ASCP).

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (https://smhs.gwu.edu/medical-laboratory-sciences/programs/mshs/curriculum/molecular-diagnostic-science) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 35 credits, including 32 credits in required courses and a 3-credit elective course.

Code	Title	Credits
Required		
HSCI 6263	Biostatistics Transl Research	

MLS 6216	Microbial Pathogenesis
MLS 6217	Medical Biotechnology
MLS 6218	Genetics
MLS 6219	Molecular Biology
MLS 6158	Advanced Laboratory Management and Operations
MLS 6166	Molecular Diagnostics Practicum *
MLS 6242	Molecular Pathology
MLS 6244	Research Ethics & Integrity
MLS 6245	Current Topics in Medical Laboratory Science
MLS 6246	Capstone Project
Elective	
One MLS or HSCI course selected in consultation with the academic advisor.	

* May be substituted with an elective course for students with current clinical molecular laboratory experience.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF PHYSICIAN ASSISTANT

The master of science in health sciences in the field of physician assistant program helps health professionals to extend and complement the capabilities of physicians in the delivery of health care. The program curriculum emphasizes a scholarly approach to medicine, development of organizational and critical-thinking skills, and evidence-based medicine.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

REQUIREMENTS

The following requirements must be fulfilled: 104 credits in required courses.

Code	Title	Credits
Required		
ANAT 6215	Anatomy for Health Sciences Students	
PA 6101	Clinical Assessment I	
PA 6102	Clinical Assessment II	
PA 6103	Clinical Assessment III	
PA 6104	Integration into Clinical Concepts I	
PA 6105	Integration into Clinical Concepts II	
PA 6106	Integration into Clinical Concepts III	
PA 6109	Foundations of Medicine	
PA 6110	Evidence Based Practice for PA Students	
or PA 6111	Evidence Based Practice for PA/MPH Students	
PA 6112	Clinical Medicine I	
PA 6113	Clinical Medicine II	
PA 6116	Clinical Skills I	
PA 6117	Clinical Skills II	
PA 6118	Health, Justice, and Society I	
PA 6119	Health, Justice, and Society II	
PA 6120	Human Behavior	
PA 6121	Clinical Specialties	
PA 6122	Role of PA in American Health Care	
PA 6259	Introduction to Clinical Education	
PA 6261	Inpatient Med Clinical Practic	
PA 6262	Primary Care Clinical Practicum	
PA 6263	Surg Inpatient Clinical Practi	
PA 6264	Women's Health Clin Pract	
PA 6265	Pediatrics Clinical Practicum	
PA 6266	Emergency Medicine Clinical Pr	
PA 6267	Behav Med Clin Pract	
PA 6268	Elective Clinical Practicum I	
PA 6300	Introduction to Professional Practice	
PHAR 6207	Basic Principles of Pharmacol.	
PHAR 6208	Pharm in Dis. Pathophysiology	
PHYL 6211	Physiology for Health Sciences Students	

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF REGULATORY AFFAIRS

The master of science in health sciences in the field of regulatory affairs degree program is designed to prepare graduates to facilitate and lead change and innovation in regulatory practice. Throughout the program, students will develop strategies for integrating business needs into regulatory strategic planning and will learn to evaluate the scientific and economic value of bringing new health care products to the global market.

The program helps prepare its graduates to:

- Lead and collaborate with all involved functions and stakeholders for effective development of medical products;
- Develop a broad understanding of the philosophies and roles of the domestic and international regulatory agencies that oversee drug, biologic, device and diagnostic development;
- Provide strategic direction, integrating business needs in matters of regulatory science and affairs.

REQUIREMENTS

The Master of Science in Health Sciences in the field of Regulatory Affairs (RAFF) requires successful completion of 36 credits, including: 9 credits of the research coursework, 6 credits of strategic leadership courses, 18 credits in the field of regulatory affairs, and a 3-credit elective course.

Required	
Regulatory affairs courses	
RAFF 6201	Introduction to Global Regulatory Affairs
RAFF 6202	Regulatory Drug Biologics
RAFF 6203	Regulatory Device Diagnostics
RAFF 6204	Clinical Research for Regulatory Affairs
RAFF 6205	Regulatory Affairs Compliance
RAFF 6275	Leadership inRegulatoryAffairs
Graduate research courses	
HSCI 6263	Biostatistics Transl Research
HSCI 6264	Epidemiology Translational Res
Strategic leadership courses	
HSCI 6223	Topics -Health Care Leadership
HSCI 6240	Issues & Trends in Health Syst
HSCI 6241	The Health Care Enterprise
Electives	
One of the following:	
CML 6274	Health Economics and Finance
CRA 6203	Partnerships w/Human Subjects
CRA 6208	International Clinical Rsrch
CRA 6209	Monitoring Clinical Research
CRA 6210	MedicalWriting/ClinicalResrch
HCQ 6201	Building a Quality Culture

Transfer credits

Up to six credits of previously earned graduate-level coursework may be accepted as transfer credit. Contact the program office for the full policy and guidelines.

Official transfer credit evaluations are conducted only for admitted students.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF TRANSLATIONAL MICROBIOLOGY

The master of science in health sciences in the field of translational microbiology program, offered in a distance learning format, prepares students with the theoretical knowledge and practical skills for research positions in public health microbiology laboratories, biotechnology companies, government agencies, and research institutes. This program is ideal for students who already have microbiology or MLS certification or for individuals who do not have an interest in becoming certified microbiologists.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 30 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
HSCI 6263	Biostatistics Transl Research	

HSCI 6264	Epidemiology Translational Res
HSCI 6270	Resear Meth Hlth Prof I
HSCI 6271	Rsch Meth Hlth Prof II
MLS 6245	Current Topics in Medical Laboratory Science
MLS 6246	Capstone Project
MLS 6244	Research Ethics & Integrity
MLS 6216	Microbial Pathogenesis
MLS 6115	Advanced Clinical Parasitology and Mycology
MLS 6217	Medical Biotechnology
One of the following	
HSCI 6241	The Health Care Enterprise
HSCI 6223	Topics -Health Care Leadership
HSCI 6240	Issues & Trends in Health Syst
Electives	

6 elective credits in Medical Laboratory Science (MLS) courses selected with the approval of program director.

DUAL MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF PHYSICIAN ASSISTANT AND MASTER OF PUBLIC HEALTH

Applicants with a strong interest in public health may wish to consider the dual master of science in health sciences (M.S.H.S.) in the field of physician assistant and master of public health (M.P.H.) dual degree program. The three-year program provides both clinical and academic preparation for careers in medicine and public health. Students receive advanced training in the design of health studies, epidemiological methods, application of computers to public health, community medicine, and techniques of health promotion. Students also design a special research project in collaboration with faculty of the Milken Institute School of Public Health and local, national, or international public health organizations.

For the M.P.H. degree, students choose from among the fields of community-oriented primary care, health policy, and epidemiology.

Visit the master of science in health sciences in the field of physician assistant (http://smhs.gwu.edu/physician-assistant/pa-program) and the master of science in health sciences (http://publichealth.gwu.edu/academics/graduate/masters-programs/#joint) program websites for additional information.

COMMUNITY-ORIENTED PRIMARY CARE

The following requirements must be fulfilled: 137 credits, including 100 credits in physician assistant courses, 13 credits in MPH core, 10 credits in prevention and community health courses, and 14 credits in community oriented primary care track courses.

Physician Assistant Curriculum

Code	Title	Credits
Required		
ANAT 6215	Anatomy for Health Sciences Students	
PA 6101	Clinical Assessment I	
PA 6102	Clinical Assessment II	
PA 6103	Clinical Assessment III	
PA 6104	Integration into Clinical Concepts I	
PA 6105	Integration into Clinical Concepts II	
PA 6106	Integration into Clinical Concepts III	
PA 6109	Foundations of Medicine	
PA 6111	Evidence Based Practice for PA/MPH Students	
PA 6112	Clinical Medicine I	
PA 6113	Clinical Medicine II	
PA 6116	Clinical Skills I	
PA 6117	Clinical Skills II	
PA 6119	Health, Justice, and Society II	
PA 6120	Human Behavior	
PA 6121	Clinical Specialties	
PA 6122	Role of PA in American Health Care	
PA 6259	Introduction to Clinical Education	
PA 6261	Inpatient Med Clinical Practic	
PA 6262	Primary Care Clinical Practicum	
PA 6263	Surg Inpatient Clinical Practi	
PA 6264	Women's Health Clin Pract	

PA 6265	Pediatrics Clinical Practicum
PA 6266	Emergency Medicine Clinical Pr
PA 6267	Behav Med Clin Pract
PA 6268	Elective Clinical Practicum I
PA 6300	Introduction to Professional Practice
PHAR 6207	Basic Principles of Pharmacol.
PHAR 6208	Pharm in Dis. Pathophysiology
PHYL 6211	Physiology for Health Sciences Students

Public Health (Community-Oriented Primary Care) Curriculum

Code	Title	Credits
Required		
Public health core		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Prevention and community health		
PUBH 6500	Planning and Implementing Health Promotion Programs	
PUBH 6501	Program Evaluation	
PUBH 6014	Practicum	
PUBH 6015	Culminating Experience	
Community-oriented primary care track		
PUBH 6504	Social and Behavioral Science Research Methods	
PUBH 6510	COPC Principles and Practice	
PUBH 6512	Comm-OrientedPrimryCarePol&Iss	
PUBH 6513	Community Health Management	
PUBH 6516	Community Health InfoResources	
PUBH 6591	P.A./M.P.H. Clinal Leadership Seminar	

HEALTH POLICY

The following requirements must be fulfilled: 138 credits, including 100 credits in physician assistant courses, 13 credits in MPH core, 22 credits in health policy track courses, and 3 credits in electives.

Physician Assistant Curriculum

Code	Title	Credits
ANAT 6215	Anatomy for Health Sciences Students	
PA 6101	Clinical Assessment I	
PA 6102	Clinical Assessment II	
PA 6103	Clinical Assessment III	
PA 6104	Integration into Clinical Concepts I	
PA 6105	Integration into Clinical Concepts II	
PA 6106	Integration into Clinical Concepts III	
PA 6109	Foundations of Medicine	
PA 6112	Clinical Medicine I	
PA 6113	Clinical Medicine II	
PA 6116	Clinical Skills I	
PA 6117	Clinical Skills II	
PA 6119	Health, Justice, and Society II	
PA 6120	Human Behavior	
PA 6121	Clinical Specialties	
PA 6122	Role of PA in American Health Care	
PA 6259	Introduction to Clinical Education	
PA 6261	Inpatient Med Clinical Practic	
PA 6262	Primary Care Clinical Practicum	
PA 6263	Surg Inpatient Clinical Practi	
PA 6264	Women's Health Clin Pract	
PA 6265	Pediatrics Clinical Practicum	
PA 6266	Emergency Medicine Clinical Pr	
PA 6267	Behav Med Clin Pract	
PA 6268	Elective Clinical Practicum I	

PA 6300	Introduction to Professional Practice
PHAR 6207	Basic Principles of Pharmacol.
PHAR 6208	Pharm in Dis. Pathophysiology
PHYL 6211	Physiology for Health Sciences Students

Public Health (Health Policy) Curriculum

Code	Title	Credits
Required		
Public health core		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Health policy track		
PUBH 6014	Practicum	
PUBH 6015	Culminating Experience	
PUBH 6242	ClinicalEpid&Decision Analysis	
PUBH 6243	Topics:ClinicalEpi&DecAnalysis	
PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care	
PUBH 6310	Statistical Analysis in Health Policy	
PUBH 6315	Intro-Health Policy Analysis	
PUBH 6320	Advanced Health Policy Analysis	
PUBH 6325	Federal Policymaking and Policy Advocacy	
PUBH 6335	Public Health and Law	
PUBH 6591	P.A./M.P.H. Clinal Leadership Seminar	
Electives		
3 credits of GWSPH graduate courses		

EPIDEMIOLOGY

The following requirements must be fulfilled: 138 credits, including 100 credits in physician assistant courses, 13 credits in MPH core, 18 credits in epidemiology track courses, 4 credits in selective courses, and 3 credits in electives.

Physician Assistant Curriculum

Code	Title	Credits
Required		
ANAT 6215	Anatomy for Health Sciences Students	
PA 6101	Clinical Assessment I	
PA 6102	Clinical Assessment II	
PA 6103	Clinical Assessment III	
PA 6104	Integration into Clinical Concepts I	
PA 6105	Integration into Clinical Concepts II	
PA 6106	Integration into Clinical Concepts III	
PA 6109	Foundations of Medicine	
PA 6112	Clinical Medicine I	
PA 6113	Clinical Medicine II	
PA 6116	Clinical Skills I	
PA 6117	Clinical Skills II	
PA 6119	Health, Justice, and Society II	
PA 6120	Human Behavior	
PA 6121	Clinical Specialties	
PA 6122	Role of PA in American Health Care	
PA 6259	Introduction to Clinical Education	
PA 6261	Inpatient Med Clinical Practic	
PA 6262	Primary Care Clinical Practicum	
PA 6263	Surg Inpatient Clinical Practi	
PA 6264	Women's Health Clin Pract	
PA 6265	Pediatrics Clinical Practicum	
PA 6266	Emergency Medicine Clinical Pr	
PA 6267	Behav Med Clin Pract	
PA 6268	Elective Clinical Practicum I	
PA 6300	Introduction to Professional Practice	

PHAR 6207	Basic Principles of Pharmacol.
PHAR 6208	Pharm in Dis. Pathophysiology
PHYL 6211	Physiology for Health Sciences Students

Public Health (Epidemiology) Curriculum

Code	Title	Credits
Required		
MPH core		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Epidemiology track		
PUBH 6014	Practicum	
PUBH 6015	Culminating Experience	
PUBH 6247	Design of Health Studies	
PUBH 6249	StatPackages/DataMgt&DataAnlys	
PUBH 6252	Advanced Epidemiology Methods	
PUBH 6260	Adv DataAnalysis-Public Health	
PUBH 6261	Epi-Bio Skills Bldg Seminar	
PUBH 6591	P.A./M.P.H. Clinal Leadership Seminar	
Selective		
4 credits from the following:		
PUBH 6242	ClinicalEpid&Decision Analysis	
PUBH 6244	Cancer Epidemiology	
PUBH 6245	InfectiousDisease Epidemiology	
PUBH 6250	Epidemiology of HIV/AIDS	
PUBH 6259	Epid Surveillance/PublicHealth	
Electives		
3 credits of GWSPH graduate courses		

Additional information including approved elective lists can be found on the program website.

DOCTOR OF PHILOSOPHY IN THE FIELD OF TRANSLATIONAL HEALTH SCIENCES

The doctor of philosophy in the field of translational health sciences degree program helps prepare graduates to address complex healthcare challenges by conceptualizing health systems broadly in terms of transitions between basic scientific discovery, clinical insights, implications for practice, implications for population health, and improved global health.

The Ph.D. requires 54 credits beyond a master's degree, successful completion of two comprehensive examinations, a proposal defense, and a defended dissertation. The curriculum is blended, integrating didactic and facilitated learning activities from content. It is delivered via distance learning and on campus (two weekends per semester for a total of 32 hours per semester) at the Virginia Science and Technology (VSTC) campus in Ashburn, VA.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (http://smhs.gwu.edu/translational-health-sciences) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 54 credits, successful completion of two comprehensive examinations, a proposal defense, and a defended dissertation.

Code	Title	Credits
Required		
Collaboration science		
THS 8512	Cross-Disciplinary Principles and Analysis	
THS 8543	Knowledge Translation to Improve Healthcare	
THS 8551	Transformative Health Care Leadership	
Translational research		
THS 8272	Integrating Qualitative and Quantitative Designs in Mixed Methods Research	
THS 8611	Foundations in Translational Research	

THS 8622	Advanced Study Design for Translational Research
THS 8633	Advanced Statistical Methods for Clinical and Translational Research
THS 8664	Bioethical Implications of Health Research
Methods-specific	
One of the following:	
CRA 6205	Clinical Investigation
HSCI 6265	Grantsmanship in Trans Res
OT 8220	Measurement of Human Function and Learning
Dissertation	
THS 8961	Proposal Defense Preparation (taken for 3 credits)
THS 8971	Dissertation Seminar I
THS 8982	Dissertation Seminar II
THS 8993	Dissertation Seminar III
Implementation science	
THS 8274	Using Program Theory to Develop and Evaluate Health Intervention Programs
THS 8723	Change Models for Quality Improvement
THS 8751	Translational Research in Complex Health Systems
THS 8764	Clinical Public Health
Elective	
3 credits of independent study	
HSCI 6297	Indpendnt Study/Health Profess

DOCTOR OF PHYSICAL THERAPY

The doctor of physical therapy program provides quality graduate education committed to developing generalist practitioners who are reflective practitioners, who think critically, and use best evidence to effectively solve problems; compassionate practitioners, who demonstrate excellence in communication and interpersonal skills,a respect for individual and cultural differences, and the core values of the profession; and dedicated practitioners who value the tenets of lifelong learning.

The curriculum consists of 109 credits of professional course work requiring thirty-three months of full-time study beginning in the fall semester. It combines content from the foundational sciences, behavioral sciences, clinical sciences, professional practice expectations, practice management expectations, and critical inquiry. Students develop the skills needed to examine, evaluate, diagnose, prognose, develop a plan of care, and implement and re-evaluate that plan of care for patients with dysfunction in the cardiopulmonary, musculoskeletal, neuromotor, and integumentary systems across the lifespan.

The curriculum is built on the overarching principles of integration and application. Information is integrated and applied through a series of integrative units using "standardized patients" and simulation experiences. Clinical experiences are introduced early in the curriculum in the second and fourth semesters. Three full-time clinical internships occur in semesters six, seven, and eight for a total of 34 weeks of full time clinical experience. Internships are located regionally, nationally, and internationally providing depth and breadth to each student's unique educational experience.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

REQUIREMENTS

The following requirements must be fulfilled: 109 credits to be taken in the following sequence:

Program of Study

Code	Title	Credits
Fall I Semester I		
PT 8201	Functional Anatomy	
PT 8311	Foundations of Examination	
PT 8312	Foundations of Interventions	
PT 8351	Professional Issues in Physical Therapy Health Care Management I	
PT 8361	Clinical Conference I	

Code	Title	Credits
Spring I Semester II		
PT 8202	Applied Physiology	
PT 8313	Therapeutic Modalities	
PT 8352	Teaching in Physical Therapy Practice	
PT 8203	Neuroscience in Rehabilitation I	
PT 8271	Research in Practice	

PT 8362	Clinical Conference II
PT 8483	Integrated Clinical Experience I
PT 8204	Movement Science I

Code	Title	Credits
Summer I Semester III		
PT 8205	Movement Science II	
PT 8206	Neuroscience in Rehabilitation II	
PT 8207	Clinical Medicine and Pharmacology	
PT 8363	Clinical Conference III	
PT 8481	Interprofessional Community Practicum	

Code	Title	Credits
Fall II Semester IV		
PT 8315	Management of Musculoskeletal Dysfunction I	
PT 8208	Medical Imaging	
PT 8318	Management of Neuromotor Dysfunction	
PT 8323	Prosthetics & Orthotics	
PT 8364	Clinical Conference IV	
PT 8272	Research Seminar	
PT 8484	Integrated Clinical Experience II	

Code	Title	Credits
Spring II Semester V		
PT 8316	Management of Musculoskeletal Dysfunction II	
PT 8320	Management of the Pediatric Client	
PT 8322	Management of the Aging Adult	
PT 8314	Management of Cardiopulmonary Dysfunction	
PT 8317	Management of Integumentary Dysfunction	
PT 8365	Clinical Conference V	

Code	Title	Credits
Summer II Semester VI		
PT 8491	Clinical Internship I	
PT 8366	Clinical Conference VI	
PT 8321	Women's Health	

Code	Title	Credits
Fall III Semester VII		
PT 8492	Clinical Internship II	
PT 8355	Professional Issues in Physical Therapy Health Care Management II	
PT 8357	Capstone Seminar	
PT 8356	Health Promotion and Wellness	

Code	Title	Credits
Spring III Semester VIII		
PT 8493	Clinical Internship III	
Elective		

DOCTORATE IN OCCUPATIONAL THERAPY

The School of Medicine and Health Sciences' (S.M.H.S.) advanced-practice doctoral degree program in occupational therapy (O.T.D.) is designed for registered occupational therapists who are seeking to advance their clinical reasoning and practice skills. The program enables graduates to transition from the level of generalist to that of a translational occupational therapy clinical scholar. After obtaining this degree, graduates will be able to develop, evaluate, and promote new occupational therapy approaches to assessment and treatment in post-acute and chronic care that are grounded in neuroscience and reflect a transdisciplinary perspective.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 30 credits in required courses and 6 credits in elective courses.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the Health Sciences program website (http://smhs.gwu.edu/academics/health-sciences) for additional information.

Code	Title	Credits
Required		
Transdisciplinary practice and research		
HSCI 6285	Principles of Collaboration and Team Science	
Advanced concepts in function and learning		
HSCI 6212	Teaching Strategies in the Health Professions	
OT 8215	Quality Improvement through Translational Practices	
OT 8220	Measurement of Human Function and Learning	
OT 8274	Program Theory and Health Innovations	
Scholarship in occupational therapy		
HSCI 6270	Resear Meth Hlth Prof I	
HSCI 6271	Rsch Meth Hlth Prof II	
OT 8272	Mixed Methods in Translational Health Sciences	
OT 8275	Doctoral Capstone Preparation	
OT 8276	Doctoral Capstone	
Electives		
6 credits from the following:		
HSCI 6223	Topics -Health Care Leadership	
HSCI 6213	Curriculum Development in the Health Professions	
HCQ 6200	Introduction to Health Care Quality	
CML 6203	Health Info Quality & Outcomes	
CML 6205	CaseStudies/ClinicIMgt&Ldrshp	
CRA 6205	Clinical Investigation	
HSCI 6241	The Health Care Enterprise	
HSCI 6261	Fdtn in Clinical/Trans.Rsrch	
HSCI 6263	Biostatistics Transl Research	
HSCI 6264	Epidemiology Translational Res	
HSCI 6265	Grantsmanship in Trans Res	
HSCI 6297	Indpendnt Study/Health Profess	
OT 8214	Evidence-Based Occupational Therapy Practice	
OT 8448	Neurocognitive Disorders	
OT 8450	Cognition and Cognitive Rehabilitation	

Additional information can be found at the Health Sciences program website. (http://smhs.gwu.edu/academics/health-sciences)

CERTIFICATE PROGRAMS

Post-baccalaureate certificates

- Post-baccalaureate certificate in medical laboratory science (p. 804)
- Post-baccalaureate certificate in blood banking for medical laboratory science (p. 802)
- Post-baccalaureate certificate in chemistry for medical laboratory science (p. 803)
- Post-baccalaureate certificate in hematology for medical laboratory science (p. 804)
- Post-baccalaureate certificate in microbiology for medical laboratory science (p. 805)
- Post-baccalaureate certificate in pre-medicine (p. 805)

Graduate certificates

- Graduate certificate in clinical research administration (p. 805)
- Graduate certificate in clinical and translational research (p. 806)
- Graduate certificate in clinical research practice (p. 806)
- Graduate certificate in health care quality (p. 806)
- Graduate certificate in integrative medicine (p. 807)
- Graduate certificate in regulatory affairs (p. 807)

Undergraduate certificate (military contract)

- Undergraduate certificate in the field of health sciences laboratory science (p. 803)

POST-BACCALAUREATE CERTIFICATE IN BLOOD BANKING FOR MEDICAL LABORATORY SCIENCE

REQUIREMENTS

Admitted students complete required courses either on a part-time or full-time basis. Courses in the major are designed to

broaden the student's foundation in the sciences in preparation for the clinical phase of the program. All courses are taught online, with the exception of the clinical practica.

The clinical practica are usually taken on a full-time basis upon completion of didactic course work. Students are typically in a clinical laboratory eight hours per day (daytime hours), five days per week. Admitted students must be able to fulfill the necessary time requirement for the practica.*

Completion of the certificate qualifies the graduate to take the Technologist in Blood Banking examination offered by national certifying agencies.

The following requirements must be fulfilled: 16 credits in required courses, including the clinical practica.

Code	Title	Credits
Required		
MLS 4118	Laboratory Operations	
MLS 4140	Clinical Laboratory Mgt	
MLS 4141	Immunology and Serology	
MLS 4150	Immunohematology	
MLS 4151	Molecular Diagnostics	
MLS 4160	Blood Bank Practicum	

*Clinical rotations, lasting between one to four weeks each, are completed at an approved clinical site. They may vary in length.

POST-BACCALAUREATE CERTIFICATE IN CHEMISTRY FOR MEDICAL LABORATORY SCIENCE

REQUIREMENTS

Admitted students complete required courses either on a part-time or full-time basis. Courses in the major are designed to broaden the student's foundation in the sciences in preparation for the clinical phase of the program. All courses are taught online, with the exception of the clinical practicum.

The clinical practicum is usually taken on a full-time basis upon completion of didactic course work. Students are typically in a clinical laboratory eight hours per day (daytime hours), five days per week. Admitted students must be able to fulfill the necessary time requirement for the practicum.*

The following requirements must be fulfilled: 19 credits in required courses, including the practicum.

Required	
MLS 4118	Laboratory Operations
MLS 4141	Immunology and Serology
MLS 4145	Clinical Biochemistry
MLS 4155	Clinical Biochemistry II
MLS 4151	Molecular Diagnostics
MLS 4161	Clinical Biochemistry Practicum
MLS 4140	Clinical Laboratory Mgt

Clinical rotations are completed at an approved clinical site and vary in length, lasting between 1 to 4 weeks each.

UNDERGRADUATE CERTIFICATE IN THE FIELD OF HEALTH SCIENCES LABORATORY TECHNOLOGY

The certificate in health science laboratory technology program is offered through an inter-service contract with the Medical Education and Training Campus (METC) at Ft. Sam Houston in San Antonio, Texas. This certificate is available exclusively to pre-approved service members in the medical laboratory technology program.

Upon successful completion of the program, students will be awarded a certificate of completion and will have earned 60 college-level credits at GW.

REQUIREMENTS

The following requirements must be fulfilled: 60 credits in required courses.

Students must maintain a minimum grade point-average of 2.0.

Required	
MLS 1070	Clinical Laboratory Rotation I
MLS 1071	Clinical Laboratory RotationII
MLS 1080	Intro to Laboratory Medicine
MLS 1081	Clinical Chemistry I
MLS 1082	Clinical Chemistry II
MLS 1083	Hematology I
MLS 1084	Hematology II
MLS 1085	Urinalysis and Body Fluids
MLS 1086	Clinical Immunology

MLS 1087	Blood Banking I
MLS 1088	Blood Banking II
MLS 1089	Clinical Microbiology I
MLS 1090	Clinical Microbiology II

For students with questions regarding courses taken prior to 2011, please contact the Program Director.

POST-BACCALAUREATE CERTIFICATE IN HEMATOLOGY FOR MEDICAL LABORATORY SCIENCE

REQUIREMENTS

Admitted students complete required courses either on a part-time or full-time basis. Courses in the major are designed to broaden the student's foundation in the sciences in preparation for the clinical phase of the program. All courses are taught online, with the exception of the clinical practicum.

The clinical practicum is usually taken on a full-time basis upon completion of didactic course work. Students are typically in a clinical laboratory eight (daytime) hours per day, five days per week. Admitted students must be able to fulfill the necessary time requirement for the practica.

The following requirements must be fulfilled: 16 credits in required courses, including the practica.*

Code	Title	Credits
Required		
MLS 4141	Immunology and Serology	
MLS 4128	Hematology I	
MLS 4129	Hematology II	
MLS 4151	Molecular Diagnostics	
MLS 4162	Hematology Practicum	
MLS 4166	Coagulation Practicum	
MLS 4158	Laboratory Management and Operations	

*Clinical rotations are completed at an approved clinical site and vary in length, lasting between 1 to 4 weeks each.

POST-BACCALAUREATE CERTIFICATE IN MEDICAL LABORATORY SCIENCE

REQUIREMENTS

Students complete required courses either on a full- or part-time basis. Courses in the major are designed to broaden the student's foundation in the sciences in preparation for the clinical phase of the program. All courses are taken through distance learning, with the exception of the four months of clinical practica.

The clinical practica are usually taken on a full-time basis upon completion of didactic course work. Students are typically in a clinical laboratory eight (daytime) hours per day, five days per week. Admitted students must be able to fulfill the necessary time requirement for the practica.

The following requirements must be fulfilled: 45 credits in required courses, including the practica.

Code	Title	Credits
Required		
MLS 4115	Parasitology and Mycology	
MLS 4123	Clinical Microbiology I	
MLS 4124	Clinical Microbiology II	
MLS 4128	Hematology I	
MLS 4129	Hematology II	
MLS 4141	Immunology and Serology	
MLS 4145	Clinical Biochemistry I	
MLS 4146	Clinical Biochemistry II	
MLS 4158	Laboratory Management and Operations	
MLS 4150	Immunohematology	
MLS 4151	Molecular Diagnostics	
MLS 4159	Capstone Seminar	
MLS 4160	Blood Bank Practicum	
MLS 4161	Clinical Biochemistry Practicum	
MLS 4162	Hematology Practicum	
MLS 4164	ClinicalMicrobiology Practicum	
MLS 4165	Urinalysis Practicum	

MLS 4166	Coagulation Practicum

POST-BACCALAUREATE CERTIFICATE IN MICROBIOLOGY FOR MEDICAL LABORATORY SCIENCE

REQUIREMENTS

Admitted students complete required courses either on a part-time or full-time basis. Courses in the major are designed to broaden the student's foundation in the sciences in preparation for the clinical phase of the program. All courses are taught online, with the exception of the clinical practicum.

The clinical practicum is usually taken on a full-time basis upon completion of didactic course work. Students are typically in a clinical laboratory eight hours per day (daytime hours), five days per week. Admitted students must be able to fulfill the necessary time requirement for the practicum.*

The following requirements must be fulfilled: 19 credits in required courses, including the practicum.

Code	Title	Credits
Required		
MLS 4115	Parasitology and Mycology	
MLS 4123	Clinical Microbiology I	
MLS 4124	Clinical Microbiology II	
MLS 4141	Immunology and Serology	
MLS 4158	Laboratory Management and Operations	
MLS 4151	Molecular Diagnostics	
MLS 4164	ClinicalMicrobiology Practicum	

*Clinical rotations are completed at an approved clinical site and vary in length, lasting between 1 to 4 weeks each.

POST-BACCALAUREATE CERTIFICATE IN PRE-MEDICINE

The post-baccalaureate certificate in pre-medicine (http://smhs.gwu.edu/programs/postbac-premed) is designed to provide students with the foundational course work, standardized test preparation, and access to real-world experience necessary for a successful medical school application. This full-time program is offered at GW's Virginia Science and Technology Campus. The program can be completed in 12 months.

The following requirements must be fulfilled: 35 credits in required courses.

Required	
HSCI 3101	General Chemistry I
HSCI 3102	General Chemistry II
HSCI 3103	Organic Chemistry I
HSCI 3104	Organic Chemistry II
HSCI 3105	Biochemistry
HSCI 3201	Biology I
HSCI 3202	Biology II
HSCI 3301	Physics I
HSCI 3302	Physics II

GRADUATE CERTIFICATE IN CLINICAL RESEARCH ADMINISTRATION

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 15 hours in required courses and one 3-credit elective course. Courses successfully completed in this program are transferable to the master of science in health sciences (M.S.H.S.) in clinical research administration degree program.

Code	Title	Credits
Required		
CRA 6201	Critical Analysis Clin Rsch	
CRA 6202	Medicines Development	
CRA 6203	Partnerships with Human Subjects	
CRA 6204	The Clinical Research Industry	
CRA 6210	MedicalWriting/ClinicalResrch	
Elective		
One of the following		
CRA 6208	International Clinical Rsrch	
CRA 6209	Quality and Risk Management	
HSCI 6263	Biostatistics Transl Research	

HSCI 6264	Epidemiology Translational Res

GRADUATE CERTIFICATE IN CLINICAL RESEARCH PRACTICE

The graduate certificate in clinical research practice capitalizes on the foundational courses of clinical research, health informatics, epidemiology, and biostatistics to prepare the graduate with the requisite knowledge and skills to conduct clinical research in collaboration with sponsored research programs. The program of study has been drawn from the core program of study of the Master of Science in Health Sciences program (http://smhs.gwu.edu/crl/programs/ctr/curriculum/mshs).

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 15 credits in required courses and 3 credits in elective courses.

Code	Title	Credits
Required		
CRA 6201	Critical Analysis Clin Rsch	
CRA 6205	Clinical Investigation	
HSCI 6263	Biostatistics Transl Research	
HSCI 6264	Epidemiology Translational Res	
HSCI 6273	Bioinformatics for Genomics	
Electives		
3 credits of electives selected in consultation with the academic advisor.		

GRADUATE CERTIFICATE IN CLINICAL AND TRANSLATIONAL RESEARCH

The graduate certificate in clinical and translational research is designed to meet the professional development needs of researchers who cannot make the time commitment needed to fulfill the requirements of the full master's degree program. All courses from the graduate certificate are transferable into the master of science in health sciences in the field of clinical and translational research program. (http://bulletin.gwu.edu/medicine-health-sciences/graduate-programs/ms-clinical-translational-research)

REQUIREMENTS

The following requirements must be fulfilled: 21 credits, including 18 credits in required courses and a 3-credit elective course.

Code	Title	Credits
Required		
CRA 6201	Critical Analysis Clin Rsch	
CRA 6205	Clinical Investigation	
HSCI 6261	Fdtn in Clinical/Trans.Rsrch	
HSCI 6265	Grantsmanship in Trans Res	
HSCI 6275	Transdisciplinary Rsrch Prop.	
HSCI 6285	Principles of Collaboration and Team Science	
Electives		
a 3-credit elective course selected in consulation with the advisor.		

GRADUATE CERTIFICATE IN HEALTH CARE QUALITY

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

All credits earned in this program are transferable to the Master of Science in Health Sciences in the field of health care quality (http://bulletin.gwu.edu/medicine-health-sciences/graduate-programs/ms-health-care-quality) degree program.

Required		
HCQ 6200	Introduction to Health Care Quality	
HCQ 6201	Building a Quality Culture	
HCQ 6202	Health Care Quality Landscape	
HCQ 6203	Quality Improvement Science	
HCQ 6204	Health Care Quality Analysis	
HCQ 6205	Patient Safety Systems	

GRADUATE CERTIFICATE IN INTEGRATIVE MEDICINE

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Required	
HSCI 6241	The Health Care Enterprise
INTM 6201	Foundations in Integrative Medicine
INTM 6202	Self Care Methods in Integrative Medicine
INTM 6203	Nutritional Metabolism and Environmental Exposure
INTM 6204	Metabolic Networks in Integrative Medicine
INTM 6205	Clinical Genomics, Proteomics, & Metabolomics
INTM 6206	Legal and Medical Ethics in Integrative Medicine
INTM 6210	Practical Application of Integrative Medicine I

GRADUATE CERTIFICATE IN REGULATORY AFFAIRS

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

All credits earned in this program are transferable to the master of science in health sciences in the field of regulatory affairs (http://bulletin.gwu.edu/medicine-health-sciences/graduate-programs/ms-regulatory-affairs) degree program.

Required	
HSCI 6263	Biostatistics Transl Research
RAFF 6201	Introduction to Global Regulatory Affairs
RAFF 6202	Regulatory Drug Biologics
RAFF 6203	Regulatory Device Diagnostics
RAFF 6204	Clinical Research for Regulatory Affairs
RAFF 6205	Regulatory Affairs Compliance

SCHOOL OF NURSING

Dean P. Jeffries
Senior Associate Dean for Academic Affairs M.J. Schumann
Associate Deans C. Pintz, B. Tebbenhoff

Established in 2010, the School of Nursing (SON) has a proven record of innovation, entrepreneurship, and leadership. SON educates and inspires nurses to provide high quality, compassionate, person-centered health care. It develops leaders who actively engage in health promotion, patient advocacy, and health care innovation, and prepares nurse educators to pursue quality and advance the profession.

School of Nursing programs include the bachelor of science in nursing (B.S.N.), master of science in nursing (M.S.N.), doctor of nursing practice (D.N.P.), and multiple certificate programs. These programs emphasize the integration of nursing practice, research, and policy with a strong focus on solving practical problems. This approach promotes strong nursing practice and leadership skills in SON graduates.

Mission

The mission of the George Washington University School of Nursing is to:

- Inspire nurses to provide high quality, compassionate health care.
- Transform health care through innovative education, research, policy, and practice.
- Develop entrepreneurial leaders and educators who pursue quality and advance the profession.
- Improve the health and well-being of people and communities locally, nationally, and globally.
- Encourage lifelong learning, and its students' advance nursing practice, policy, and education as they make a difference in the world.

Program formats and locations

On-campus programs
The second-degree accelerated B.S.N. and the Veterans B.S.N. are held on GW's Virginia Science and Technology campus (VSTC) in Ashburn, Virginia. Students at the VSTC use SON's skills and simulation laboratory, a sophisticated learning environment. In the lab, students develop competencies using high-technology manikins in multiple simulated health care settings that cross the human life span. Students experience life in a hospital long before their first clinical experience.

Distance learning programs
The M.S.N., D.N.P., and certificate programs are offered via distance learning. Programs for RNs returning to advance their education by obtaining either a BSN or an MSN are also offered as distance education programs.

Foggy Bottom campus
Some components of the distance learning programs are held on GW's Foggy Bottom campus in downtown Washington, D.C. The campus is also home to SON's administrative and academic program offices.

REGULATIONS

- **Admission (p. 808)**
  - Conditional Admission (p. 809)
  - Advance Tuition Deposit (p. 809)
  - International Applicants (p. 809)
  - Unclassified Students (p. 809)
  - Readmission (p. 809)
  - Transfer Credit (p. 809)
  - Criminal Background Check and Urine Drug Screen (p. 810)
- **Financial Regulations (p. 810)**
- **Financial Aid (p. 811)**
- **Health and Safety (p. 811)**
- **Procedures on the Evaluation of Professional Comportment (p. 812)**
- **Academic Regulations (p. 814)**
  - Scholarship Requirements (p. 814)
  - Evaluation of Academic Performance (p. 814)
  - Academic Standing (p. 815)
  - Programs of Study (p. 816)
  - Graduation Requirements (p. 817)
  - Honor Society (p. 817)
  - University Policy on Equal Opportunity (p. 817)

Admission

To be considered for admission to any GW School of Nursing (SON) program, an applicant must complete the Nursing's Centralized Application Service (NursingCAS) (http://www.nursingcas.org) application. Applicants are required to pay an application fee for NursingCAS; the NursingCAS fee will vary based on the number of programs for which the applicant applies. Official transcripts must be submitted to NursingCAS from each academic institution attended, regardless of whether credit was earned or is desired.

Detailed application information is available on the SON website (http://nursing.gwu.edu/how-apply). Applicants should refer to the individual program descriptions for information on prerequisites and supporting documents, since these vary by program. It is the responsibility of applicants to ensure that all required application materials are submitted by the designated deadlines. Unofficial copies, facsimiles, or photocopies of transcripts, certificates, or diplomas will not be accepted. All records become the property of the University and will not be returned. In addition, admitted applicants may need to submit information from a criminal background check, drug screen,

physical examination, and evidence of required immunizations and health insurance coverage depending on the program.

Conditional Admission

Admission with conditions may be offered at the discretion of the admissions committee and the Associate Dean for the Division. The terms of admission are outlined in the letter of acceptance from the University.

Advance Tuition Deposit

Upon notification of acceptance, an advance tuition deposit will be required of students. The deposit is credited toward tuition and is not refundable. Failure to pay this deposit may result in the revocation of a student's admission offer.

International Applicants

The following additional requirements pertain to international applicants:

Required Records
Official copies of all required documentation (transcripts, diplomas, and certificates as well as any other records listing subjects studied, grades received, examinations taken, the results of CHS: keeps its official records. If these documents are in a language other than English, they must be accompanied by a certified English translation. In addition, an evaluated copy completed by an acceptable international evaluation service must be submitted regardless of whether the official record is in English.

Language Tests
Applicants whose native language is not English or who are not citizens of countries where English is an official language must submit official test scores from either TOEFL or academic IELTS. The following are the minimum scores for admission consideration:

- TOEFL: 600 on paper-based; 100 on Internet-based
- Academic IELTS: an overall band score of 7.0, with no individual band score below 6.0

The language test requirement may be waived for applicants who hold a degree from an accredited college or university located in a country in which English is the official language and also the language of instruction at the institution.

Financial Certificate
A Financial Certificate must be completed and submitted with the application for admission for all international students planning to study at the University under the authorization of either a student (F) or exchange visitor (J) visa. Satisfactory completion and submission of the Financial Certificate is required for the issuance of a Form I-20 or IAP-66. Students pursuing distance learning programs are not eligible to apply for or obtain a student visa.

Unclassified Students

A student who wishes to take individual courses in the School of Nursing must obtain permission to register as an unclassified student. Application is made to the Office of Admissions, School of Nursing. The dean's office, in conjunction with the appropriate Associate Dean for the Division, will determine whether the applicant will be granted permission to register as an unclassified student. Permission to take individual courses, if granted, will generally be limited to a total of 6 credits.

Credit earned for courses taken as an unclassified student may be transferred to a degree program at the University if the courses are applicable to the program, have been taken for credit, and have been completed with the minimum grade required in the program. Successful completion of coursework taken as an unclassified student does not guarantee admission to a degree program.

Readmission

Students who were previously registered in a School of Nursing program at the University but did not register during the immediately preceding semester (summer sessions excluded) must apply for readmission. Students who have attended other academic institutions while not enrolled at this University must have complete official transcripts sent directly to the School of Nursing Office of Admissions from each institution attended. Applications for readmission are considered on the basis of regulations currently in effect.

Transfer Credit

Undergraduate Students
Advanced standing may be awarded for appropriate coursework completed at other accredited institutions provided minimum grade requirements have been met. The minimum acceptable grade is '*C*' for coursework to be applied toward an undergraduate degree. Advanced standing may also be awarded for non-traditional classroom or clinical experience as outlined below. GW reserves the right to refuse transfer credit in part or in whole or to allow credit provisionally. The School of Nursing program will award no more than 66 credits accepted as advanced standing from a two-year institution. The School of Nursing will review relevant experiences, licensure, and certification as part of the course NURS 4121 Nursing Advancement Portfolio, to award credit to associate degree prepared nurses applying to the bachelor of science in nursing/master of science in nursing(B.S.N./M.S.N.) nursing advancement program.

Graduate Students
Up to 6 credits of coursework may be accepted as transfer credit for graduate students provided the coursework was completed within the past five years at an accredited college or university with a minimum grade of *B*. A limited amount of additional transfer credit may be approved upon petition to the Senior Associate Dean of Academic Affairs. The University reserves the right to refuse transfer credit in part or in whole or to allow credit provisionally. Students' completing the GW School of Nursing's accelerated B.S.N. program will have up to 12 credits applied to the M.S.N. program at GW. The completed credits are eligible to be used for the School of

Nursing's graduate program, for a period not to exceed five years.

Degree candidates who are currently enrolled at this institution and plan to take courses at other accredited institutions for transfer credit must secure preapproval by the Associate Dean for the Division and the Senior Associate Dean of Academic Affairs.

Credit for College Board College-Level Examination Program (CLEP)
GW grants credit for specific examinations; those examinations that are not accepted include English composition, English composition with essay, and college mathematics. To earn credit, the student must score at the fiftieth percentile on each examination. Arrangements for taking the examinations are the responsibility of the applicant and should be made through the CLEP Board (http://www.collegeboard.com/clep).

Credit is not assigned for any examination that duplicates material studied in previously completed college coursework. Assignment of credit is determined by the School of Nursing Office of Admissions.

Criminal Background Check and Urine Drug Screen

Following acceptance into a clinical program, new students must complete a criminal background check and urine drug screen prior to the first day of their first term. These services are supplied by Castle Branch (https://www.castlebranch.com). Instructions for completing this requirement are provided upon admission. Clinical sites may require that students complete the site's own screening for criminal background and drugs.

Financial Regulations

The following financial regulations were adopted for the academic year 2016-2017. Costs are expected to increase in subsequent years.

University Fees and Financial and Regulations

The following regulations apply to all GW students. Visit the University Financial Fees and Regulations website (p. 47) for additional information. Note that other fees and regulations included therein may not apply to students in the School of Nursing.

- Special fees and deposits (nonrefundable)
- Voluntary Library Gift
- Payment of fees
- Monthly payment plans
- Third-party payments
- Past due accounts
- Dishonored/Returned checks
- Withdrawals and refunds

Drop-Refund Schedule for on-campus students (B.S.N. only):

On or before the end of the first week of classes	90%
On or before the end of the second week of classes	60%
On or before the end of the third week of classes	40%
On or before the end of the fourth week of classes	25%
After the fourth week of classes	None

Drop-Refund schedule for off-campus students (distance learning):

On or before the end of the second week of classes	90%
On or before the end of the fourth week of classes	50%
After the fourth week of classes	None

School of Nursing: State Requirements
Tuition Refund for Oregon Residents Taking Online Courses Only

Oregon residents enrolled in an on-line education course are allowed a modified tuition refund policy in order to meet Oregon State Mandate OAR 583-030-0035(18)(c). An Oregon student who withdraws from an on-line course is eligible for a partial refund through the middle week of the term. Refunds are based on unused instructional time and are prorated on a weekly basis. Students must be current residents of Oregon at the time of course registration and withdrawal to be eligible for this modified refund policy.

Fall and Spring term (15 week), Oregon Residents:

During the first week of classes	100%
On or before the end of the second week of classes	87%
On or before the end of the third week of classes	80%
On or before the end of the fourth week of classes	74%
On or before the end of the fifth week of classes	67%
On or before the end of the sixth week of classes	60%
On or before the end of the seventh week of classes	50%
On or before the end of the eighth week of classes	50%
After the eighth week of classes	None

Summer term (10 week), Oregon Residents:

During the first week of classes	100%
On or before the end of the second week of classes	80%
On or before the end of the third week of classes	70%
On or before the end of the fourth week of classes	60%
On or before the end of the fifth week of classes	50%
After the fifth week of classes	None

Refund policies of the University are in conformity with guidelines for refunds adopted by the American Council

on Education. Federal regulations require that financial aid recipients use such refunds to repay financial aid received for that semester's attendance. This policy applies to institutional aid as well.

In no case will tuition be reduced or refunded because of absence from classes. Authorization to withdraw and certification for work done will not be given to a student who does not have a clear financial record.

Financial Aid

GW offers financial assistance to all eligible students from a variety of resources. Undergraduate aid consists of two basic types: awards for academic achievement or talent without reference to financial circumstances (merit scholarships) and scholarships, grants, loans, and employment based on academic achievement and demonstrated financial need.

GW also participates in federal student aid programs from the U.S. Department of Education and student financial assistance programs from other U.S. government agencies such as the Departments of Veterans Affairs and Defense. Some states offer student financial assistance for undergraduate enrollment at GW.

In general, consideration for student financial assistance is restricted to students who are in good academic standing, meet minimum GPA and satisfactory academic progress requirements for specific awards, and are not financially encumbered by the University. Failure to meet and maintain satisfactory academic progress requirements may result in rescinding of awards.

Students in the accelerated B.S.N. program are only eligible to apply for federal direct and private alternative student loans through the Office of Student Financial Assistance (http://financialaid.gwu.edu). There are no GW grants available for this program. However, students may be eligible to apply for School of Nursing scholarships.

Several offices on campus provide information on financial assistance for graduate and certificate students. A general overview of financing options is provided in the brochure *Graduate Funding Opportunities*, published by the Office of Graduate Student Assistantships and Fellowships (https://graduate.admissions.gwu.edu/financial-assistance),. Forms and information on federal loans for graduate students can be obtained from the Office of Student Financial Assistance. Information on the Federal Work–Study Program, cooperative education opportunities, and on- and off-campus employment is available from the GW Career Center.

Gift aid (scholarships, grants, fellowships, assistantships, etc.) is taxable to the extent that it exceeds the allowable costs of tuition, fees, and required books and supplies or is dedicated to other costs, such as room and board. Federal grants may be taxable if, together with other gift assistance, they exceed the allowable costs. In the case of a student who is awarded tuition scholarships, grants, or awards from more than one source, the combined amount cannot exceed tuition charges; institutional aid will be adjusted to this limit.

In general, consideration for financial aid is restricted to students in good academic standing who are at least half-time and meet the minimum grade-point average for particular awards and are not financially encumbered by any other University office. Applications for institutional or federal aid cannot be processed if the relevant tax returns have not been filed in accordance with the IRS Code. Documents submitted as part of aid applications become the property of GW and cannot be returned. Federal regulations require that GW report suspected cases of fraud or misrepresentation to the appropriate federal, state, and local authorities.

Information on financial aid is assumed to be accurate at the time the current academic year Bulletin is published. Future changes in federal regulations or institutional policies may alter the application requirements or program guidelines.

Health and Safety

Health and Accident Insurance

All GW students are required to have health and accident insurance. Students who fail to maintain such insurance may be placed on Leave of Absence without tuition refund. Undergraduate students are automatically enrolled in GW's student health insurance program through Aetna. Students who have acquired their own insurance must provide the required information to be waived from the program and have this item removed from their bill. Graduate students must submit verification of health insurance coverage to the Clinical Coordinator. (https://nursing.gwu.edu/directory)

Immunization Requirements

It is the law in the District of Columbia that all students under the age of 26 have a record on file with GW Medical Services (https://studenthealth.gwu.edu) documenting immunity to measles, mumps, and rubella (two immunizations with the initial dose given after the first birthday or positive titers), varicella (chickenpox—by immunization, documented history of disease, or positive titers), hepatitis B series, meningococcal vaccine (or meningitis waiver), and a current tetanus/diphtheria booster (within 10 years prior to the beginning of the semester).

In addition, the School of Nursing requires all clinical students to submit verification of health and immunization status prior to commencing any clinical coursework. All undergraduate and graduate students in clinical programs must submit the required documentation to Castle Branch (https://www.castlebranch.com). All students must have a hepatitis screening test (see immunization policy (https://registrar.gwu.edu/vaccination-requirements)). Students are responsible for providing proof of immunity to measles, mumps, rubella, and varicella by titer. Students must show documentation of TdaP (Tetanus, diphtheria, acellular pertussis) within the past seven years. Skin testing for tuberculosis exposure (PPD) is required on an annual basis.

Annual influenza Immunization is required. GW Medical Services is available to provide any needed inoculations on a fee-for-service basis.

Undergraduate students who have not provided proof of necessary immunization by the end of the second week of classes may be removed from classes and will not be permitted to register for the subsequent semester until such proof is provided. Graduate students are not permitted to enroll in clinical courses without completion of immunization requirements.

Verification of Health Status
The School of Nursing requires for all students completion of a full physical examination within the 12 months prior to the beginning of clinical courses.

Compliance with HIPAA and OSHA Guidelines
The sites at which students pursue their clinical experience must comply with federal guidelines for the education of employees regarding prevention of the spread of blood borne pathogens and patient privacy; therefore, such sites require that all students provide evidence of relevant annual training. Undergraduate gain required training as part of their classroom experience. Graduate students must complete the required university module on HIPAA and either provide evidence of having taken OSHA training or complete the School of Nursing's training.

Procedures on the Evaluation of Professional Comportment

1. Preamble
   Students enrolled in undergraduate and graduate degree and certificate nursing programs ("Nursing School students") are required to conform to all rules, regulations, and policies with University-wide applicability, including those contained in the Guide to Student Rights and Responsibilities (https://studentconduct.gwu.edu/guide-student-rights-responsibilities) (hereinafter "Guide"). In this regard, the Guide's *Code of Academic Integrity, Policy on Equal Opportunity*; *Policy on Sexual Harassment*; *Student Grievance Procedures*; *Privacy of Student Records*, and Articles I-IV, VI, and VII of the Guide's *Statement of Student Rights and Responsibilities* apply to Nursing School students; however, owing to the unique curriculum and degree requirements of the School of Nursing, the following procedures govern Nursing School students (hereinafter "Procedures").
   These Procedures supplement certain of the applicable policies established by the Guide. For instance, the process set forth in Section Q(2) of Article VI of this Bulletin is designed to provide protection against improper academic evaluation as guaranteed by Article II, Section B of the Guide (Protection Against Improper Academic Evaluation). However, these Procedures, including the rights and procedures contained in them, supersede the Guide in all instances involving alleged misconduct by Nursing School students, with the exception of matters involving alleged academic dishonesty which are processed under the Guide's *Code of Academic Integrity*.
   All cases involving alleged misconduct (with the exception of those involving alleged academic dishonesty) will be processed solely under these Procedures. Further, Nursing School students accused of misconduct will be bound by only those procedures and rights specifically set out in the Procedures below, unless the School of Nursing Dean or his/her designee (hereinafter "Dean") decides in a particular case to have the case processed under the Guide's Code of Student Conduct. To the extent these Procedures are silent as to a particular right or procedure, such right or procedure is not intended to be afforded under these Procedures. In the case of any inconsistency or ambiguity between these Procedures and University-wide rules, regulations, and policies, including the Guide, these Procedures shall govern.
2. Evaluation of Professional Comportment
   As members of the health care community, Nursing School students are expected to behave in a manner consistent with the principles and obligations inherent to professional practice. Professional maturity, integrity, and competence are expected of students in every aspect of the clinical setting with faculty, preceptors, coworkers, and patients. Students are obliged to practice diligence, loyalty, and discretion in the patient–provider relationship.
   Some behaviors or patterns, either during the didactic or clinical phase, may raise concerns as to the student's suitability to continue in the program of study.
   Inappropriate behaviors for a nursing student may include, but are not limited to, breaching patient confidentiality, using illegal drugs or abusing controlled substances, becoming sexually involved with a patient, undertaking a procedure or scope of practice beyond that of a student, disobeying or showing disrespect for others, threatening verbal or physical behavior toward others—including students, faculty or patients—showing a judgmental attitude toward patients, or revealing a lack of concern or compassion in practice.
   The process described below is intended to address behaviors that are unacceptable to the School of Nursing and raise questions about the student's fitness for the practice of nursing.
   a. When a problem with professional comportment (other than academic dishonesty) regarding a student is perceived, the observer will communicate this concern to the Senior Associate Dean of Academic Affairs. If the communication is verbal, it must be confirmed immediately by a signed written statement or else it will not be pursued further.
   b. Upon receiving such a communication, the Senior Associate Dean of Academic Affairs will create a confidential file in which all documents pertaining to the matter will be placed. The contents of the file will be preserved for a period of time not less than five (5)

years from the date of separation or graduation from the School of Nursing. Access to this file will be restricted to the student under consideration, the Senior Associate Dean of Academic Affairs, the Dean of the School of Nursing and his/her staff, the School of Nursing Ad Hoc Committee, if one is constituted, and attorneys for GW and student.

c. The Dean will notify the student in writing that s/he has received a communication from an individual who perceives that the student has a problem with professional comportment. The notice will include a copy of these Procedures.

d. The Senior Associate Dean of Academic Affairs will meet informally with the student as soon as possible. At that meeting, or as soon thereafter as possible, the Senior Associate Dean of Academic Affairs may do one or more of the following:
   i Advise the student.
   ii Recommend that the student seek professional assistance, at the student's expense.
   iii Develop additional information through contacts with the student, his/her peers, faculty, professional consultants, and/or any other source deemed to have relevant information. With the student's concurrence, s/he may be referred for a medical, psychiatric, and/or psychological evaluation. The cost of such an evaluation will be paid by the University, and the student will be asked to authorize the professional consultant to make a written report to the Senior Associate Dean of Academic Affairs for inclusion in the student's confidential file. This authorization of the release of information regarding a psychiatric or psychological evaluation shall be made only after the student has had an opportunity to review the written report.
   iv Refer the case to a School of Nursing Ad Hoc Committee ("Ad Hoc Committee").
   v Suspend the student pending investigation and recommendation of the Ad Hoc Committee.

e. The involvement of, and actions taken by, the Senior Associate Dean of Academic Affairs may be continuing in nature; Paragraphs 6 through 19 apply if the student is referred to an Ad Hoc Committee.

f. An Ad Hoc Committee and its Chair will be named by the Senior Associate Dean of Academic Affairs. The Ad Hoc Committee, including the Chair, will consist of three faculty members from the School of Nursing.

g. The Senior Associate Dean of Academic Affairs will notify the student, in writing, of the composition of the Ad Hoc Committee. The student will be allowed ten (10) calendar days from the mailing of this notice to object to any person's appointment to the Ad Hoc Committee. Such objection must be sent to the Senior Associate Dean of Academic Affairs in writing. The Senior Associate Dean of Academic Affairs will, at his/her sole discretion, determine whether an objection warrants the appointment of one or more different persons to the Ad Hoc Committee, who shall be selected as set forth in subsection (vi) above.

h. The Ad Hoc Committee will investigate the allegation. The Ad Hoc Committee will review the student's confidential file and interview him or her. The Ad Hoc Committee also may gather and review other material and interview any other person who the Ad Hoc Committee, at its sole discretion, has reason to believe may have relevant information to contribute.

i. The student under review and/or the student's advisor may attend the information gathering sessions. The information sessions will be recorded or transcribed; the method used is at the discretion of the Ad Hoc Committee. The student and/or his or her advisor may submit written questions to be answered by persons interviewed by the Ad Hoc Committee, but the procedure regarding their questioning is left to the sole discretion of the Ad Hoc Committee, including whether the questions submitted by the student and/or his or her advisor will be modified and/or posed to the persons interviewed. The student also may suggest persons to be interviewed by the Ad Hoc Committee, but the decision to interview such persons is left to the sole discretion of the Ad Hoc Committee. The student may speak on his/her behalf and may submit other material. The student's adviser may not speak. The materials and/or testimony to be considered and the weight to be given to them are left to the sole discretion of the Ad Hoc Committee. The information sessions should not become excessively legalistic and are not conducted as criminal or civil trials. The legal rules of evidence, including, but not limited to, those rules regarding relevancy, hearsay, and admissibility are not applicable and the criminal and/or civil standards of due process are not controlling. The student and the student's advisor cannot be present when the Ad Hoc Committee meets in executive session.

j. Meetings of the Ad Hoc Committee are confidential. Minutes of the Ad Hoc Committee will be placed in the student's confidential file upon the completion of the Ad Hoc Committee's review.

k. The Chair and all members will be required to be present for all meetings of the Ad Hoc Committee. Meetings may be conducted by conference call when it is not possible for all members to be present physically.

l. The Ad Hoc Committee will make its final recommendation(s) to the Senior Associate Dean of Academic Affairs. Such recommendation(s) will be in writing and shall include findings of fact and the reasons for the recommendation(s). There is no required format for the recommendation(s). The content of the recommendation(s), including the nature and specificity of the findings and reasons, is left to the sole discretion of the Ad Hoc Committee. The Chair may review and

sign the final recommendation(s) on behalf of the Ad Hoc Committee. The recommendation(s) could include, but is (are) not limited to, one or more of the following:

i Advising the student.

ii Recommending that the student seek professional assistance, at the student's expense.

iii Recommending conditions with which the student must comply in order to continue in the School of Nursing.

iv Recommending temporary suspension from the School of Nursing

v Recommending dismissal from the School of Nursing.

The Ad Hoc Committee must agree that its recommendation(s) is (are) supported by a preponderance of the evidence (more likely than not). The Ad Hoc Committee shall make an additional recommendation regarding whether the confidential file will be made part of the student's permanent academic file.

m. The Ad Hoc Committee will forward its recommendation(s) to the Dean and shall send a copy to the student.

n. The Dean will review the student's confidential file and the recommendation(s) of the Ad Hoc Committee. The Dean, at his/her sole discretion, may meet with the student prior to making his/her determination.

o. The Dean will take whatever action s/he deems appropriate, including dismissal of the student from the School of Nursing. The Dean will inform the student in writing of his/her decision.

p. The student shall have fifteen (15) calendar days in which to appeal the decision of the Dean. Such appeal shall be in writing sent to the Provost and Executive Vice President for Academic Affairs of the University. The scope of this appeal is limited to the Provost and Executive Vice President for Academic Affairs or his/her designee's determination as to whether the procedures set forth in these Procedures have been complied with. Failure to appeal the decision shall be deemed a waiver of any and all rights to challenge the Dean's decision and shall be deemed an acceptance of the decision.

q. The Provost and Executive Vice President for Academic Affairs or his/her designee will make his/her decision in the written record of the proceedings. His/her decision shall be final.

r. At any time during the process, if the student in question selects an attorney as his or her advisor, GW will have its attorney present. The student, therefore, is required to inform the Office of the Dean two (2) days in advance of the hearing if counsel is to be present.

Academic Regulations

Many School of Nursing programs are taught in whole or in part via distance learning. Students enrolled in such programs must have specified hardware and software and meet specific technical requirements. Check your computer's readiness for distance learning (https://it.gwu.edu/tech-commons).

The School of Nursing publishes student handbooks each academic year that contains updated information on policies, regulations, and other matters of concern to matriculated students. It is the responsibility of the student to be aware of the information contained in this Bulletin and the applicable program-specific student handbook.

Scholarship Requirements

In order to graduate, undergraduate students must maintain a minimum GPA of 3.0 in courses required in the major during their degree program. A minimum grade of *B* is required in clinical courses and a minimum grade of *C* is required in didactic courses.

In order to graduate, graduate students must maintain a minimum GPA of 3.0 during their degree program. A minimum grade of *B* is required in clinical courses and in advanced pathophysiology, advanced pharmacology, and advanced health assessment courses and a minimum grade of *C* is required in other didactic courses.

In some cases, programs may establish higher GPA requirements.

Although transfer credit may be assigned, courses taken at other institutions are not considered in computing the GPA. *CR* (Credit); *AU (*Audit) *P* (Pass); *NP* (No Pass); *I* (Incomplete)*; IPG* (In Progress); *W* (Authorized Withdrawal); *and Z* (Unauthorized Withdrawal).

Evaluation of Academic Performance

Faculty members are responsible for evaluating the performance of students in a meaningful, useful, and timely manner and for assigning grades on a basis that is rational, just, and unbiased. The authority for assignment of grades rests with faculty members in the respective programs. Official grades for coursework can be obtained through Degree Map (https://registrar.gwu.edu/degreemap).

Grades in Undergraduate Degree or Certificate and Post-Baccalaureate Certificate Programs

In the School of Nursing, grades that may be assigned are *A*, *A*–, *B*+, *B*, *B*–, *C*+, C, *C*–, *D*+, *D, D*- and *F*. Except for courses that specifically state that repetition for credit is permitted, a candidate for an undergraduate degree in the School of Nursing may not repeat a course in which a grade of *C* or higher was received, or a clinical course in which a grade of B or higher was received, unless a petition to do so is approved by the Senior Associate Dean of Academic Affairs upon recommendation of the Associate Dean for the Division. If a course is repeated, the first grade remains on

the student's record and is included in the cumulative GPA. Please see *Progression* statement for further policy on course repetition. Grades and designations that may appear on the transcript include *CR* (Credit); *AU (*Audit) *P* (Pass); *NP* (No Pass); *I* (Incomplete)*; IPG* (In Progress); *W* (Authorized Withdrawal); *and Z* (Unauthorized Withdrawal). These grades and designations are not considered in determining the GPA.

Grades in Graduate Degree and Certificate Programs
In the School of Nursing, grades that may be assigned are A, *A*–, *B*+, *B*, *B*–, *C*+, C, *C*–, and F. Except for courses that specifically state that repetition is permitted, a candidate for a graduate degree or certificate in the School may not repeat a course in which a grade of *C* or higher was received, or a clinical course in which a grade of B or higher was received, unless a petition to do so is approved by the Senior Associate Dean of Academic Affairs upon recommendation of the Associate Dean for the Division. If a course is repeated, the first grade remains on the student's record and is included in the cumulative GPA. Please see *Progression* statement for further policy on course repetition. Grades and designations that may appear include *CR* (Credit); *AU (*Audit) *P* (Pass); *NP* (No Pass); *I* (Incomplete)*; IPG* (In Progress); *W* (Authorized Withdrawal); *and Z* (Unauthorized Withdrawal). These designations are not considered in determining the GPA.

Incomplete/In Progress
The designation *I* (Incomplete) may be used at the discretion of the instructor. An Incomplete indicates that the instructor has received a satisfactory explanation for the student's inability to complete the required work of the course. The grade may be used only if the student's prior performance in the course has been satisfactory. Any failure to complete the work of a course that is not satisfactorily explained to the instructor before the date when grades must be turned in will be graded *F*. Incomplete work must be made up by a date agreed upon by the instructor and the student, but no later than the last day of the examination period for the semester immediately following the semester or summer session in which the grade of *I* is assigned. An extension of one additional semester can be requested by the student and may be approved by the Associate Dean for the Division. When work for the course is completed, the grade earned will replace the grade of *I* on the student's transcript. An Incomplete that is not changed within the allotted time automatically becomes an *F*.

The symbol of *IPG* is reserved for courses (such as special projects or clinical courses) in which the course requirements may extend beyond the official GW deadline for submitting grades. *IPG* must be completed during semester following the course in which designation was assigned. Once the course has been completed, the *IPG* will be removed from the transcript and the earned grade recorded.

Unauthorized Withdrawal
The symbol of *Z* is assigned when students are registered for a course that they have not attended or have attended only briefly, and in which they have done no graded work. At the end of the academic year, students' records are reviewed; if there is more than one *Z* per semester, a student's record will be encumbered until released by the Associate Dean for the Division or the Senior Associate Dean of Academic Affairs. The symbol of *Z* is not a grade but an administrative notation.

The Grade-Point Average
Scholarship is computed in terms of the grade-point average, based only on the student's record in this University. The grade-point average is computed from grades as follows: *A*, 4.0; *A*–, 3.7; *B*+, 3.3; *B*, 3.0; *B*–, 2.7; *C*+, 2.3; *C*, 2.0; *C*–, 1.7; *D*+, 1.3; *D*, 1.0; *D*–, 0.7; *F*, 0, for each credit hour for which the student has registered in a degree program. Grades below *C* will be computed in the grade-point average but will not be considered as fulfilling degree requirements. Courses in which an *I* or *IPG* has been assigned will be included when a final grade has been recorded.

Dean's List
The name of any full-time undergraduate student who achieves a GPA of 3.5 or higher in any one semester with no grades below *B*– will be placed on the Dean's List for that semester.

Appeal Procedures for Cases of Alleged Improper Academic Evaluation
Students who believe that a grade or evaluation is unjust or inaccurate may submit a petition through the program that offers the course. If a mutually satisfactory resolution is not achieved, the student may use the following appeal procedures:

1. The student must submit a written appeal to the Senior Associate Dean of Academic Affairs within five (5) days of posting the grade.
2. The Senior Associate Dean of Academic Affairs will meet with the student to attempt to resolve the issue.
3. If the issue cannot be resolved, the Senior Associate Dean of Academic Affairs will form a three-person special committee ("Grade Appeal Committee"). The Grade Appeal Committee will consist of three (3) members of the School of Nursing faculty.
4. The Grade Appeal Committee will conduct a hearing at which the student and the faculty member have an opportunity to state, in each other's presence, their views on the academic evaluation at issue.
5. The Grade Appeal Committee will make a recommendation to the Dean regarding how the issue should be resolved. The Dean shall make the final decision regarding the grade appeal and will advise the student and the faculty member in writing of his or her decision.

Academic Standing

An enrolled student is considered to be in good academic standing by the School of Nursing provided that he or she is not on probation nor been suspended.

Warning
An undergraduate student or graduate student whose GPA falls between 3.0 and 3.2 will receive a warning letter from the Senior Associate Dean of Academic Affairs, with a copy to the Associate Dean for the Division.

A graduate student whose GPA falls between 3.0 and 3.2 will receive a warning letter from the Senior Associate Dean of Academic Affairs, with a copy to the Associate Dean for the Division.

Academic Probation
A full-time undergraduate student who has attempted a minimum of 12 credits of coursework and whose cumulative GPA is below 3.0 will be placed on academic probation and will receive a probation letter from the Senior Associate Dean of Academic Affairs, with a copy to the Associate Dean for the Division. This probation extends over the period in which the student attempts an additional 12 credits of coursework. While on probation, the student will be allowed to register for no more than 13 credits per semester, unless approved by the Associate Dean for the Division and the Senior Associate Dean of Academic Affairs.

A part-time undergraduate student who has attempted a minimum of 6 credits of coursework and whose cumulative GPA is below 3.0 will be placed on academic probation and will receive a probation letter from the Senior Associate Dean of Academic Affairs, with a copy to the Associate Dean for the Division. This probation extends over the period in which the student attempts an additional 6 credits of coursework.

A full- or part-time graduate student who's cumulative GPA falls below 3.0 will be placed on academic probation and will receive a probation letter from the Senior Associate Dean of Academic Affairs, with a copy to the Associate Dean for the Division. For full-time students, probation extends for one semester of full-time coursework as defined by the program; for part-time students, probation extends during the period in which the student attempts 9 credits of coursework.

Progression
In undergraduate programs, any grade below a *C* in supporting courses, or below a *B* in clinical courses, is not satisfactory and the student will not be permitted to progress as planned under the original program of study, but will have a new program of study as recommended by the student's advisor and the Associate Dean for the Division of Undergraduate Studies. an unsatisfactory grade or a grade of *F* on a second attempt is grounds for dismissal. B.S.N. students who are absent from their program for one semester or more, regardless of the reason, may be required to be reexamined on clinical competencies before resuming their studies. Accelerated B.S.N. program students must complete their program of study in no more than six (6) semesters of enrollment, excluding leaves of absence.

In graduate programs, any grade below a *C* in supporting courses or less than B in clinical courses, pathophysiology, pharmacology, and advanced health assessment is not satisfactory. A student receiving an unsatisfactory grade may attempt a course a second time; an unsatisfactory grade or a grade of *F* on a second attempt is grounds for dismissal. Any graduate student who earns a grade below a *B* in a clinical course will not progress in the clinical portion of the program until that course is successfully completed. Both grades remain on the student's transcript and are calculated in the final GPA. Graduate students must complete their degree program within five (5) years.

Suspension
An undergraduate student whose cumulative GPA remains below 3.0 after a period of probation may be suspended. A student suspended for poor scholarship may not register for any coursework at the University, even as an auditor. A suspended student may apply for readmission after the lapse of the semester following suspension. Evidence must be presented to the Senior Associate Dean of Academic Affairs, through the Associate Dean for the Division, demonstrating that the student is better prepared to pursue academic coursework. Any student suspended twice for poor scholarship will not be readmitted.

A graduate student who is suspended for failure to raise the cumulative GPA to 3.0 may apply for readmission after the lapse of one calendar year by submitting evidence that he or she is better prepared to pursue graduate coursework. If the student fails to achieve the minimum GPA of 3.0 at the end of the semester following readmission, the Associate Dean for the Division may recommend that graduate study be terminated and further enrollment prohibited.

Dismissal
Any student who has received one or more unsatisfactory grades during a semester may be recommended for dismissal by the Associate Dean for the Division. This will be reviewed by the Senior Associate Dean of Academic Affairs. The final decision regarding dismissal will be made by the Dean.

Programs of Study

Students enrolled in undergraduate, graduate, or certificate programs must meet with their faculty advisor, in person or electronically, in order to review a program of study, listing all coursework required for the degree or certificate, including applicable transfer credit. Changes to the program of study can be made through petition to the program.

Transfer within the School of Nursing
To apply for a transfer from one program to another within the School, a written request must be submitted to the School of Nursing Office of Student Services, along with the necessary supporting documentation required by the program. Transfers will be considered individually by the Associate Dean of the Division and the Senior Associate Dean in consultation with the director of the program within the SON program to which the students wishes to transfer. Consideration will include the

student's prior and current academic performance and the current enrollment within the proposed program.

Changes in course enrollment within the School of Nursing
A student may not substitute one course for another without approval of the Associate Dean for the Division and the Senior Associate Dean of Academic Affairs. After the deadlines for adding or dropping courses, a student must obtain the permission of the course instructor, the Associate Dean for the Division, and the Senior Associate Dean of Academic Affairs to withdraw from a course or to change status from credit to audit or audit to credit.

Adding and Dropping Courses
During the registration period and before the end of the second week of classes students may add or drop courses using GWeb (https://banweb.gwu.edu/PRODCartridge/twbkwbis.P_WWWLogin). After the second week of classes, students who wish to add or drop a course must complete a Registration Transaction Form (http://registrar.gwu.edu/registration-forms) and submit the form to the office of the Dean; forms are available online, at SON offices, and in the Office of the Registrar (http://registrar.gwu.edu). Adding a course after the second week requires a signature of the instructor or other authorized member of the School.

A course dropped during the first four weeks of classes will not appear on the student's transcript. A course dropped after the fourth week but before the end of the eighth week will be assigned a notation of *W* (Authorized Withdrawal). The deadline for dropping a course without academic penalty is the end of the eighth week of classes in the fall and spring semesters. After the end of the eighth week of classes, dropping a course without academic penalty is only possible after the student presents a petition (https://nursing.gwu.edu/forms-policies) to the Senior Associate Dean of Academic Affairs and receives written permission.

All charges for courses from which the student withdraws are subject to the refund policy listed under Fees and Financial Regulations (p. 47) in this Bulletin. Failure to withdraw by these procedures can result in an extended financial obligation and the recording of a grade of *F* or a notation of *Z*.

Graduation Requirements

Degrees are conferred in January, May, and August. Graduating students are strongly encouraged to participate in the commencement ceremony held each year in May.

To be recommended for graduation by the faculty, students must have met admission requirements; completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree; filed an application for graduation prior to the published deadline; and be free from all indebtedness to the University. Registration, either for coursework or for continuous enrollment, is required for the semester or summer session at the close of which the degree is to be conferred.

Applications (https://registrar.gwu.edu/online-graduation-application-instructions) for graduation must be filed by October 1 for fall graduation, February 1 for spring graduation, and July 1 for summer graduation.

Residence Requirements
A minimum number of credits must be completed satisfactorily in residence in the School of Nursing. See information on the School of Nursing website (https://nursing.gwu.edu) for specific information regarding the accelerated or veteran B.S.N. and the B.S.N./M.S.N. program for associate degree prepared RNs. Students in all other master of science in nursing and doctor of nursing practice programs must take all but 6 of the total required credits in residence. Courses applicable to the degree taken while registered in any division of GW in the semester immediately prior to admission to degree candidacy in the School of Nursing are counted as courses in residence.

Honors
Bachelor's degrees with honors are awarded to students whose academic records give evidence of particular merit. The student's grade-point average determines the level of honors as follows: *cum laude*, 3.4 to 3.59; *magna cum laude*, 3.6 to 3.79; *summa cum laude*, 3.8 to 4.0. The grade-point average includes all coursework completed at GW and is not rounded off. To be eligible for an honors designation, a student must complete at least 60 credits of coursework at GW.

The grade-point average is calculated by the Office of the Registrar, and the honors designation is entered on the transcript and the diploma of those students who earn an honors designation. If honors are entered in the commencement program, honors status will be determined on the basis of work completed by the end of the seventh term and entered only for those students who have completed seven-eighths of the credits required for the degree. Honors indicated on the diploma are calculated on the basis of all coursework completed. The diploma and transcript are the official indication that a degree was conferred and honors awarded.

Honor Society

The School of Nursing Phi Epsilon chapter is a chartered member of Sigma Theta Tau International (http://phiepsilon.nursingsociety.org/phiepsilonchapter/home), the national honor society of nursing. School of Nursing students who meet the qualifications specified by the constitution of Sigma Theta Tau are eligible for membership and may be nominated by an Associate Dean for the Division, faculty member, or a Sigma Theta Tau member.

University Policy on Equal Opportunity

GW does not unlawfully discriminate against any person on any basis prohibited by federal law, the District of Columbia Human Rights Act, or other applicable law, including without limitation, race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, or gender identity or expression. This policy covers all programs, services, policies, and procedures

of the University, including admission to education programs and employment.

UNDERGRADUATE

Undergraduate programs

- Bachelor of Science in Nursing (p. 829)
- Associate's Degree in Nursing Pathway to Bachelor of Science in Nursing (p. 824)
- Associate's Degree in Nursing Pathway to Bachelor of Science in Nursing and Master of Science in Nursing, Adult-Gerontology Primary Care Nurse Practitioner (p. 825)
- Associate's Degree in Nursing Pathway to Bachelor of Science in Nursing and Master of Science in Nursing, Family Nurse Practitioner (p. 826)
- Associate's Degree in Nursing Pathway to Bachelor of Science in Nursing and Master of Science in Nursing, Nurse-Midwifery (p. 827)
- Associate's Degree in Nursing Pathway to Bachelor of Arts or Bachelor of Science to Master of Science in Nursing (p. 828)

Please note: While it will not affect degree requirements for students entering in 2016-17, the titles and number of credits assigned to Nursing (NURS) courses are subject to change. Please consult the School of Nursing website (https://nursing.gwu.edu) for up-to-date course information.

GRADUATE

Master's programs

- Master of Science in Nursing in the field of Adult-gerontology acute care nurse practitioner (p. 830)
- Master of Science in Nursing in the field of Adult-gerontology primary care nurse practitioner (p. 831)
- Master of Science in Nursing in the field of Family nurse practitioner (p. 832)
- Master of Science in Nursing in the field of Nurse-midwifery (p. 834) (collaborative program between GW School of Nursing and Shenandoah University (http://www.su.edu/nursing/nursing-graduate-programs/nurse-midwifery-programs))
- Master of Science in Nursing in the field of Nursing Leadership and Management (p. 835)

Combined programs

- Dual Master of Science in Nursing in the field of adult-gerontology acute care nurse practitioner and Doctor of Nursing Practice (p. 836)
- Dual Master of Science in Nursing in the field of adult-gerontology primary care nurse practitioner and Doctor of Nursing Practice
- Dual (p. 837)Master of Science in Nursing in the field of family nurse practitioner and Doctor of Nursing Practice (p. 836)

Doctor of Nursing Practice program

- Doctor of Nursing Practice (p. 837)
  - Education concentration
  - Executive leadership
  - Family specialty for nurse practitioners
  - Health care quality
  - Palliative care specialty for nurse practitioners

Please note: While it will not affect degree requirements for students entering in 2016-17, the titles and number of credits assigned to Nursing (NURS) courses are subject to change. Please consult the School of Nursing website (https://nursing.gwu.edu) for up-to-date course information.

CERTIFICATE

In addition to degree programs in which a certificate is awarded along with the degree, the School of Nursing offers post-master's certificate-only programs* in the following specialties:

- Adult-Gerontology Acute Care Nurse Practitioner (p. 840)
- Adult-Gerontology Primary Care Nurse Practitioner (p. 840)
- Family Nurse Practitioner (p. 840)
- Family Specialty for Nurse Practitioners (p. 840)
- Nursing Education (p. 841)
- Palliative Care Nurse Practitioner (p. 841)
- Psychiatric Mental Health Nurse Practitioner (p. 841)

Visit the School of Nursing Office of Admission website (https://nursing.gwu.edu/admissions-financial-aid) for additional information.

*As used in this section, "certificate program" refers to an established program in which just the certificate is awarded upon completion, rather than a degree program in which both a degree and a certificate are awarded at completion.

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

NURS 3101. Ethical Foundations of Nursing. 3 Credits.
Theories and principles related to common ethical and moral dilemmas faced by nursing professionals in their clinical practice. Methods of analyzing and resolving moral dilemmas using clinical decision making frameworks; methods for increasing awareness by examining and understanding the impact of the nurse's own value system.

NURS 3102. Nutrition for Health Professionals. 3 Credits.
Fundamentals of human nutrition and their scientific foundations. Nutritional requirements related to changing individual and family needs; food choices, health behaviors, food safety, prevention of chronic disease, and nutrition-related public health in the United States and globally.

NURS 3103. Human Anatomy and Physiology I. 4 Credits.
Designed for students entering the allied health professions. Fundamental structures and functions as they relate to the human body, including homeostasis, anatomical language and body organization, tissues and histology, integumentary; and skeletal, muscular, nervous and endocrine systems. Requires a basic background in introductory cell/molecular biology; an equivalent course with a minimum grade of C may be substituted for the prerequisite. Prerequisite: BISC 1111.

NURS 3104. Human Anatomy and Physiology II. 4 Credits.
Continuation of NURS 3103. Fundamental structures and functions as they relate to the human body, including homeostasis, anatomical language and body organization, tissues and histology; and cardiovascular, lymphatic, respiratory, digestive, urinary, and reproductive systems. Requires a basic background in introductory cell/molecular biology. Prerequisite: NURS 3103.

NURS 3110. Transition into the Nursing Profession. 2 Credits.
Historical and evolutionary perspectives in nursing in the context of current issues and trends in health care delivery and professional nursing. Values and characteristics of professional nursing practice by examining legal, regulatory, ethical issues, critical reasoning, evidence-based practice, and nursing self-care. Same as NURS 3110W.

NURS 3110W. Transition: Nursing Profession. 2 Credits.
Historical and evolutionary perspectives in nursing considered in the context of current issues and trends in health care delivery and professional nursing. The values and characteristics of professional nursing practice are examined in terms of legal, regulatory, and ethical issues as well as critical reasoning, evidence-based practice, and nursing self-care.

NURS 3111. Foundations of Health Assessment. 3 Credits.
Development of the knowledge and skills necessary for conducting comprehensive and need-specific health assessments for individuals in the context of their family and community; determining areas in which health promotion activities should be implemented or reinforced. Students use structured interviews to elicit health histories and health practices and perform physical examinations in a systematic manner. Identification of a broad range of normal variations through practice with peers in the laboratory setting. Nursing practice in the laboratory setting, including physical mobility, safety, infection control, drug calculation, medication administration, and other health technologies.

NURS 3112. Nursing Practice and Clinical Reasoning 1: Adult and Aging Acute and Chronic Illness. 3 Credits.
The values, knowledge and competencies at the foundation of safe, evidence-based, professional holistic nursing care of adults with common medical and surgical needs; essentials of the nursing process and disease process; expected outcomes and effects of nursing interventions with adults experiencing selected health conditions at multiple levels of care.

NURS 3113. Clinical Skills Lab: Adult Medical-Surgical 1. 6 Credits.
Foundational values, knowledge, skills, and competencies for safe, evidence-based, professional, and holistic nursing care of adults with common medical and surgical needs, and using critical thinking and effective communication skills to deliver such care in clinical and laboratory environments.

NURS 3114. Nursing Practice and Clinical Reasoning 2: Advanced Adult Medical-Surgical. 3 Credits.
Builds upon the basic concepts introduced in NURS 3112 by introducing complex, multi-system disease processes requiring a higher level of critical thinking. Safe, evidence-based, professional, and holistic nursing care related to the management of clients with advanced medical and surgical needs; knowledge, skills, and competencies for assessing and managing clients/patients in a hospital environment. Prerequisites: NURS 3110, NURS 3111, NURS 3112, NURS 3113 and NURS 3118.

NURS 3115. Clinical Skills Lab: Adult Medical-Surgical 2. 4 Credits.
Builds upon the basic concepts introduced in NURS 3113 by introducing complex, multi-system disease processes requiring a higher level of critical thinking. Safe, evidence-based, professional, and holistic nursing care related to the management of clients with advanced medical and surgical needs; knowledge, skills, and competencies for assessing and managing clients/patients in a hospital environment. Prerequisites: NURS 3110, NURS 3111, NURS 3112, NURS 3113 and NURS 3118.

NURS 3116. Nursing Practice and Clinical Reasoning 3: Psychiatric Mental Health. 3 Credits.
Theoretical principles, concepts, and skills applicable to the provision of safe and effective nursing interventions to clients across the lifespan who are experiencing psychiatric and mental health conditions. Application of scientific principles; assessing, planning, and evaluating nursing interventions; developing therapeutic communication, critical reasoning, analytical skills. Practical learning for promoting wellness of clients in acute and/or community-based psychiatric health care settings. Prerequisites: NURS 3110, NURS 3111, NURS 3112, NURS 3113 and NURS 3118.

NURS 3117. NCPR: 4 Maternity/Women Hlth. 3 Credits.

NURS 3118. Pharmacology 1. 2 Credits.
The underlying principles of pharmacology and medication administration; historical perspective on pharmacotherapy, legal/ethical responsibilities of the nurse in drug administration, regulatory (FDA) drug approval process, major drug classifications, and nursing management required for drug therapy; basic principles of pharmacokinetics, pharmacodynamics, pharmacotherapeutics, medication calculations, drug-drug interactions, contraindications/ precautions, and adverse effects; the nursing process and patient teaching principles as they relate to pharmacologic concepts.

NURS 3119. Pathophysiology. 3 Credits.
Pathophysiology of common disease conditions affecting human beings across the lifespan; regulatory and compensatory mechanisms related to commonly occurring diseases; pathophysiologic bases of common human health alterations, associated clinical manifestations, and diagnostic assessments for each disease process.

NURS 4099. Variable Topics. 1-6 Credits.
Assigned topics determined by the School of Nursing. Restricted to students with prior permission of the undergraduate division of the School of Nursing.

NURS 4116. NPCR 5: Children & Families. 3 Credits.

NURS 4117. NPCR 6:Epidemiology&CommHealth. 3 Credits.

NURS 4118. Pharmacology 2. 1 Credit.
Principles of pharmacology and mechanisms of action of drug prototypes used in clinical practice; drug interactions, side effects, and contraindications as the foundation for clinical judgment and management of patients across the lifespan; dosage calculations for oral and parenteral medications and their safe administration; common pathophysiological disorders and the specific drug classes used in their management; educating patients and families concerning safe medication administration and other topics.

NURS 4119. PatientSafety&HlthCareQuality. 3 Credits.

NURS 4120. Capstone:Transitn to Practice. 6 Credits.

NURS 4121. Nursing Advancement Portfolio. 0-15 Credits.
Upon admission to one of the Associate's Degree in Nursing Pathway to Bachelor of Science in Nursing/Master of Science in Nursing programs, a student's professional portfolio is evaluated and between 0-15 credits are awarded as part of the total credits required for the bachelor's degree. If fewer than 15 credits are awarded, completion of one or more of the following courses may be required, as determined by the program director: NURS 3112, NURS 3113, and NURS 3118. In lieu of tuition, a $500 portfolio evaluation fee is charged for this course.

NURS 4418. Pharmacology 2. 1 Credit.

NURS 6180. Dimensions of Prof. Nursing. 3 Credits.

NURS 6202. Concepts in Population Health. 3 Credits.
Graduate-level nurses integrate and synthesize concepts associated with quality, health promotion, disease prevention, and chronic health problems with communities, the general population, and specific population groups. Issues related to culturally diverse and vulnerable populations.

NURS 6203. Nursing Leadership. 3 Credits.
Evidence-based leadership skills as a core competency in nursing to improve quality in patient care and strengthen nursing as a profession. Emphasis on theories of leadership, personal leadership, skill building, team-building techniques, change, conflict resolution, motivation, and communication skills.

NURS 6204. Health Information and Technology. 3 Credits.
Key issues and concepts related to the use of technology and information management to support the provision of high quality health care and outcomes.

NURS 6205. HealthPolicy,Quality,Political. 3 Credits.
The health policy process and analysis relevant to the three main thrusts of policy: cost, quality and access. Political, social, economic, and population factors that influence this process. Comparisons to health systems in other countries as appropriate. Quality science and informatics in the context of interdisciplinary, coordinated, and ethical health care delivery.

NURS 6207. Evidence-Based Practice for Health Care Researchers. 3 Credits.
The methodological issues of health care research. Appraisal and synthesis of research results and evidence-based methods. Identification and use of appropriate inquiry methodologies; ethical implications of research and translational scholarship.

NURS 6208. Biostatistics for Health Care Research. 3 Credits.
Introduction to the basic ideas and modeling approaches used in biostatistics through the use of health care research data. Descriptive and inferential statistics; identification of appropriate statistical procedures and estimation of appropriate sample size. Application of univariate, bivariate, and multivariate statistical procedures.

NURS 6209. Transitional Care. 3 Credits.
Transitional care planning and implementation, including pertinent health care policy, transitional care models, inter-professional collaboration, quality outcomes, multifaceted interventions, and the patient engagement dynamics that influence patient-centered care transitions in the current health care environment. Recommended background: BSN.

NURS 6210. Building a Quality Culture. 3 Credits.

NURS 6211. Health Care Quality Landscape. 3 Credits.

NURS 6212. Quality Improvement Science. 3 Credits.

NURS 6213. Health Care Quality Analysis. 3 Credits.

NURS 6214. Patient Safety Systems. 3 Credits.

NURS 6220. Advanced Physiology and Pathophysiology. 3 Credits.
System-focused advanced physiology and pathophysiology for analysis of health deviations across the life span. Interpretation of changes in normal function that result in symptoms indicative of illness. This systematic assessment is foundational to clinical decision making and management of health deviations.

NURS 6222. Advanced Health Assessment and Diagnostic Reasoning. 4 Credits.
Nurse Practitioner and nurse-midwifery students will acquire the knowledge, skills and clinical foundation for advanced health assessment and diagnostic reasoning in the ambulatory health care setting. This course is a prerequisite to all other clinical courses and includes a fifteen-week online didactic course, a 75-hour clinical practicum and a three day, on-campus skills training session.

NURS 6224. Adult/Gerontology Primary Care Nurse Practitioner 1, Practice Introduction. 4 Credits.
Theoretical and practical foundations of common primary care conditions in the adult patient. Assessment, diagnosis, and management of culturally diverse adults. Advanced decision making and clinical judgment, evidence-based practice, health promotion and disease prevention. Concurrent clinical practicum in a primary care setting under the supervision of preceptors and faculty. Prerequisites: NURS 6220, NURS 6222, NURS 6234.

NURS 6225. Adult/Gerontology Primary Care Nurse Practitioner 2, Adolescent & Adult. 8 Credits.
Theoretical and practical foundations of primary care of culturally diverse adolescents, adults, and older adults with chronic health problems. Synthesis and integration of advanced decision-making skills, including diagnostic reasoning and clinical judgment, health assessment, health promotion, technology, and evidence-based practice. Concurrent clinical practicum in which students manage patients in a primary care setting under the supervision of preceptors and faculty. A two- to three-day on-campus session is required. Prerequisites: Nurs 6224.

NURS 6226. Primary Care of the Family. 5 Credits.
The theoretical and practical foundations of family primary care.

NURS 6227. Family Nurse Practitioner Clinical Practicum. 1-7 Credits.
Clinical experiences focused on the primary care needs of women, adults, older adults, children, and childbearing families. Students complete a total of 7 credits in this course as their clinical experience.

NURS 6228. Advanced Family Primary Care. 5 Credits.
Seminar and clinical practicum focusing on the integration of the family nurse practitioner role through the application of family theory and evidenced-based practice in primary care settings.

NURS 6229. Adult/Gerontology Primary Care Nurse Practitioner 3, Adult, Older/Frail. 8 Credits.
Theoretical and evidence-based practice foundations for assessment and management of patients across the aging continuum. The physiologic, psychological, socioeconomic, emotional, cultural, and spiritual dimensions of the older adult in relationship to self, family, care-givers, and the health-care system are emphasized. Concurrent clinical practicum in which the student manages patients across the older-age spectrum under the supervision of preceptors and faculty. An on-campus visit is required in which students participate in a Standardized Patient final examination test-out. Prerequisites: Nurs 6225.

NURS 6230. Family Nurse Practitioner 1, Lifespan Primary Care/Diagnosis/Management. 4 Credits.
First clinically based course for family nurse practitioner students. Didactic and clinical experiences in primary care, focusing on prevention and common/chronic health problems across the lifespan. Prerequisites: NURS 6220 Advanced Pathophysiology, NURS 6222 Advanced Health Assessment, NURS 6234 Advanced Pharmacology.

NURS 6231. Family Nurse Practitioner 2, Lifespan Primary Care/Diagnosis/Management. 8 Credits.
Second clinically based course for family nurse practitioner students. Didactic and clinical experiences in family nurse practitioner care, focusing on prevention and common/chronic health problems across the lifespan. Prerequisites: N6220 Advanced Pathophysiology, N6222 Advanced Health Assessment, N6234 Advanced Pharmacology, N6230 FNP I.

NURS 6232. Family Nurse Practitioner 3, Professional Issues/Diagnosis/Management. 8 Credits.
Third course for family nurse practitioner students. Didactic and clinical experiences in primary care, focusing on prevention and common/chronic health problems across the lifespan. Consideration of professional issues for FNPs: Role development, certification, ethical issues in practice, inter-professional collaboration, and health care reimbursement issues are discussed and related to current clinical experiences. Prerequisites: Nurs 6220 Advanced Pathophysiology, Nurs 6222 Advanced Health Assessment, Nurs 6234 Pharmacology, Nurs 6230 FNP I, Nurs 6231 FNP 2.

NURS 6233. Genetics for Healthcare Providers. 3 Credits.
Basic scientific principles of genetics and their clinical applications.

NURS 6234. Advanced Pharm for Nursing. 3 Credits.
This course will cover an introduction to pharmacotherapeutics as it primarily applied to Advanced practice Nurses in Primary Care settins. The course will briefly review key pathophysiologic points, and then will discuss the pharmocotherapeutic interventions that may be considered in the treatment of disease. The course will begin with a general introduction to the foundations for professional practice and the concepts of pharmacoeconomics, pharmacokinetics, pharmacodynamics, and pharmacogenetics will be introduced. Issues surrounding community practices in pharmacotherapeutics will be explored. The course will then focus on pharmacological interventions in the spectrum of disease states seen in primary care practices involving the Nervous system, Immune System, Cardiovascular system, Hematologic system, Genitourinary system, Gastrointestinal system, Respiratory system, Endocrine system, Sensory systems, and the Skin.

NURS 6235. Adult-Gerontology Acute Care Nurse Practitioner 1: Introduction to Practice. 4 Credits.
The second clinical practicum course for adult-gerontology acute care nurse practitioner students. The scientific underpinnings and practical management of complex acute and chronic conditions across a spectrum of care delivery situations from subacute rehabilitation, to urgent care, emergency department, hospital-based care, and critical care; advanced decision making and clinical judgment in the application of evidence-based practice, health promotion, and disease prevention; acute and chronic conditions most commonly encountered across the spectrum of care delivery settings; theoretical, academic, and political elements involved in the evolution of the AGACNP role. In the required clinical practicum students manage patients' acute, chronic, and critical conditions under the supervision of preceptors and faculty. Recommended background: prior completion of NURS 6220, NURS 6234 and NURS 6222.

NURS 6236. Adult-Gerontology Acute Care Nurse Practitioner 2: Complex and Acute Illness. 8 Credits.
The second clinical practicum course for adult-gerontology acute care nurse practitioner students. Management of complex, acute stable and unstable conditions experienced by a variety of age groups from adolescents to middle-aged adults, to the elderly; application of advanced assessment techniques and technology for the diagnosis and management of patients. Both clinical and simulation experiences provide students with opportunities to provide advanced evidence-based interventions. Prerequisites: NURS 6235. Recommended background: prior completion of NURS 6220, NURS 6234 and NURS 6222.

NURS 6237. Adult-Gerontology Acute Care Nurse Practitioner 3: Complex and Chronic Disease Mgt Adolesc/Elderly. 8 Credits.
The third clinical practicum course for adult-gerontology acute care nurse practitioner students. The scientific underpinnings and the practical management of complex acute and chronic conditions across a spectrum of care delivery situations from subacute rehabilitation, to urgent care, emergency department, hospital-based care, and critical care; the scope of practice of the AGACNP is not setting specific; rather, it is based on the needs of patients. Special issues for adolescents and the frail elderly and evaluation of care for adolescents, adults, and the elderly. Prerequisites: NURS 6235 and NURS 6236. Recommended background: prior completion of NURS 6220, NURS 6234 and NURS 6222.

NURS 6239. Bridge to Nurse Midwifery. 1 Credit.

NURS 6241. The Health Care Enterprise. 3 Credits.
Overview of general management business principles related to health care systems. Management of patient-centered care delivery; strategic health care leadership; organizational, marketing, and fiscal management principles. Same as HSCI 6241.

NURS 6242. Psychopharmacology. 3 Credits.
Essential theoretical foundations of neurobiology and psychopharmacology for nurse practitioners to provide safe behavioral health care across the lifespan. Prerequisites: NURS 6220, NURS 6222 and NURS 6234.

NURS 6243. Addiction and Change. 3 Credits.
Principles of addiction and change with a focus on correlating how changes in behavior lead to recovery in addictions. Models of addiction and change, the neurobiology of addiction, behavior change theories and models, and treating addictions through behavioral mechanisms.

NURS 6244. Foundations for Psychiatric-Mental Health Nurse Practitioners. 3 Credits.
The nurse practitioner's role in providing behavioral health care in various health care systems across the lifespan; theoretical foundations for managing all phases of therapeutic relationships; psychosocial and risk assessment that meets clinical standards of care. Prerequisites: NURS 6220, NURS 6222 and NURS 6234.

NURS 6245. Mental Health Diagnostic Assessment Across the Lifespan. 3 Credits.
Assessment framework for formulating accurate diagnoses of mental health disorders across the lifespan using criteria outlined in the Diagnostic and Statistical Manual of Mental Health Disorders-5 (DSM-5). Prerequisites: NURS 6220, NURS 6222 and NURS 6234.

NURS 6246. Psychiatric Mental Health Nurse Practitioner (PMHNP) Clinical Practicum 1. 2 Credits.
Designed to build beginning level psychiatric mental health nurse practitioner skills with patients across the lifespan and in a variety of clinical settings. Students integrate knowledge from didactic and clinical course work to provide safe and competent behavioral healthcare. Prerequisites: NURS 6220, NURS 6222 and NURS 6234.

NURS 6247. Psychiatric Mental Health Nurse Practitioner (PMHNP) Clinical Practicum 2. 2 Credits.
Designed to build psychiatric mental health nurse practitioner skills in a variety of clinical settings. Students integrate foundational knowledge from course work to provide safe and competent behavioral healthcare to individuals across the lifespan. Prerequisites: Nurs 6220, Nurs 6222, Nurs 6234 and NURS 6246.

NURS 6248. Psychiatric Mental Health Nurse Practitioner (PMHNP) Clinical Practicum 3. 3 Credits.
Developing competency in the PMHNP role. Students integrate foundational knowledge from coursework to provide safe and competent behavioral healthcare to individuals across the lifespan. Prerequisites: NURS 6220, NURS 6222, NURS 6234, NURS 6244, NURS 6245, NURS 6246 and NURS 6247.

NURS 6249. Psychotherapeutic Treatment Modalities. 3 Credits.
Evidence-based psychotherapeutic treatment modalities used by the nurse practitioner in providing behavioral health care across the lifespan. Theoretical foundations for selecting and using psychotherapeutic interventions as part of the treatment plan. Prerequisites: NURS 6220, NURS 6222, NURS 6234, NURS 6242, NURS 6243, NURS 6244, NURS 6245, NURS 6246 and NURS 6247.

NURS 6256. Intro to Palliative Care. 3 Credits.

NURS 6258. Leadership Capstone Pract I. 3 Credits.
Nursing 6258 is the first of a two-semester capstone course designed to provide a mentored practicum that offers the opportunity to apply leadership content and refine leadership abilities in a setting and practice area mutually agreed upon by the student and course faculty.

NURS 6259. Leadership Capstone Pract II. 3 Credits.
Nursing 6259 is a continuation of NURS 6258 and is designed to provide a mentored internship practicum, the opportunity to apply leadership content, and refine leadership abilities.

NURS 6260. Foundations of Coaching. 3 Credits.
Nurse coaching methodology and competencies. Leadership and therapeutic relationship skills and the theory and meta-science fundamental to each skill. Assessing readiness for change, building trust and warmth, obtaining and holding the clients agenda, visioning, awareness raising techniques, brainstorming, and goal setting.

NURS 6261. Advanced Coaching Skills. 3 Credits.
Builds on concepts introduced in NURS 6260. Multidisciplinary and nursing theories foundational to nurse coaching. Advanced coaching techniques and common coaching topics and contexts such as weight loss, stress and time management, and executive coaching. Prerequisites: NURS 6260.

NURS 6262. Leadership Coaching in Nursing. 3 Credits.
Theoretical foundations and evidence for leadership coaching in nursing; the different applications of coaching in nursing management. Executive coaching, team coaching, peer coaching, and personal career coaching. Application and evaluation of multiple models, competencies, and methodologies for nursing leadership coaching through learning activities and live demonstration. Creation of a complete evidence-based coaching strategy for a case study.

NURS 6272. HumanResrcDev/HlthProfPractice. 3 Credits.

NURS 6273. Health Info Quality & Outcomes. 3 Credits.

NURS 6274. Health Economics & Finance. 3 Credits.

NURS 6275. Leadership &Change/Health Care. 3 Credits.

NURS 6276. Foundations of Palliative Care. 3 Credits.

NURS 6277. Pain and Suffering. 3 Credits.

NURS 6278. PalliativeCare:Chronic Illness. 3 Credits.

NURS 6279. Palliative Care Practicum I. 1-4 Credits.

NURS 6280. Palliative Care Practicum II. 1-4 Credits.

NURS 6281. PC Leadership and Management. 2 Credits.

NURS 6291. AdvTopics. 1-9 Credits.

NURS 6292. Teachw/Tech.inHealthProfession. 3 Credits.

NURS 6293. Health Ed.for Indiv&Community. 3 Credits.

NURS 6294. SpirtlBelief&Pract/HlthCare. 3 Credits.

NURS 6295. Health Care Quality Process. 3 Credits.

NURS 6296. Ped Health Assess & Pharm. 1 Credit.

NURS 6297. Independent Study. 1-9 Credits.

NURS 6298. NP Clinical Completion. 1-5 Credits.

NURS 8401. Org Concepts in Nursing. 3 Credits.

NURS 8402. Knowledge Managemnt in Nursing. 3 Credits.

NURS 8403. Translating Research into Prac. 3 Credits.

NURS 8404. Research & Policy for Nursing. 3 Credits.

NURS 8405. Healthcare Quality Improvement. 3 Credits.

NURS 8406. Field Exp Adv Nursing Practice. 3 Credits.

NURS 8407. Grant Writing. 3 Credits.

NURS 8408. Topics Pharmacology. 3 Credits.

NURS 8409. Healthcare Quality Practicum. 3 Credits.
Application of quality improvement processes and patient safety theories, models, methods, and tools in health care settings to conceive and execute a quality improvement (QI) project in an organizational setting. The final deliverable is a comprehensive QI project report.

NURS 8410. Executive Presence I. 2 Credits.

NURS 8411. Executive Presence II. 2 Credits.
This is a continuation of Executive Presence I. In this course, the student will examine power shifts in leadership, revisit change as a stimulus for innovation, participate in an interactive session for individuals who can practice communicating their practicum proposals and receiving friendly feedback and constructive input from their peers, and re-evaluate the leadership development plan designed in Executive Presence I.

NURS 8412. HC Finance for Nurse Leaders. 3 Credits.

NURS 8413. Adult-Gerontology Acute Care Nurse Practitioner: Advanced Role Immersion. 3 Credits.
Students develop and integrate bedside with systems and population level competencies; role development, leadership, interdisciplinary collaboration, systems management, and evidenced-based practice are discussed and applied to concurrent clinical experiences; independent practice skills in the context of interdisciplinary teams. Prerequisites: NURS 6235, NURS 6236 and NURS 6237. Recommended background: prior enrollment in NURS 6220, NURS 6234 and NURS 6222.

NURS 8414. DNP Residency. 3 Credits.

NURS 8498. Research Project Proposal. 3 Credits.

NURS 8499. Clinical Research Project. 3 Credits.

UNDERGRADUATE PROGRAMS

Associate's programs

- Associate's Degree in Nursing Pathway to Bachelor of Science in Nursing (p. 824)
- Associate's Degree in Nursing Pathway to Bachelor of Science in Nursing and Master of Science in Nursing, Adult-Gerontology Primary Care Nurse Practitioner (p. 825)
- Associate's Degree in Nursing Pathway to Bachelor of Science in Nursing and Master of Science in Nursing, Family Nurse Practitioner (p. 826)
- Associate's Degree in Nursing Pathway to Bachelor of Science in Nursing and Master of Science in Nursing, Nurse-Midwifery (p. 827)
- Associate's Degree in Nursing Pathway to Bachelor of Arts or Bachelor of Science to Master of Science in Nursing (p. 828)

Bachelor programs

- Bachelor of Science in Nursing (p. 829)

ASSOCIATE'S DEGREE IN NURSING PATHWAY TO BACHELOR OF SCIENCE IN NURSING

A combination of associates degree in nursing (A.D.N.), course work, and courses taken as part of GW's University General Education Requirement (http://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/BSNPrerequisiteDescriptions.pdf) allows currently licensed Registered Nurse (RN) students to complete a bachelor of science in nursing (B.S.N.) over three semesters and one summer session. Students attend part time, which allows them to continue working as professional nurses. The B.S.N. curriculum is completed through distance learning, and students complete clinical practicum rotations in the local community with faculty mentoring. Select on-campus experiences provide opportunities for students to interact with faculty members and fellow students. Upon completion of the program some credits earned may be applied toward a GW master of science in nursing degree.

Information for VA Community College Graduates
GW School of Nursing is pleased to provide guaranteed admission to students who have earned associate's degrees from accredited nursing programs at community colleges across Virginia and who meet GW's academic requirements.

Information for Montgomery (MD) Community College Graduates
GW School of Nursing is pleased to provide guaranteed admission to students who have earned associate's degrees from accredited nursing programs at Montgomery Community Colleges in Maryland and who meet GW's academic requirements.

For more information visit the (https://nursing.gwu.edu/rn-bsnmsn-take-classes-online)RN to BSN/MSN webpage. (https://nursing.gwu.edu/online-rn-bsn)

REQUIREMENTS

The following requirements must be fulfilled: 21 credits in required courses; 15 credits toward the University General Education Requirement, which is usually fulfilled by transfer of credits from the A.D.N. program; and up to 15 credits based on review of the student's professional portfolio and awarded through enrollment in NUR 4121. If fewer than 15 credits are awarded, completion of one or more of the following courses may be required, as determined by the program director: NURS 3112, NURS 3113, and NURS 3118.

Code	Title	Credits
Year One		
Semester one: fall		
NURS 6205	HealthPolicy,Quality,Political	
NURS 6203	Nursing Leadership	
Semester two: spring		
NURS 6202	Concepts in Population Health	

NURS 6207	Evidence-Based Practice for Health Care Researchers
Semester three: summer session	
NURS 4117	NPCR 6:Epidemiology&CommHealth
NURS 4119	PatientSafety&HlthCareQuality
NURS 4121	Nursing Advancement Portfolio
Year Two	
Semester four: fall	
NURS 6233	Genetics for Healthcare Providers
or NURS 6260	Foundations of Coaching

ASSOCIATE'S DEGREE IN NURSING PATHWAY TO BACHELOR OF SCIENCE IN NURSING/MASTER OF SCIENCE IN NURSING ADULT-GERONTOLOGY PRIMARY CARE NURSE PRACTITIONER

For newly licensed registered nurse (RN) graduates as well as experienced RNs without a bachelors' degree, the RN to BSN/MSN: adult-gerontology primary care nurse practitioner program prepares RNs for growth in advanced nursing practice. The program is designed to move RNs without a bachelor's degree seamlessly through the BSN program and into MSN coursework, allowing students to complete both degree programs in three years (six semesters and two summer sessions) on a part-time basis.

Students complete coursework via distance learning and faculty-mentored clinical practicum rotations in their local community. This format allows professional nurses to advance their education with access to GW's resources and expert faculty while continuing to work. In addition, students are required to attend four on campus programs:

- New Student Orientation—To assist students in their transition to GW, the School of Nursing hosts a mandatory orientation for all new students. Designed to empower students with the knowledge and tools needed to be successful in the School of Nursing, the orientation program is a vital first step toward academic success. Students become familiar with various campus academic resources, program requirements, course registration, online technology, and student expectations. They will also have the opportunity to meet fellow students, faculty members, consult with advisors, visit the campus, and tour local attractions. Orientation typically takes place the 2nd or 3rd week in August.
- NURS 6222: Advanced Health Assessment and Diagnostic Reasoning—All nurse practitioner students are expected to come to campus towards the end of the health assessment course to be tested on their history and physical examination skills in the simulation center. On-campus training is also provided utilizing GW teaching assistants. Seminars are presented that strengthen diagnostic reasoning skills. This on-campus experience typically takes place over a several day period toward the end of April.
- NURS 6225–AGPCNP II: Adolescent and Adult- All nurse practitioner students are expected to come to campus towards the end of the AGPCNP II/FNP 2 courses to be tested on their clinical reasoning skills in the simulation center. On-campus seminars include reading 12 lead EKGs, radiological interpretation, and a hands on suturing/wound care workshop. This on-campus experience typically takes place over a several day period in November or December.
- NURS 6229–AGPCNP III: Adult, Older/Frail - All nurse practitioner students are required to pass final skills assessment with standardized patients in the simulation center. This on-campus experience typically takes place over several days in April prior to graduation in May.
- Upon completion of the program students will be eligible to sit for the nationally recognized AANP or ANCC certification examination for the adult-gerontology primary care nurse practitioner role and population focus.

Please note that students are responsible for all travel costs. See the University's Visiting Campus website (http://www.gwu.edu/gw-overview).

Information for VA Community College Graduates
GW School of Nursing is pleased to provide guaranteed admission to students who have earned associate's degrees from accredited nursing programs at community colleges across Virginia and who meet GW's academic requirements.

Information for Montgomery (MD) Community College Graduates
GW School of Nursing is pleased to provide guaranteed admission to students who have earned associate's degrees from accredited nursing programs at Montgomery Community Colleges in Maryland and who meet GW's academic requirements.

For more information visit the RN to BSN/MSN program. (https://nursing.gwu.edu/online-rn-bsn)

REQUIREMENTS

For the **Bachelor of Science in Nursing** portion of the program the following requirements must be fulfilled: 21 credits in required courses; 15 credits toward the University General Education Requirement, which is usually fulfilled by transfer

of credits from the ADN program; and up to 15 credits based on review of the student's professional portfolio and awarded through enrollment in NUR 4121. If fewer than 15 credits are awarded, completion of one or more of the following courses may be required, as determined by the program director: NURS 3112, NURS 3113, and NURS 3118.

For the **Master of Science in Nursing in the field of adult-gerontology primary care nurse practitioner** portion of the program **t**he following requirements must be fulfilled: 33 credits in required courses and completion of 625 clinical hours.

Program Requirements

Required for BSN	
NURS 4117	NPCR 6:Epidemiology&CommHealth
NURS 4119	PatientSafety&HlthCareQuality
NURS 4121	Nursing Advancment Portfolio
NURS 6202	Concepts in Population Health
NURS 6203	Nursing Leadership
NURS 6205	HealthPolicy,Quality,Political
NURS 6207	Evidence-Based Practice for Health Care Researchers
NURS 6233	Genetics for HC Providers
Required for MSN	
NURS 6208	Biostatistics for Health Care Research
NURS 6220	Advanced Physiology and Pathophysiology
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning
NURS 6224	Adult/Gerontology Primary Care Nurse Practitioner 1, Practice Introduction
NURS 6225	Adult/Gerontology Primary Care Nurse Practitioner 2, Adolescent & Adult
NURS 6229	Adult/Gerontology Primary Care Nurse Practitioner 3, Adult, Older/Frail
NURS 6234	Advanced Pharm for Nursing

ASSOCIATE'S DEGREE IN NURSING PATHWAY TO BACHELOR OF SCIENCE IN NURSING/MASTER OF SCIENCE IN NURSING FAMILY NURSE PRACTITIONER

For newly licensed registered nurse (RN) graduates as well as experienced RNs without a bachelors' degree, the RN to BSN/MSN: family nurse practitioner program prepares RNs for growth in advanced nursing practice. The program is designed to move RNs without a bachelor's degree seamlessly through the B.S.N. program and into M.S.N. coursework, allowing students to complete both degree programs in three years (six semesters and two summer sessions) on a part-time basis.

Students complete coursework via distance learning and faculty-mentored clinical practicum rotations in their local community. This format allows professional nurses to advance their education with access to GW's resources and expert faculty while continuing to work. In addition, students are required to attend four on campus events:

- New Student Orientation—To assist students in their transition to GW, the School of Nursing hosts a mandatory orientation for all new students. Designed to empower students with the knowledge and tools needed to be successful in the School of Nursing, the orientation program is a vital first step toward academic success. Students become familiar with various campus academic resources, program requirements, course registration, online technology, and student expectations. They will also have the opportunity to meet fellow students, faculty members, consult with advisors, visit the campus, and tour local attractions. Orientation typically takes place the 2nd or 3rd week in August.
- NURS 6222: Advanced Health Assessment and Diagnostic Reasoning—All nurse practitioner students are expected to come to campus towards the end of the health assessment course to be tested on their history and physical examination skills in the simulation center. On-campus training is also provided utilizing GW teaching assistants. Seminars are presented that strengthen diagnostic reasoning skills. This on-campus experience typically takes place over a several day period toward the end of April.
- NURS 6231–FNP 2: Lifespan Primary Care/Diagnosis/Management. All nurse practitioner students are expected to come to campus towards the end of the FNP 2 course to be tested on their clinical reasoning skills in the simulation center. On-campus seminars include reading 12 lead EKGs, radiological interpretation, and a hands on suturing/wound care workshop. This on-campus experience typically takes place over a several day period in November or December.

- NURS 6232- FNP 3: Professional Issues/Diagnosis/Management - All nurse practitioner students are required to pass final skills assessment with standardized patients in the simulation center. This on-campus experience typically takes place over several days in April prior to graduation in May.
- Upon completion of the program students will be eligible to sit for the nationally recognized AANP or ANCC certification examination for the Family Nurse practitioner role and population focus.

Please note that students are responsible for all travel costs. See the University's Visiting Campus website (http://www.gwu.edu/gw-overview).

Visit the program website (https://nursing.gwu.edu/family-nurse-practitioner) for more information.

Information for VA Community College Graduates
GW School of Nursing is pleased to provide guaranteed admission to students who have earned associate's degrees from accredited nursing programs at community colleges across Virginia and who meet GW's academic requirements.

Information for Montgomery (MD) Community College Graduates
GW School of Nursing is pleased to provide guaranteed admission to students who have earned associate's degrees from accredited nursing programs at Montgomery Community Colleges in Maryland and who meet GW's academic requirements.

For more information visit the RN/BSN/MSN:FNP webpage. (https://nursing.gwu.edu/online-rn-bsn)

REQUIREMENTS

For the **Bachelor of Science in Nursing** portion of the program the following requirements must be fulfilled: 21 credits in required courses; 15 credits toward the University General Education Requirement, which is usually fulfilled by transfer of credits from the associate's degree program; and up to 15 credits based on review of the student's professional portfolio and awarded through enrollment in NUR 4121. If fewer than 15 credits are awarded, completion of one or more of the following courses may be required, as determined by the program director: NURS 3112, NURS 3113, and NURS 3118.

For the **Master of Science in Nursing in the field of family nurse practitioner** portion of the program the following requirements must be fulfilled: 33 credits in required courses and completion of 700 to 800 clinical hours.

Program of Study

Required for BSN	
NURS 4117	NPCR 6:Epidemiology&CommHealth
NURS 4119	PatientSafety&HlthCareQuality
NURS 4121	Nursing Advancment Portfolio
NURS 6202	Concepts in Population Health
NURS 6203	Nursing Leadership
NURS 6205	HealthPolicy,Quality,Political
NURS 6207	Evidence-Based Practice for Health Care Researchers
NURS 6233	Genetics for HC Providers
Required for MSN	
NURS 6220	Advanced Physiology and Pathophysiology
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning
NURS 6234	Advanced Pharm for Nursing
NURS 6208	Biostatistics for Health Care Research
NURS 6230	Family Nurse Practitioner 1, Lifespan Primary Care/Diagnosis/Management
NURS 6231	Family Nurse Practitioner 2, Lifespan Primary Care/Diagnosis/Management
NURS 6232	Family Nurse Practitioner 3, Professional Issues/Diagnosis/Management

ASSOCIATE'S DEGREE IN NURSING PATHWAY TO BACHELOR OF SCIENCE IN NURSING/MASTER OF SCIENCE IN NURSING NURSE MIDWIFERY

The Associate's Degree in Nursing Pathway to Bachelor of Science in Nursing/Master of Science in Nursing (ADN to BSN/MSN) in the field of nurse-midwifery program is a collaboration between GW and Shenandoah University (SU). The program applies previously completed ADN credits toward curriculum requirements for the BSN degree, allowing students to earn both the BSN and MSN with a seamless, three-year program of study.

Coursework for the ADN to BSN/MSN program is completed via distance learning, a format that allows professional nurses to advance their education while continuing to work. Students have access to GW and SU resources and expert faculty and attend select on-campus programs. Core-level courses required for the BSN and MSN are completed through GW, which awards the two degrees. The nurse-midwifery

didactic and clinical components of the curriculum are fulfilled through SU, which awards a Certificate of Endorsement in Nurse-Midwifery. Program graduates are eligible to sit for the national certification exam given by the American Midwifery Certification Board.

The Nurse-Midwifery Program at Shenandoah University is fully accredited by the Accreditation Commission for Midwifery Education.

Visit the ADN Pathway to BSN/MSN Nurse-Midwifery website (https://nursing.gwu.edu/nurse-midwifery) (http://nursing.gwu.edu/adn-bsnmsn-concentration-nurse-midwifery)for detailed program information.

Information for VA Community College Graduates
GW School of Nursing is pleased to provide guaranteed admission to students who have earned associate's degrees from accredited nursing programs at community colleges across Virginia and who meet GW's academic requirements.

Information for Montgomery (MD) Community College Graduates
GW School of Nursing is pleased to provide guaranteed admission to students who have earned associate's degrees from accredited nursing programs at Montgomery Community Colleges in Maryland and who meet GW's academic requirements.

For more information visit the (http://nursing.gwu.edu/adn-pathways-online)ADN Pathways webpage. (https://nursing.gwu.edu/online-rn-bsn)

REQUIREMENTS

The following requirements must be fulfilled: 53 credits, including 34 credits in required courses taken at GW and 19 credits of required courses taken at Shenandoah University. In addition, for the Bachelor of Science in Nursing portion of the program, students must complete 15 credits toward the University General Education Requirement, which is usually fulfilled by transfer of credits from the associate degree program; and up to 15 credits based on review of the student's professional portfolio and awarded through enrollment in NUR 4121. If fewer than 15 credits are awarded under NURS 4121, completion of one or more of the following courses may be required, as determined by the program director: NURS 3112, NURS 3113, and NURS 3118

Program Requirements

Required for BSN-GW	
NURS 4117	NPCR 6:Epidemiology&CommHealth
NURS 4119	PatientSafety&HlthCareQuality (course has an on-campus component)
NURS 4121	Nursing Advancment Portfolio
NURS 6202	Concepts in Population Health
NURS 6203	Nursing Leadership
NURS 6205	HealthPolicy,Quality,Political
NURS 6207	Evidence-Based Practice for Health Care Researchers
NURS 6233	Genetics for HC Providers
Required for MSN-GW	
NURS 6208	Biostatistics for Health Care Research
NURS 6220	Advanced Physiology and Pathophysiology
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning (course has an on-campus component)
NURS 6234	Advanced Pharm for Nursing
Required for Nurse-Midwifery certificate-SU	
NM 610 - Primary Care of Women (3)	
NM 620 - Comprehensive Antepartal Care (3)	
NM 630 - Midwifery Practicum (3)	
NM 640 - Comprehensive Perinatal Care (3)	
NM 651 - Integrated Midwifery Internship (5)	
NM 652 - Evidence Based Practice Project (1)	
NM 660 - Advanced Nurse-Midwifery Role Development (1)	

ASSOCIATE'S DEGREE IN NURSING PATHWAY TO MASTER OF SCIENCE IN NURSING

ADN to MSN Bridge

The Associate Degree in Nursing to Master of Science in Nursing bridge option is designed for nurses with an A.D.N. and a B.A. or B.S. in a non-nursing field who wish to pursue graduate study. Students go straight into a master's program by taking a "bridge course," NURS 3110 Transition into the Nursing Profession , the summer before matriculation in the M.S.N. program.

The A.D.N. to M.S.N. bridge option is available in the fields listed below. For more information visit the program website (http://nursing.gwu.edu/adn-msn-bridge):

Adult-Gerontology Primary Care Nurse Practitioner (https://nursing.gwu.edu/node/123)
Family Nurse Practitioner (https://nursing.gwu.edu/node/125)

Nurse-Midwifery (with Shenandoah University) (https://nursing.gwu.edu/nurse-midwifery)
Nursing Leadership and Management (https://nursing.gwu.edu/node/127)

BACHELOR OF SCIENCE IN NURSING

Through the school's accelerated bachelor of science in nursing (A.B.S.N.) program, students who already have a bachelor's degree in a non-nursing field can pursue professional nursing. The Veterans B.S.N. (V.B.S.N.) program is an option for military veterans seeking to capitalize on their military training and experience, for which they are eligible to receive academic credit. These 15-month, full-time programs draw upon students' previous knowledge from the natural and behavioral sciences, the humanities, and nursing theory to critically analyze and synthesize responses to health problems and provide appropriate nursing interventions. Taught to practice in a multicultural world, students learn to use the nursing process to support and promote health in diverse individuals, families, groups, and communities.

Graduates of the A.B.S.N. and V.B.S.N. degree programs are equipped with the knowledge, skills, and practical experience needed to enter the nursing profession with high ethical, legal, and professional values. What's more, upon completion, students will have earned 12 graduate credits, with at least 9 graduate credits eligible to be applied to any of GW's master of science in nursing (M.S.N.) degree programs within five years.

Housed at GW's Virginia Science and Technology Campus, the programs offer the unique opportunity to put theory into practice through the school's Skills and Simulation Laboratory (http://nursing.gwu.edu/skills-and-simulation-laboratories), a sophisticated and innovative learning environment in which students gain hands-on experience even before entering a clinical facility.

As the curriculum advances, students are placed in clinical rotations in top-rated facilities in the greater Washington, D.C., area, including Northern Virginia. This gives students highly valued exposure to medical and surgical nursing, obstetrics, pediatrics, psychiatric nursing, and community health. The combination of learning in a traditional classroom setting, in a premier simulation lab, through online courses, and in myriad clinical environments makes GW's A.B.S.N. and V.B.S.N. programs exceptional choices for aspiring nurses.

REQUIREMENTS

The followed requirements must be fulfilled: 60 credit hours including the required curriculum and at least 700 clinical hours; clinical hours are a component of some required courses.

Code	Title	Credits
Required		
NURS 3110	Transition into the Nursing Profession	
NURS 3111	Foundations of Health Assessment	
NURS 3112	Nursing Practice and Clinical Reasoning 1: Adult and Aging Acute and Chronic Illness	
NURS 3113	Clinical Skills Lab: Adult Medical-Surgical 1	
NURS 3114	Nursing Practice and Clinical Reasoning 2: Advanced Adult Medical-Surgical	
NURS 3115	Clinical Skills Lab: Adult Medical-Surgical 2	
NURS 3116	Nursing Practice and Clinical Reasoning 3: Psychiatric Mental Health	
NURS 3117	NCPR: 4 Maternity/Women Hlth	
NURS 3118	Pharmacology 1	
NURS 3119	Pathophysiology	
NURS 4116	NPCR 5: Children & Families	
NURS 4117	NPCR 6:Epidemiology&CommHealth	
NURS 4118	Pharmacology 2	
NURS 4119	PatientSafety&HlthCareQuality	
NURS 4120	Capstone:Transitn to Practice	
NURS 6203	Nursing Leadership *	
NURS 6204	Health Information and Technology *	
NURS 6205	HealthPolicy,Quality,Political *	
NURS 6207	Evidence-Based Practice for Health Care Researchers *	

*May be applied to the Master of Science in Nursing programs at The George Washington University.

GRADUATE PROGRAMS

Master's programs

- Master of Science in Nursing in the field of Adult-gerontology acute care nurse practitioner (p. 830)
- Master of Science in Nursing in the field of Adult-gerontology primary care nurse practitioner (p. 831)
- Master of Science in Nursing in the field of Family nurse practitioner (p. 832)

- Master of Science in Nursing in the field of Nurse-midwifery (p. 834) (collaborative program between GW School of Nursing (https://nursing.gwu.edu) and Shenandoah University (http://www.su.edu/nursing/nursing-graduate-programs/nurse-midwifery-programs))
- Master of Science in Nursing in the field of Nursing Leadership and Management (p. 835)

Combined programs

- Dual Master of Science in Nursing in the field of adult-gerontology acute care nurse practitioner and Doctor of Nursing Practice (p. 836)
- Dual Master of Science in Nursing in the field of adult-gerontology primary care nurse practitioner and Doctor of Nursing Practice (visit the School of Nursing website (https://nursing.gwu.edu) for more information)
- Dual Master of Science in Nursing in the field of family nurse practitioner and Doctor of Nursing Practice (visit the School of Nursing website (https://nursing.gwu.edu) for more information)

Doctor of Nursing Practice program

- Doctor of Nursing Practice (p. 837)
  - Education concentration
  - Executive leadership
  - Family specialty for nurse practitioners
  - Health care quality
  - Palliative care specialty for nurse practitioners

MASTER OF SCIENCE IN NURSING IN THE FIELD OF ADULT-GERONTOLOGY ACUTE CARE NURSE PRACTITIONER

The master of science in nursing (M.S.N.) in the field of adult-gerontology acute care nurse practitioner (AGACNP) degree program is separate and distinct from the adult-gerontology primary care nurse practitioner (AGPCNP) program. The AGACNP program prepares nurse practitioners to provide care for acutely, critically, or complex chronically ill patients across the continuum of care. The principle focus of the program is on delivering care in hospital-based or urgent care centers. In contrast, the AGPCNP program prepares nurse practitioners (NPs) for practice in primary care settings.

Master's and doctoral students take program-specific courses following completion of the master's core curriculum. All courses are designed to satisfy the American Association of Colleges of Nursing (AACN) Essentials in Master's Education in Nursing (AACN, 2011) and Doctorate of Nursing Practice Essentials (AACN, 2006) curriculum guidelines. In addition, program-specific courses are designed to meet specifications described in the Adult-Gerontology Acute Care Nurse Practitioner Competencies document (AACN, 2012) and prepare students to be eligible to sit for the national certification examination for adult-gerontology primary care nurse practitioners. The program-specific courses include some on-campus components, including evaluations using standardized patients, simulation, and a clinical immersion experience.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the School of Nursing website (https://nursing.gwu.edu) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits, including 9 credits in professional core courses, 6 credits in research courses, 33 credits in field-specific courses, and completion of 625 clinical hours.

Program Requirements

Code	Title	Credits
Professional core		
NURS 6202	Concepts in Population Health	
NURS 6203	Nursing Leadership	
NURS 6205	HealthPolicy,Quality,Political	
Research		
NURS 6207	Evidence-Based Practice for Health Care Researchers	
NURS 6208	Biostatistics for Health Care Research	
Field-specific		
NURS 6220	Advanced Physiology and Pathophysiology	
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning	
NURS 6233	Genetics for Healthcare Providers	
NURS 6234	Advanced Pharm for Nursing	
NURS 6235	Adult-Gerontology Acute Care Nurse Practitioner 1: Introduction to Practice	
NURS 6236	Adult-Gerontology Acute Care Nurse Practitioner 2: Complex and Acute Illness	
NURS 6237	Adult-Gerontology Acute Care Nurse Practitioner 3: Complex and Chronic Disease Mgmt Adoles/Elder	

MASTER OF SCIENCE IN NURSING IN THE FIELD OF ADULT-GERONTOLOGY PRIMARY CARE NURSE PRACTITIONER

Application to the MSN program

Applicants to the Master of Science in Nursing programs must have an earned Bachelor's degree from an accredited institution and a current license as a registered nurse with a GPA of 3.0 or higher. A Bachelor of Science in Nursing is preferred. RNs with a Bachelor's degree in another field may apply and, if accepted, will be required to take a bridge course the summer prior to the start of their studies.

Students may apply for admission if they will receive their Bachelor's degree before the first day of classes at GW. Applicants must complete the required applications before the deadline and notify the Admissions Office of their current student status. Admitted students will be required to submit a final transcript reflecting degree conferral before the first day of classes at GW. Satisfactory completion of NCLEX (National Council Licensure Examination for Registered Nurses) is required in order to continue in the Masters programs. It is recommended that applicants without relevant nursing work experience attend part time while working as a registered nurse.

Applicants must have a minimum GPA of 3.0 in all coursework, though the admission committee reserves the right to interview applicants who have less than a 3.0 GPA for either undergraduate or graduate studies. The GRE is not required for this program.

Degree Requirements

In addition to fulfilling general admission requirements, applicants to Master of Science in Nursing programs must have a BSN from an accredited institution, normally with a minimum GPA of 3.0 or higher, and a current RN license. Applicants that are registered nurses with a bachelor's degree in a related field may be admitted with the condition that they complete a Nursing bridge course prior to the start of their academic program.

Depending upon the program chosen, MSN credit requirements vary from 36 to 48 credit hours. All MSN programs require 9 credits of professional core courses (NURS 6202 Concepts in Population Health,NURS 6203 Nursing Leadership, NURS 6205 HealthPolicy,Quality,Political) and 6 credits of research courses (NURS 6270 , NURS 6271). Field-specific course requirements follow, with credit indicated in parentheses in the case of courses offered for variable credit.

The master of science in nursing degree in the field of adult-gerontology primary care nurse practitioner (AGPCNP) program provides the theoretical and practical foundations for nurses to expand their scope of practice and to become leaders in their roles as advanced practice nurses providing care for patients across the adult age continuum: the adolescent patient (12 and up), adult patient, older adult patient, and frail elderly patient.

Students complete the coursework online via distance learning and the clinical practicum rotations in their local community with faculty mentoring. The curriculum integrates research, policy, technology, simulation, and evidence-based nursing practice with diagnostic reasoning and clinical judgment to solve real-world health care problems. The distance-based format allows professional nurses to advance their education with access to GW's resources and expert faculty while continuing to work. Students may choose to enroll in the program on a full- or part-time basis.

Upon completion of the program students are eligible to sit for the nationally recognized AANP or ANCC certification examination for the Adult-Gerontology Primary Care Nurse Practitioner role and population focus.

Students in the AGPCNP option are required to complete four on-campus components.

- New Student Orientation—To assist in the transition to GW, the School of Nursing will host a mandatory orientation for all new students. The New Student Orientation is a vital first step towards academic success. It is designed to empower students with the knowledge and tools needed to be successful in the School of Nursing. Students become familiar with various campus academic resources, program requirements, course registration, online technology, and student expectations. Students will have the opportunity to meet other students, faculty members, consult with advisors, visit the campus, and tour local attractions. Orientation typically takes place the 2nd or 3rd week in August.
- NURS 6222—Advanced Health Assessment and Diagnostic Reasoning --All nurse practitioner students are expected to come to campus towards the end of the health assessment course to be tested on history and physical examination skills in the simulation center. On-campus training is also provided utilizing GW teaching assistants. Seminars are presented that strengthen diagnostic reasoning skills. This on-campus experience typically takes place over a 4-5 day period towards the end of April.
- NURS 6225 – AGPCNP II: Adolescent and Adult and NURS 6231-FNP 2: Lifespan Primary Care/Diagnosis/Management —All nurse practitioner students are expected to come to campus towards the end of the AGPCNP II/FNP 2 courses to be tested on clinical reasoning skills in the simulation center. On-campus seminars include reading 12 lead EKGs, radiological interpretation, and a hands on suturing/wound care workshop. This on-campus experience typically takes place over a 4-5 day period in early November.
- NURS 6229 – AGPCNP III: Adult, Older/Frail (or) NURS 6232 - FNP 3: Professional Issues/Diagnosis/Management—All

nurse practitioner students are required to pass final skills assessment with standardized patients in the simulation center. This on-campus experience typically takes place over a 2-3 day period in April prior to graduation in May.

Please note that students are responsible for all travel-related expenses. See the Visiting Campus (http://www.gwu.edu/visiting-campus) website for more information about visiting GW.

Visit the program website (http://nursing.gwu.edu/adult-nurse-practitioner) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits, including 9 credits in professional core courses, 6 credits in research courses, 30 credits in field-specific courses, a 3-credit elective course, and completion of 625 clinical hours.

Program Requirements

Code	Title	Credits
Professional core		
NURS 6202	Concepts in Population Health	
NURS 6203	Nursing Leadership	
NURS 6205	HealthPolicy,Quality,Political	
Research		
NURS 6207	Evidence-Based Practice for Health Care Researchers	
NURS 6208	Biostatistics for Health Care Research	
Field-specific		
NURS 6220	Advanced Physiology and Pathophysiology	
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning	
NURS 6224	Adult/Gerontology Primary Care Nurse Practitioner 1, Practice Introduction	
NURS 6225	Adult/Gerontology Primary Care Nurse Practitioner 2, Adolescent & Adult	
NURS 6229	Adult/Gerontology Primary Care Nurse Practitioner 3, Adult, Older/Frail	
NURS 6233	Genetics for Healthcare Providers	
NURS 6234	Advanced Pharm for Nursing	
Electives		

A 3-credit elective course.

MASTER OF SCIENCE IN NURSING IN THE FIELD OF FAMILY NURSE PRACTITIONER

Application to the MSN program

Applicants to the Master of Science in Nursing programs must have an earned Bachelor's degree from an accredited institution and a current license as a registered nurse with a GPA of 3.0 or higher. A Bachelor of Science in Nursing is preferred. RNs with a Bachelor's degree in another field may apply and, if accepted, will be required to take a bridge course the summer prior to the start of their studies.

Students may apply for admission if they will receive their Bachelor's degree before the first day of classes at GW. Applicants must complete the required applications before the deadline and notify the Admissions Office of their current student status. Admitted students will be required to submit a final transcript reflecting degree conferral before the first day of classes at GW. Satisfactory completion of NCLEX (National Council Licensure Examination for Registered Nurses) is required in order to continue in the Masters programs. It is recommended that applicants without relevant nursing work experience attend part time while working as a registered nurse.

Applicants must have a minimum GPA of 3.0 in all coursework, though the admission committee reserves the right to interview applicants who have less than a 3.0 GPA for either undergraduate or graduate studies. The GRE is not required for this program.

Degree Requirements

In addition to fulfilling general admission requirements, applicants to Master of Science in Nursing programs must have a BSN from an accredited institution, normally with a minimum GPA of 3.0 or higher, and a current RN license. Applicants that are registered nurses with a bachelor's degree in a related field may be admitted with the condition that they complete a Nursing bridge course prior to the start of their academic program.

Depending upon the program chosen, MSN credit requirements vary from 36 to 48 credit hours. All MSN programs require 9 credits of professional core courses (NURS 6202 Concepts in Population Health,NURS 6203 Nursing Leadership, NURS 6205 HealthPolicy,Quality,Political) and 6 credits of research courses (NURS 6270 , NURS 6271). Field-specific course requirements follow, with credit indicated in parentheses in the case of courses offered for variable credit.

The master of science in nursing in the field of family nurse practitioner (FNP) degree program prepares registered nurses

for leadership in primary care to families and individuals of all ages.

This specialty stresses the integration of research and nursing practice with a strong emphasis on solving real-world problems. The curriculum provides the theoretical and practical foundations for nurses to expand their scope of practice. Simultaneous clinical experiences ensure that students meet all criteria to sit for the nationally recognized AANP or ANCC certification examination for the Family Nurse Practitioner role and population focus. Students may choose to enroll in the program on a full- or part-time basis.

Students in the FNP option are required to complete four on-campus components:

- New Student Orientation: To assist in the transition to GW, the School of Nursing hosts a mandatory orientation for all new students. Designed to empower students with the knowledge and tools needed to be successful in the School of Nursing, the orientation program is a vital first step toward academic success. Students become familiar with various campus academic resources, program requirements, course registration, online technology, and student expectations. They also have the opportunity to meet fellow students and faculty members, consult with advisors, become familiar with the campus, and tour local attractions. Orientation typically takes place the second or third week in August.
- NURS 6222 Advanced Health Assessment and Diagnostic Reasoning: All students are expected to come to campus towards the end of the health assessment course to be tested on their history and physical examination skills in the simulation center. On-campus training is provided using GW teaching assistants, and seminars that strengthen diagnostic reasoning skills are presented. This on-campus experience typically takes place over a four- to five-day period towards the end of April.
- NURS 6225 Adult/Gerontology Primary Care Nurse Practitioner 2, Adolescent & Adult and NURS 6231 Family Nurse Practitioner 2, Lifespan Primary Care/Diagnosis/Management: All students are expected to come to campus towards the end of the AGPCNP II/FNP two courses to be tested on their clinical reasoning skills in the simulation center. On-campus seminars include reading 12 lead EKGs, radiological Interpretation, and a hands on suturing/wound care workshop. This on-campus experience typically takes place over a four- to five-day period in early November.
- NURS 6229 Adult/Gerontology Primary Care Nurse Practitioner 3, Adult, Older/Frail or NURS 6232 Family Nurse Practitioner 3, Professional Issues/Diagnosis/Management: All students are required to pass final skills assessment with standardized patients in the simulation center. This on-campus experience typically takes place over a two- to three day-period in April prior to graduation in May.

Please note that students are responsible for all travel-related expenses. See the Visiting Campus (http://www.gwu.edu/visiting-campus) website for more information about visiting GW.

Visit the Program website (http://nursing.gwu.edu/adult-nurse-practitioner) for additional information.

The School of Nursing also offers a Family Nurse Practitioner program for professionals holding a master's degree in nursing. Visit the certificate program website (http://nursing.gwu.edu/adult-nurse-practitioner-certificate) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits including, 6 credits in professional core courses, 9 credits in research courses, 33 credits in field-specific courses, and completion of 700 clinical hours.

Program Requirements

Code	Title	Credits
Professional core		
NURS 6202	Concepts in Population Health	
NURS 6203	Nursing Leadership	
NURS 6205	HealthPolicy,Quality,Political	
Research		
NURS 6207	Evidence-Based Practice for Health Care Researchers	
NURS 6208	Biostatistics for Health Care Research	
Field-specific		
NURS 6220	Advanced Physiology and Pathophysiology	
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning	
NURS 6230	Family Nurse Practitioner 1, Lifespan Primary Care/Diagnosis/Management	
NURS 6231	Family Nurse Practitioner 2, Lifespan Primary Care/Diagnosis/Management	
NURS 6232	Family Nurse Practitioner 3, Professional Issues/Diagnosis/Management	
NURS 6233	Genetics for Healthcare Providers	
NURS 6234	Advanced Pharm for Nursing	

MASTER OF SCIENCE IN NURSING IN THE FIELD OF NURSE-MIDWIFERY

Application to the MSN program

Applicants to the Master of Science in Nursing programs must have an earned Bachelor's degree from an accredited institution and a current license as a registered nurse with a GPA of 3.0 or higher. A Bachelor of Science in Nursing is preferred. RNs with a Bachelor's degree in another field may apply and, if accepted, will be required to take a bridge course the summer prior to the start of their studies.

Students may apply for admission if they will receive their Bachelor's degree before the first day of classes at GW. Applicants must complete the required applications before the deadline and notify the Admissions Office of their current student status. Admitted students will be required to submit a final transcript reflecting degree conferral before the first day of classes at GW. Satisfactory completion of NCLEX (National Council Licensure Examination for Registered Nurses) is required in order to continue in the Masters programs. It is recommended that applicants without relevant nursing work experience attend part time while working as a registered nurse.

Applicants must have a minimum GPA of 3.0 in all coursework, though the admission committee reserves the right to interview applicants who have less than a 3.0 GPA for either undergraduate or graduate studies. The GRE is not required for this program.

Degree Requirements

In addition to fulfilling general admission requirements, applicants to Master of Science in Nursing programs must have a BSN from an accredited institution, normally with a minimum GPA of 3.0 or higher, and a current RN license. Applicants that are registered nurses with a bachelor's degree in a related field may be admitted with the condition that they complete a Nursing bridge course prior to the start of their academic program.

Depending upon the program chosen, MSN credit requirements vary from 36 to 48 credit hours. All MSN programs require 9 credits of professional core courses (NURS 6202 Concepts in Population Health,NURS 6203 Nursing Leadership, NURS 6205 HealthPolicy,Quality,Political) and 6 credits of research courses (NURS 6270 , NURS 6271). Field-specific course requirements follow, with credit indicated in parentheses in the case of courses offered for variable credit.

The master of science in nursing in the field of nurse-midwifery program is a collaboration between GW and Shenandoah University (SU). The program prepares graduates to be eligible for the American Midwifery Certification Board's national certification exam. The nurse-midwifery degree program at SU is fully accredited by the Accreditation Commission for Midwifery Education.

Core courses required for the MSN are completed through GW, which awards the MSN degree, while the nurse-midwifery didactic and clinical component of the curriculum is fulfilled through SU, which awards the Postgraduate Certificate in Midwifery. A versatile distance learning format allows professional nurses to advance their education while continuing to work,and provides students with access to the resources and experts at GW and SU. In addition, there are selected on-campus sessions for skills training and education as well as clinical practicums in sites across the country. Students may choose to enroll in the program on a full- or part-time basis.

Visit the program website (http://nursing.gwu.edu/msn-concentration-nurse-midwifery) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 47 credits, including 9 credits in professional core, 6 credits in research, and 13 credits in field-specific courses at GW and 19 credits in nurse-midwifery courses at Shenandoah University.

Program Requirements

Professional core	
NURS 6202	Concepts in Population Health
NURS 6203	Nursing Leadership
NURS 6205	HealthPolicy,Quality,Political
Research	
NURS 6207	Evidence-Based Practice for Health Care Researchers
NURS 6208	Biostatistics for Health Care Research
Field-specific	
NURS 6220	Advanced Physiology and Pathophysiology
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning
NURS 6233	Genetics for HC Providers
NURS 6234	Advanced Pharm for Nursing
NM 610	
NM 620	
NM 630	
NM 640	

NM 651	
NM 652	
NM 660	

Courses marked as "NM" are taken at Shenandoah University

Courses in Nurse-Midwifery at Shenandoah University (19 Credit Hours):

- NM 610: Primary Care of Women (3) (http://nursing.gwu.edu/course-descriptions/#NM610)
- NM 620: Comprehensive Antepartal Care (3) (http://nursing.gwu.edu/course-descriptions/#NM620)
- NM 630: Midwifery Practicum (3) (http://nursing.gwu.edu/course-descriptions/#NM630)
- NM 640: Comprehensive Perinatal Care (3) (http://nursing.gwu.edu/course-descriptions/#NM640)
- NM 651: Integrated Midwifery Internship (5) (http://nursing.gwu.edu/course-descriptions/#NM650)
- NM 652: Evidence Based Practice Project (1) (http://nursing.gwu.edu/course-descriptions/#NM652)
- NM 660: Advanced Nurse-Midwifery Role Development (1) (http://nursing.gwu.edu/course-descriptions/#NM660)

MASTER OF SCIENCE IN NURSING IN THE FIELD OF NURSING LEADERSHIP AND MANAGEMENT

Application to the MSN program

Applicants to the Master of Science in Nursing programs must have an earned Bachelor's degree from an accredited institution and a current license as a registered nurse with a GPA of 3.0 or higher. A Bachelor of Science in Nursing is preferred. RNs with a Bachelor's degree in another field may apply and, if accepted, will be required to take a bridge course the summer prior to the start of their studies.

Students may apply for admission if they will receive their Bachelor's degree before the first day of classes at GW. Applicants must complete the required applications before the deadline and notify the Admissions Office of their current student status. Admitted students will be required to submit a final transcript reflecting degree conferral before the first day of classes at GW. Satisfactory completion of NCLEX (National Council Licensure Examination for Registered Nurses) is required in order to continue in the Masters programs. It is recommended that applicants without relevant nursing work experience attend part time while working as a registered nurse.

Applicants must have a minimum GPA of 3.0 in all coursework, though the admission committee reserves the right to interview applicants who have less than a 3.0 GPA for either undergraduate or graduate studies. The GRE is not required for this program.

Degree Requirements

In addition to fulfilling general admission requirements, applicants to Master of Science in Nursing programs must have a BSN from an accredited institution, normally with a minimum GPA of 3.0 or higher, and a current RN license. Applicants that are registered nurses with a bachelor's degree in a related field may be admitted with the condition that they complete a Nursing bridge course prior to the start of their academic program.

Depending upon the program chosen, MSN credit requirements vary from 36 to 48 credit hours. All MSN programs require 9 credits of professional core courses (NURS 6202 Concepts in Population Health,NURS 6203 Nursing Leadership, NURS 6205 HealthPolicy,Quality,Political) and 6 credits of research courses (NURS 6270 , NURS 6271). Field-specific course requirements follow, with credit indicated in parentheses in the case of courses offered for variable credit.

The master of science in nursing in the field of nursing leadership and management degree program is designed to prepare graduates for upper-level positions in the field by enhancing the depth and breadth of the practicing clinical professional's knowledge and skills. The program focuses on leadership development by training nurses to think and act strategically, participate in policy decisions, and lead organizations through change and improvement.

Students complete the coursework online via distance learning. This distance-based format allows professional nurses to advance their education with access to GW's resources and expert faculty while continuing to work full-time. In addition, students attend select on-campus experiences to interact with faculty and fellow students. Students may choose to enroll in the program on a full- or part-time basis.

Visit the program website (http://nursing.gwu.edu/nursing-leadership-management) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits including 9 credits in professional core courses, 6 credits in research courses, and 21 credits in field-specific courses.

Program Requirements

Professional core	
NURS 6202	Concepts in Population Health
NURS 6203	Nursing Leadership
NURS 6205	HealthPolicy,Quality,Political
Research	

NURS 6207	Evidence-Based Practice for Health Care Researchers
NURS 6208	Biostatistics for Health Care Research
Field-specific	
NURS 6204	Health Info and Technology
NURS 6241	The Health Care Enterprise
NURS 6258	Leadership Capstone Pract I
NURS 6259	Leadership Capstone Pract II
NURS 6262	Leadership Coaching in Nursing
NURS 6274	Health Economics & Finance
NURS 6295	Health Care Quality Process

DUAL MASTER OF SCIENCE IN NURSING IN THE FIELD OF ADULT-GERONTOLOGY ACUTE CARE NURSE PRACTITIONER AND DOCTOR OF NURSING PRACTICE

The master of science in nursing (M.S.N.) in the field of adult-gerontology acute care nurse practitioner (AGACNP) degree program is separate and distinct from the adult-gerontology primary care nurse practitioner program (p. 831) (AGPCNP) program. The AGACNP program prepares nurse practitioners to provide care for acutely, critically, or complex chronically ill patients across the continuum of care. The principle focus of the program is on delivering care in hospital-based or urgent care centers. In contrast, the AGPCNP program prepares nurse practitioners (NPs) for practice in primary care settings.

The AGACNP program can be pursued as part of a dual degree program that awards the master of science in nursing (M.S.N.) mid-program and a doctor of nursing practice (http://bulletin.gwu.edu/nursing/doctor-nursing-practice) (D.N.P.) degree upon completion. Students take the D.N.P. core courses in the final semesters of the program. All students must have an earned bachelor's degree to enter the program and complete the M.S.N. core courses at the beginning of their graduate-level program of study.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the School of Nursing website (https://nursing.gwu.edu) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 81 credits, including 78 credits in required courses and a 3-credit elective course.

Code	Title	Credits
Required		
NURS 6202	Concepts in Population Health	
NURS 6203	Nursing Leadership	
NURS 6205	HealthPolicy,Quality,Political	
NURS 6207	Evidence-Based Practice for Health Care Researchers	
NURS 6208	Biostatistics for Health Care Research	
NURS 6220	Advanced Physiology and Pathophysiology	
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning	
NURS 6233	Genetics for Healthcare Providers	
NURS 6234	Advanced Pharm for Nursing	
NURS 6235	Adult-Gerontology Acute Care Nurse Practitioner 1: Introduction to Practice	
NURS 6236	Adult-Gerontology Acute Care Nurse Practitioner 2: Complex and Acute Illness	
NURS 6237	Adult-Gerontology Acute Care Nurse Practitioner 3: Complex and Chronic Disease Mgmt Adoles/Elder	
NURS 6241	The Health Care Enterprise	
NURS 8401	Org Concepts in Nursing	
NURS 8402	Knowledge Managemnt in Nursing	
NURS 8403	Translating Research into Prac	
NURS 8404	Research & Policy for Nursing	
NURS 8405	Healthcare Quality Improvement	
NURS 8413	Adult-Gerontology Acute Care Nurse Practitioner: Advanced Role Immersion	
NURS 8498	Research Project Proposal	
NURS 8499	Clinical Research Project	
NURS 8499	Clinical Research Project	

Electives
One 3-credit elective course.

DOCTOR OF NURSING PRACTICE

An alternative to research-focused doctoral programs, the doctor of nursing practice (D.N.P.) advances professional nursing roles in clinical practice and nursing leadership and management. It is designed to develop leaders in health care at the local and national levels. Graduates can incorporate health policy, knowledge of information technology, evidence based practice, business principles, collaboration, health systems, and health policy into practice. A clinical research project immerses students in a practice environment that lays the foundation for future scholarship and success in the nursing field. Students may enter either at the post-bachelor's or post-master's level.

Visit the program website (https://nursing.gwu.edu/doctor-nursing-practice-dnp-program) for more information.

REQUIREMENTS

Program Options

POST-BACHELOR'S OPTIONS

- Doctor of Nursing Practice–Family Nurse Practitioner
- Doctor of Nursing Practice–Adult-Gerontology Primary Care Nurse Practitioner

POST-MASTER'S OPTIONS

- Doctor of Nursing Practice
- Doctor of Nursing Practice–Education Concentration
- Doctor of Nursing Practice–Executive Leadership
- Doctor of Nursing Practice–Family Specialty for Nurse Practitioners
- Doctor of Nursing Practice–Health Care Quality
- Doctor of Nursing Practice–Palliative Care Specialty for Nurse Practitioner

Program Requirements

Students who enter the D.N.P. program at the post-master's level must complete 36 credits of doctoral work. Students who enter the program at the post-bachelor's level must complete the credit requirements for their concentration (adult gerontology primary care nurse practitioner or family nurse practitioner) before beginning doctoral coursework. Students pursuing a Post-Graduate APRN Certificate: FSNP must complete 500 clinical hours

Curriculum Requirements

Code	Title	Credits
Adult gerontology primary care nurse practitioner		
Required for post-B.S.N. entry:		
NURS 6202	Concepts in Population Health	
NURS 6203	Nursing Leadership	
NURS 6205	HealthPolicy,Quality,Political	
NURS 6207	Evidence-Based Practice for Health Care Researchers	
NURS 6208	Biostatistics for Health Care Research	
NURS 6220	Advanced Physiology and Pathophysiology	
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning	
NURS 6224	Adult/Gerontology Primary Care Nurse Practitioner 1, Practice Introduction	
NURS 6225	Adult/Gerontology Primary Care Nurse Practitioner 2, Adolescent & Adult	
NURS 6229	Adult/Gerontology Primary Care Nurse Practitioner 3, Adult, Older/Frail	
NURS 6233	Genetics for Healthcare Providers	
NURS 6234	Advanced Pharm for Nursing	

Code	Title	Credits
Family nurse practitioner		
Required for post-B.S.N. entry:		
NURS 6202	Concepts in Population Health	
NURS 6203	Nursing Leadership	
NURS 6205	HealthPolicy,Quality,Political	
NURS 6207	Evidence-Based Practice for Health Care Researchers	
NURS 6208	Biostatistics for Health Care Research	
NURS 6220	Advanced Physiology and Pathophysiology	
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning	
NURS 6230	Family Nurse Practitioner 1, Lifespan Primary Care/Diagnosis/Management	
NURS 6231	Family Nurse Practitioner 2, Lifespan Primary Care/Diagnosis/Management	
NURS 6232	Family Nurse Practitioner 3, Professional Issues/Diagnosis/Management	
NURS 6233	Genetics for Healthcare Providers	

NURS 6234	Advanced Pharm for Nursing

Code	Title	Credits
Following completion of concentration courses, AGNP and FNP students take:		
NURS 6241	The Health Care Enterprise	
NURS 8401	Org Concepts in Nursing	
NURS 8402	Knowledge Managemnt in Nursing	
NURS 8403	Translating Research into Prac	
NURS 8404	Research & Policy for Nursing	
NURS 8405	Healthcare Quality Improvement	
NURS 8414	DNP Residency	
NURS 8498	Research Project Proposal	
NURS 8499	Clinical Research Project (taken twice for a total of 6 credits)	
3 credits of approved elective courses		

Code	Title	Credits
Required for post-M.S.N. entry in the nursing practice major:		
NURS 6202	Concepts in Population Health	
NURS 6241	The Health Care Enterprise	
NURS 8401	Org Concepts in Nursing	
NURS 8402	Knowledge Managemnt in Nursing	
NURS 8403	Translating Research into Prac	
NURS 8404	Research & Policy for Nursing	
NURS 8405	Healthcare Quality Improvement	
NURS 8498	Research Project Proposal	
NURS 8499	Clinical Research Project (taken twice for a total of 6 credits)	
6 credits of approved elective courses unless concentration specifies different program of study		

Code	Title	Credits
Required for post-M.S.N. entry in the executive leadership major:		
NURS 6202	Concepts in Population Health	
NURS 6241	The Health Care Enterprise	
NURS 8401	Org Concepts in Nursing	
NURS 8402	Knowledge Managemnt in Nursing	
NURS 8403	Translating Research into Prac	
NURS 8404	Research & Policy for Nursing	
NURS 8405	Healthcare Quality Improvement	
NURS 8410	Executive Presence I	
NURS 8411	Executive Presence II	
NURS 8412	HC Finance for Nurse Leaders	
NURS 8498	Research Project Proposal	
NURS 8499	Clinical Research Project (taken twice for a total of 6 credits)	
MBAD 6262	Managing Human Capital	
MBAD 6265	Entrepreneurship	
MBAD 6290	Special Topics (Social Entrepreneurship)	
MBAD 6234	Financial Management	
A 1.5 credit approved MBAD approved		

Code	Title	Credits
Required for post-M.S.N. entry in the nursing education concentration:		
NURS 6202	Concepts in Population Health	
NURS 6241	The Health Care Enterprise	
NURS 8401	Org Concepts in Nursing	
NURS 8402	Knowledge Managemnt in Nursing	
NURS 8403	Translating Research into Prac	
NURS 8404	Research & Policy for Nursing	
NURS 8405	Healthcare Quality Improvement	
NURS 8498	Research Project Proposal	
NURS 8499	Clinical Research Project (taken twice for a total of 6 credits)	
HOL 6701	Adult Learning	
HOL 6721	Assessing the Impact of Organizational Change	

HOL 6742	Design of Adult Learning Interventions

Code	Title	Credits
Required for post-M.S.N. entry in the palliative care nurse practitioner major:		
NURS 6202	Concepts in Population Health	
NURS 6276	Foundations of Palliative Care	
NURS 6277	Pain and Suffering	
NURS 6278	PalliativeCare:Chronic Illness	
NURS 6279	Palliative Care Practicum I	
NURS 6280	Palliative Care Practicum II	
NURS 6241	The Health Care Enterprise	
NURS 8401	Org Concepts in Nursing	
NURS 8402	Knowledge Managemnt in Nursing	
NURS 8403	Translating Research into Prac	
NURS 8404	Research & Policy for Nursing	
NURS 8405	Healthcare Quality Improvement	
NURS 8498	Research Project Proposal	
NURS 8499	Clinical Research Project (taken twice for a total of 6 credits)	

Visit the DNP: Palliative Care Nurse Practitioner (PCNP) website (http://nursing.gwu.edu/adn-bsn) for detailed program information.

Code	Title	Credits
Required for post-M.S.N. entry in the health care quality major:		
NURS 6202	Concepts in Population Health	
NURS 6212	Quality Improvement Science	
NURS 6213	Health Care Quality Analysis	
NURS 6214	Patient Safety Systems	
NURS 6241	The Health Care Enterprise	
NURS 8401	Org Concepts in Nursing	
NURS 8402	Knowledge Managemnt in Nursing	
NURS 8403	Translating Research into Prac	
NURS 8404	Research & Policy for Nursing	
NURS 8405	Healthcare Quality Improvement	
NURS 8498	Research Project Proposal	
NURS 8499	Clinical Research Project (taken twice for a total of 6 credits)	

Code	Title	Credits
Required for post-M.S.N. entry in dual family specialty for nurse practitioner certificate program:		
NURS 6202	Concepts in Population Health	
NURS 6226	Primary Care of the Family	
NURS 6227	Family Nurse Practitioner Clinical Practicum	
NURS 6228	Advanced Family Primary Care	
NURS 6241	The Health Care Enterprise	
NURS 8401	Org Concepts in Nursing	
NURS 8402	Knowledge Managemnt in Nursing	
NURS 8403	Translating Research into Prac	
NURS 8404	Research & Policy for Nursing	
NURS 8405	Healthcare Quality Improvement	
NURS 8498	Research Project Proposal	
NURS 8499	Clinical Research Project (taken twice for a total of six credits)	

CERTIFICATE PROGRAMS

Post-Master's certificates

- Adult-Gerontology Acute Care Nurse Practitioner (p. 840)
- Adult-Gerontology Primary Care Nurse Practitioner (p. 840)
- Family Nurse Practitioner (p. 840)
- Family Specialty for Nurse Practitioners (p. 840)
- Nursing Education (p. 841)
- Palliative Care Nurse Practitioner (p. 841)
- Psychiatric Mental Health Nurse Practitioner (p. 841)

POST MASTER'S CERTIFICATE IN ADULT-GERONTOLOGY ACUTE CARE NURSE PRACTITIONER

REQUIREMENTS

The following requirements must be fulfilled: 30 credits in required courses.

Code	Title	Credits
Required		
NURS 6220	Advanced Physiology and Pathophysiology	
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning	
NURS 6234	Advanced Pharm for Nursing	
NURS 6235	Adult-Gerontology Acute Care Nurse Practitioner 1: Introduction to Practice	
NURS 6236	Adult-Gerontology Acute Care Nurse Practitioner 2: Complex and Acute Illness	
NURS 6237	Adult-Gerontology Acute Care Nurse Practitioner 3: Complex and Chronic Disease Mgmt Adoles/Elder	

POST MASTER'S CERTIFICATE IN ADULT-GERONTOLOGY PRIMARY CARE NURSE PRACTITIONER

REQUIREMENTS

The following requirements must be fulfilled: 30 credits in required courses.

Code	Title	Credits
Required		
NURS 6220	Advanced Physiology and Pathophysiology	
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning	
NURS 6224	Adult/Gerontology Primary Care Nurse Practitioner 1, Practice Introduction	
NURS 6225	Adult/Gerontology Primary Care Nurse Practitioner 2, Adolescent & Adult	
NURS 6229	Adult/Gerontology Primary Care Nurse Practitioner 3, Adult, Older/Frail	
NURS 6234	Advanced Pharm for Nursing	

POST MASTER'S CERTIFICATE IN FAMILY NURSE PRACTITIONER

REQUIREMENTS

The following requirements must be fulfilled: 30 credits in required courses.

Code	Title	Credits
Required		
NURS 6220	Advanced Physiology and Pathophysiology	
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning	
NURS 6230	Family Nurse Practitioner 1, Lifespan Primary Care/Diagnosis/Management	
NURS 6231	Family Nurse Practitioner 2, Lifespan Primary Care/Diagnosis/Management	
NURS 6232	Family Nurse Practitioner 3, Professional Issues/Diagnosis/Management	
NURS 6234	Advanced Pharm for Nursing	

POST MASTER'S CERTIFICATE IN FAMILY SPECIALTY FOR NURSE PRACTITIONERS

REQUIREMENTS

The following requirements must be fulfilled: 17 credits in required courses.

Code	Title	Credits
Required		
NURS 6226	Primary Care of the Family	
NURS 6227	Family Nurse Practitioner Clinical Practicum	
NURS 6228	Advanced Family Primary Care	

POST-MASTER'S CERTIFICATE IN NURSING EDUCATION

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
HOL 6701	Adult Learning	
HOL 6742	Design of Adult Learning Interventions	
HOL 6721	Assessing the Impact of Organizational Change	
Elective		
One of the following:		
NURS 6292	Teachw/Tech.inHealthProfession	
NURS 6293	Health Ed.for Indiv&Community	

POST MASTER'S CERTIFICATE IN PALLIATIVE CARE NURSE PRACTITIONER

REQUIREMENTS

The following requirements must be fulfilled: 20 credits in required courses.

Code	Title	Credits
Required		
NURS 6276	Foundations of Palliative Care	
NURS 6277	Pain and Suffering	
NURS 6278	PalliativeCare:Chronic Illness	
NURS 6279	Palliative Care Practicum I	
NURS 6280	Palliative Care Practicum II	
NURS 6295	Health Care Quality Process	

POST-MASTER'S CERTIFICATE IN PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER

The following requirements must be fulfilled: 32 credits in required courses. Up to 10 transfer credits may be granted for graduate-level coursework taken within five years prior to application; courses must demonstrate content addressing patients across the lifespan and must have been earned with a minimum grade of *B*.

Code	Title	Credits
Required		
Students without transfer credits		
NURS 6220	Advanced Physiology and Pathophysiology	
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning	
NURS 6234	Advanced Pharm for Nursing	
NURS 6242	Psychopharmacology	
NURS 6243	Addictions and Change	
NURS 6244	Foundations for Psychiatric-Mental Health Nurse Practitioners	
NURS 6245	Mental Health Diagnostic Assessment Across the Lifespan	
NURS 6246	Psychiatric Mental Health Nurse Practitioner (PMHNP) Clinical Practicum 1	
NURS 6247	Psychiatric Mental Health Nurse Practitioner (PMHNP) Clinical Practicum 2	
NURS 6248	Psychiatric Mental Health Nurse Practitioner (PMHNP) Clinical Practicum 3	
NURS 6249	Psychotherapeutic Treatment Modalities	
Students with transfer credits		
NURS 6242	Psychopharmacology	
NURS 6243	Addictions and Change	
NURS 6245	Mental Health Diagnostic Assessment Across the Lifespan	

NURS 6246	Psychiatric Mental Health Nurse Practitioner (PMHNP) Clinical Practicum 1
NURS 6247	Psychiatric Mental Health Nurse Practitioner (PMHNP) Clinical Practicum 2
NURS 6248	Psychiatric Mental Health Nurse Practitioner (PMHNP) Clinical Practicum 3
NURS 6249	Psychotherapeutic Treatment Modalities

COLLEGE OF PROFESSIONAL STUDIES

Dean A. Eskandarian
Associate Deans A. Ashkar, J. Prostko

The College of Professional Studies (CPS) offers an expanding range of degree programs leading to associate's, bachelor's, and master's degrees in professional studies, along with a variety of certificate programs.

CPS's innovative programs are typically co-developed through collaboration among University content specialists and outside partners—government agencies, professional associations, consulting organizations, and business and industry leaders.

Programs draw from multiple academic disciplines and are delivered in flexible formats: face-to-face on campus, through distance learning, or a blend of both.

By combining University faculty experts with accomplished practitioners, CPS is a catalyst for academic innovation, constructing credentials for the workforce that uphold the University's rigorous standards of academic excellence and respond to the needs of a wide variety of professionals. Professional studies degree and certificate programs are also offered to organizational clients under contract and can be presented in flexible formats, including series of short classroom-based modules and distance learning.

New programs not included in this bulletin may be found at the College of Professional Studies website (http://www.cps.gwu.edu).

CPS manages facilities and services for off-campus programs offered by other schools of the University. The staff of instruction includes members of the full-time faculty of the University and academically qualified adjunct faculty from the professional community. All University off-campus offerings in Maryland are approved by the Maryland State Board for Higher Education; those in Virginia are certified by the State Council of Higher Education for Virginia.

REGULATIONS

- **Enrollment Status (p. 843)**
- **Time Limits (p. 843)**
- **Scholarship Requirements (p. 843)**
- **Grade of F (p. 844)**
- **Incompletes (p. 844)**
- **Transfer of Credit (p. 844)**
- **Provisional Admission (p. 844)**
- **Readmission (p. 844)**
- **Withdrawing From a Course (p. 845)**
- **Academic Integrity (p. 845)**

Enrollment Status

Once a student begins a degree or certificate program, he or she is expected to be enrolled continuously and actively engaged in fulfilling the requirements for the degree each semester of the academic year until the degree is conferred or certificate completed. For the fall and spring semesters, students must register for one or more credits to maintain enrollment status. A student who must interrupt active pursuit of the degree or certificate may petition the Dean, through the Program Director, for a leave of absence for a specified period of time, generally limited to one calendar year. If the petition is approved, the student must register for Leave of Absence in each fall and spring semester, following regular registration procedures. Students who discontinue their studies without being granted a leave of absence and students granted leaves who do not return to active study at the close of the period of approved absence must apply for readmission and are subject to the regulations and requirements then in force.

Time Limits

A full-time student is allowed a maximum of three calendar years from the date of the first registration as a degree student (excluding time spent enrolled exclusively in English for Academic Purposes courses) to complete all degree requirements; a part-time student is allowed a maximum of five calendar years. The time limit does not include any period of registration as a non-degree student before admission to degree candidacy or any period spent on approved leave of absence. Students who do not complete degree requirements within the time allowed will have their degree candidate status terminated; such students may be readmitted to degree candidate status under conditions specified by the Program Director and approved by the Dean.

Scholarship Requirements

Undergraduate students must maintain a minimum cumulative grade-point average of 2.0. and graduate students must maintain a minimum grade-point average of 3.0. If a student's GPA falls below the required minimum, he or she will receive

an academic warning and will be allowed one semester in which to raise the GPA to the required minimum; any such student who does not raise his or her GPA to the required minimum in one semester will be dismissed from the program. If it is mathematically impossible for the student's GPA to reach the required minimum in one semester, he or she will be dismissed from the program without warning.

See Grades under University Regulations (p. 21) for undergraduate and graduate grading systems.

Grade of F

A student who receives a grade of *F* is subject to dismissal from the program. If the student wishes to remain enrolled, he or she must present cause for consideration by the Program Director and to the Dean as to why continued study should be permitted. A student who receives a grade of *F*, if permitted to remain in the program, must repeat the course and achieve a passing grade as well as maintain the minimum required GPA; however, once a grade of *F* has been received it remains a part of the student's permanent record and is calculated into the grade-point average. Failure to receive permission to remain in the program and retake the failed course or achieve a passing grade after having been permitted to repeat a failed course will result in dismissal from the program.

Incompletes

The symbol *I* (Incomplete) indicates that a satisfactory explanation has been given to the instructor for the student's inability to complete the required coursework during the semester in which the course was taken. At the discretion of the instructor, the symbol *I* may be recorded if a student, for reasons beyond the student's control, is unable to complete the work of the course, and if the instructor is informed of, and approves, such reasons before the date when grades must be reported. This symbol may be used only if the student's prior performance and class attendance in the course have been satisfactory. Any failure to complete the work of a course that is not satisfactorily explained to the instructor before the date when grades must be reported will be graded *F,* Failure. If acceptable reasons are later presented to the instructor, that instructor may initiate an appropriate grade change. The instructor and student must sign an Incomplete Agreement, available through the Office of the Dean, which sets forth the requirements and due dates for successful completion of the course. The coursework must be completed within the designated time period agreed upon by the instructor and student in the Incomplete Agreement, but no more than one calendar year from the end of the semester in which the course was taken. All students who receive an Incomplete must maintain active student status during the subsequent semester(s) in which the coursework is being completed. If not registered in other courses during this period, the student must register for Continuous Enrollment.

When work for the course is completed, the instructor will complete a grade change form and submit it to the Office of the Registrar. Beginning with the fall 2014 semester, the final grade will replace the symbol of *I*. If work for the course is not completed within the designated time period, the grade will be converted automatically to a grade of *F,* Failure, 0 quality points, and the grade-point average and academic standing recalculated. For courses taken prior to the fall 2014 semester, the grade earned will be indicated in the form of *I,* followed by the grade. The symbol *I* cannot be removed and remains on the student's permanent academic record, even after the course has been completed successfully.

Transfer of Credit

A maximum of one-quarter of the credits required for the degree may be approved for transfer to a graduate program in the College of Professional Studies from credit earned while enrolled as a non-degree student at GW or from another degree-granting school of this University or another accredited college or university. For transfer credit to be approved, all of the following conditions must be met: the coursework must be from an accredited institution and must have been taken within the two years prior to matriculation; it must be approved as part of the student's program of studies; it must not have been applied to the completion of requirements for another degree; it must be post-baccalaureate graduate-level coursework; and the student must have received a minimum grade of *B* in each course for which transfer credit is requested. Requests for transfer credit must be submitted in writing and approved by the Program Director and the Dean during the student's first year in the program. An official transcript of the coursework must be on file before the request can be considered.

Transfer of credit for undergraduate students is subject to specific program requirements. Students must have received a minimum grade of *C* in any course for which transfer of credit is requested.

Once enrolled in the College of Professional Studies, students are not permitted to transfer coursework taken outside the University, except under extraordinary circumstances, and permission must be obtained in advance from the Dean.

Provisional Admission

Applicants with credentials that do not meet the minimum standards for the program of study, but who nonetheless show promise of successful work, are occasionally granted provisional admission by the Program Director/admissions committee. During the period of provisional status, students must meet the requirements set forth in their admission letter. Students who do not meet these requirements are dismissed from the program.

Readmission

The College of Professional Studies will not review any application for readmission to a program by a student who was dismissed from the same or any other program at the College or course of study at the University until at least one year after the student was dismissed.

Withdrawing From a Course

Students requesting to withdraw from a course after the eighth week of classes (or after the fourth week for modules) must be passing the course and must obtain the written permission of the Program Director and the Dean. If approved, the symbol *W,* Authorized Withdrawal, will appear on the transcript. Tuition will not be refunded. See Adding, Dropping, and Withdrawing from Courses under University Regulations (p. 21).

Academic Integrity

The University community, in order to fulfill its purposes, must establish and maintain guidelines of academic behavior. All members of the community are expected to exhibit honesty and competence in their academic work. Incoming students have a special responsibility to acquaint themselves with, and make use of, all proper procedures for doing research, writing papers, and taking examinations. Members of the community will be presumed to be familiar with the proper academic procedures and held responsible for applying them. Deliberate failure to act in accordance with such procedures will be considered academic dishonesty. Acts of academic dishonesty are a legal, moral, and intellectual offense against the community and will be prosecuted through the proper University channels, possibly resulting in dismissal from the program together with other University sanctions. The University Code of Academic Integrity (https://studentconduct.gwu.edu/code-academic-integrity) can be found at the Office of Academic Integrity (http://studentconduct.gwu.edu).

UNDERGRADUATE

Bachelor's completion programs

- Bachelor of Professional Studies with a major in cybersecurity (p. 847)
- Bachelor of Professional Studies with a major in integrated information science and technology (p. 847)
- Bachelor of Professional Studies with a major in police and security studies (p. 848)

Dual degree programs

- Bachelor of Arts with a major in political communication and Master of Professional Studies in the field of political management (p. 849)
- Bachelor of Arts with a major in political science and Master of Professional Studies in the field of advocacy in the global environment (p. 849)
- Bachelor of Arts with a major in political science and Master of Professional Studies in the field of legislative affairs (p. 850)
- Bachelor of Arts with a major in political science and Master of Professional Studies in the field of political management (p. 850)

GRADUATE

Master's programs

Admission Requirements

Applicants must hold a baccalaureate degree from a regionally accredited institution of higher learning or international equivalent. Applicants should have a strong academic background, normally with a *B* grade-point average or above (3.0 GPA on a 4.0 scale). Additional application requirements can be found on the Graduate Programs Finder (http://www.gwu.edu/all-graduate-programs).

- Master of Professional Studies in the field of b (p. 851)ioinformatics and biotechnology
- Master of Professional Studies in the field of cybersecurity strategy and information management (p. 852)
- Master of Professional Studies in the field of homeland security (p. 852)
- Master of Professional Studies in the field of landscape design (p. 854)
- Master of Professional Studies in the field of law firm management (p. 854)
- Master of Professional Studies in the field of paralegal studies (p. 855)
- Master of Professional Studies in the field of paralegal studies with a concentration in health care corporate compliance (p. 857)
- Master of Professional Studies in the field of publishing (p. 858)
- Master of Professional Studies in the field of sustainable urban planning (p. 859)

The Graduate School of Political Management, through the College of Professional Studies, offers the following:

- Master of Professional Studies in the field of advocacy in the global environment (p. 862)
- Master of Professional Studies in the field of legislative affairs (p. 863)
- Master of Professional Studies in the field of political management (p. 864)
- Master of Professional Studies in the field of political communication and governance ((p. 869)*Offered in Spanish only*)
- Master of Professional Studies in the field of strategic public relations (p. 870)
- Dual Master of Professional Studies in the field of political management and graduate certificate in survey design and analysis (p. 870)

CERTIFICATES

Undergraduate certificates

- Cyber Attacks and Cyber Threats Analysis

- Investigation of Cyber Security Incidents (p. 871)
- Protection and Defense of Computer Networks (p. 872)

Graduate certificates

The College of Professional Studies offers the following graduate certificates. Requirements are listed on the College of Professional Studies website (http://www.cps.gwu.edu). In addition to those listed, graduate certificates in political management and strategic governance and in strategic communications campaigns are offered in Spanish to closed cohorts of students in Latin America and in Spain.

- Climate Change Management and Policy (p. 872)
- Digital Politics (p. 872)
- Global Public Relations (p. 873)
- Health Care Corporate Compliance (p. 873)
- Justice and Public Safety Information Management (p. 874)
- Landscape Design (p. 874)
- PACs and Political Management (p. 874)
- Paralegal Studies (p. 875)
- Strategic Management and Executive Leadership for Law Enforcement
- Sustainable Landscapes (p. 876)
- Sustainable Urban Planning (p. 876) (p. 876)

FACULTY

Program Directors S. Billet, L. Brown, J.I. Carruthers, A. Grossblatt, N.K Houghtby-Haddon, S. Hooshangi, R. Izurieta, F. Lemieux, C. Leonard, T.E. Marsh, L. Matos, L. Parnell, J. Thorpe, L. Wheeler

Professors A. Eskandarian, M.R. Kennedy, F. Lemieux

Associate Professors A.N. Ashkar, S.E. Billet, L.M. Brown, M. Cornfield, A.L. Grossblat, T.E. Marsh, L.J. Parnell, S.L. Wiley

Assistant Professors J.I. Carruthers, M. J. Dallek, K.C. Homayounpour, S. Hooshangi, G.G. Lebel, C. Leonard, D.K. Rehr, C.P. Uthoff

Associate Research Professors L.R. Matos

Assistant Research Professors R. Izurieta

Instructors N.K. Houghtby-Haddor, J.L. Robinson

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

- College of Professional Studies (CPS) (p. 1075)
- Advocacy in the Global Environment (PSAD) (p. 1400)
- Health Care Corporate Compliance (PSHC) (p. 1401)
- Homeland Security (PSHS) (p. 1401)
- Landscape Design (PSLD) (p. 1403)
- Law Firm Management (PSLM) (p. 1404)
- Legislative Affairs (LGAF) (p. 1327)
- Middle Grade Science (PSMS) (p. 1409)
- Middle School Math (PSMM) (p. 1408)
- Molecular Biology (PSMB) (p. 1404)
- Paralegal Studies (PSLX) (p. 1405)
- Physics Education (PSPH) (p. 1407)
- Political Management (PMGT) (p. 1387)
- Publishing (PSPB) (p. 1408)
- Public Leadership (PSPL (p. 1406))
- Public Relations (PSPR) (p. 1407)
- Security and Safety Leadership (PSSL) (p. 1409)
- Urban Sustainability (PSUS) (p. 1410)

UNDERGRADUATE PROGRAMS

Bachelor's completion programs

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- Bachelor of Arts with a major in political science and Master of Professional Studies in the field of political management (p. 850)

BACHELOR OF PROFESSIONAL STUDIES WITH A MAJOR IN CYBERSECURITY

The Bachelor of Professional Studies with a major in cybersecurity program is intended for students with associate's or non-technical bachelor's degrees who are looking for entry-level positions and advancement in the field of cybersecurity. The program consists of a core curriculum and two concentrations that focus on protection and defense of computer networks and cyber attacks and cyber threats analysis. Upon completion of the program, students will be able to understand and implement cybersecurity requirements, protect and effectively defend computer networks against malicious activities, and correct computer network vulnerabilities through penetration testing and hacking techniques.

The core curriculum of this bachelor's degree program includes courses related primarily to specialty areas identified by NICE. The course work in program subject areas culminates in a practicum that focuses on preparing students to obtain professional certification combined with practical exercises in the computer lab.

REQUIREMENTS

Students completing this program will have satisfied GW's university-wide general education requirement, which includes 22 credits in the following areas:

1. Mathematics or statistics (3 credits)
2. Natural or physical science with lab (4 credits)
3. Humanities (3 credits)
4. Social and behavioral sciences (6 credits)
5. Written communication or composition (6 credits)

In addition, students take a minimum of 60 credits at GW, including 24 credits in foundational courses and 36 credits in subject area courses.

Code	Title	Credits
Foundational		
PSCS 2101	Writing and Communication in a Technical Field	
PSCS 2102	Fundamentals of Information Technology and Computing	
PSCS 2103	Ethics in the Age of Technology	
PSCS 4110	Data Communication and Networking Technologies	
PSCS 4120	Introduction to Cybersecurity	
PSCS 4190	Capstone Project	
Protection and Defense of Computer Networks		
PSCS 4101	Introduction to Protection Technologies	
PSCS 4102	Intrusion Detection and Vulnerability Management	
PSCS 4103	Securing Operating Systems	
PSCS 4104	Securing Network Devices	
PSCS 4105	Cyber Defense Techniques Practicum	
Cyber Attacks and Cyber Threats Analysis		
PSCS 4201		
PSCS 4202	Cyber Attack Tools and Techniques	
PSCS 4203	Analysis of the Intelligence Cycle	
PSCS 4204	Computer Network Attack and Exploitation	
PSCS 4205	Practicum: Cyber Attack Techniques	

BACHELOR OF PROFESSIONAL STUDIES WITH A MAJOR IN INTEGRATED INFORMATION, SCIENCE, AND TECHNOLOGY

The Bachelor of Professional Studies in the field of integrated Information, science, and technology (IIST) is an innovative and interdisciplinary program designed for community college graduates and working professionals who are seeking to complete their bachelor's degree in a technology-related field. The 60-credt program can be completed within two academic years (five consecutive semesters, including one summer session).

See the program website (http://cps.gwu.edu/bachelors-completion) for admission requirements.

REQUIREMENTS

This bachelor's degree completion program is designed for individuals who currently hold an associate's degree or have earned at least 60 credit hours towards their undergraduate degree.

The remaining 60 credit hours of study required for bachelor's degree completion include 44 credits in required courses and 16 credits in elective courses.

Code	Title	Credits
General Education		

6 credits of quantitative and logical reasoning	
6 credits of social and behavioral sciences	
6 credits of natural sciences, including one laboratory course	
6 credits of arts and humanities	
Required	
PSIS 2101	Writing & Comm & Med Rel - I
PSIS 2102	Writing & Comm & Med Rel - II
PSIS 2103	Found Math & Stat Sci - I
PSIS 2104	Found Math & Stat Sci - II
PSIS 2105	Found Info Tech & Comp - I
PSIS 2106	Found Info Tech & Comp - II
PSIS 3122	Ethics in Sci & Tech Policy
PSIS 4138	Introduction to Health IT
PSIS 4142	Rel Databases & Design
PSIS 4152	Entrprnrshp/Tech Venture Cr
PSIS 4191	Capstone Project and Senior Thesis I
PSIS 4192	Caps Proj & Senior Thesis- II
or PSIS 4190	Capstone Proj & Senior Thesis
PSIS 4190	Capstone Proj & Senior Thesis
Electives	
Four courses selected from the following:	
PSIS 4132	Phys Principles of Biotech
PSIS 4133	Bioinformatics
PSIS 4137	Alternative Energy Sources
PSIS 4141	Comp & Telecom Networks
PSIS 4144	Info & Network Security
PSIS 4145	Software Sys Dev Processes
PSIS 4195	Undergraduate Research
PSIS 4199	Special Topics

FACULTY

Director *S.* Hooshangi

BACHELOR OF PROFESSIONAL STUDIES WITH A MAJOR IN POLICE AND SECURITY STUDIES

The bachelor of professional studies with a major in police and security studies degree program helps students acquire the knowledge and skills needed to work more effectively as police professionals. Developed by faculty in consultation with metropolitan area law enforcement and police specialists, the core course work is designed to develop three central areas of competency: intelligence and criminal analysis; forensic science; and leadership and management. Elective courses are offered in a variety of disciplines, including sociology, leadership, public health, and international affairs.

Visit the program website (http://cps.gwu.edu/police-security-studies) for admissions and additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 120 credits, including 30 credits in general education courses, 60 credits in required courses, and 30 credits in elective courses.

Admission requirements:

To be considered for admission to the College of Professional Studies Police and Security Studies program, the applicant must possess an academic record of achievement and be employed as a security and safety professional. The admission requirements are listed below.

- Completion of a college-level English Composition course at a regionally accredited U.S. college or university with a grade of C or higher. **Note:** *Applicants may submit an acceptable writing sample taken in a CPS test setting if a college-level English Composition course has not been completed. Test centers are located in DC, Alexandria, Arlington, and Newport News, VA.*
- Attended at least one college-level course (minimum 3 credits) at a regionally accredited institution of higher education.
- Two or more years of work experience in the safety and security field.
- Completion of the first 12 credit hours taken at GW with a grade of C or higher. *All degree candidates receive provisional admission until completion of their first 12 credit hours at GW.*

Requirements for the degree: 120 credits

Requirements for the program:

30 credits of general education coursework including:*

6 credits of English composition or UW 1020 University Writing plus 2 credits of independent research with a focus on the application of the principles learned in UW 1020	
6 credits of quantitative and logical reasoning	
6 credits of social and behavioral sciences	
6 credits of natural sciences, including one laboratory course	
6 credits of arts and humanities	
60 credits of core courses:	
Intelligence and Criminal Analysis	
CPS 2103	Particular Forms of Crime (Intelligence and Criminal Analysis)
CPS 2107	Models of Policing
CPS 2108	Criminal Intelligence
CPS 2109	Criminal Analysis (Forensic Science)
CPS 2110	Predictive Policing
Forensic Science	
CPS 2130	Intro to Forensic Science
CPS 2131	Crime Scene Investigation
CPS 2132	Computer Crime Investigation
CPS 2133	Incident Management
CPS 2171	The Criminal Mind
Leadership and Management	
CPS 2102	Resource Management
CPS 2104	Leading Teams
CPS 2106	Strategic Planning
CPS 2134	Ethical Dilemmas in Policing
CPS 4192	Capstone Simulation
30 credits of electives selected from the following, in consultation with academic advisor:	
CPS 2101	The Criminal Justice System
CPS 2170	Domestic Violence
CPS 2172	Comparative Police Systems
CPS 2173	Transnational Threats&Security
CPS 2174	Crisis & Emergency Planning
CPS 2175	Emergency Pub. Health Issues
CPS 2176	Media,PR&Crisis Communication

General education and elective courses may be completed at any regionally accredited institution. A grade of C or higher is required for transfer credit to be approved. General education and elective course work may be completed before, during, or within five years of completing the other requirements for the bachelor's degree.

FACULTY

Director F. Lemieux

Assistant Director J. Delinski

BACHELOR OF ARTS WITH A MAJOR IN POLITICAL COMMUNICATION AND MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF POLITICAL MANAGEMENT

OVERVIEW

The School of Media and Public Affairs (https://smpa.gwu.edu) (SMPA) and the Graduate School of Political Management (https://gspm.gwu.edu) (GSPM) offer the dual B.A./M.P.S. degree program for undergraduate students who are interested in careers in the field of political management. The program allows students to take a specified number of graduate credits as part of their undergraduate degree, thereby allowing both degrees to be earned more quickly and at a lower cost. Students pursuing the dual program must meet all requirements of their respective SMPA program. To meet the requirements of the dual program, students take 6 credits in graduate-level courses as part of their B.A. program of study.

Consult the School of Media and Public Affairs (https://smpa.gwu.edu) for admissions requirements and more details.

BACHELOR OF ARTS WITH A MAJOR IN POLITICAL SCIENCE AND MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF ADVOCACY IN THE GLOBAL ENVIRONMENT

Columbian College's Department of Political Science and the College of Professional Studies offer the dual B.A./M.P.S. degree program for undergraduate students who

are interested in careers in global politics and advocacy, from lobbying to strategic public relations, campaigns, and influence building. The program allows students to take a specified number of graduate credits as part of their undergraduate degree, thereby allowing both degrees to be earned more quickly and at a lower cost. Students pursuing the dual program must complete all political science degree requirements (http://bulletin.gwu.edu/professional-studies/undergraduate-programs/dual-ba-political-science-mps-advocacy-global-environment/%20http://politicalscience.columbian.gwu.edu/psc-major-requirements). To meet the requirements of the dual program, students take 9 credits in graduate-level courses as part of their B.A. program of study.

Consult the Department of Political Science (http://www.gwu.edu/~psc) for admissions requirements and other details.

REQUIREMENTS

The following requirements must be fulfilled:

Students must complete all Political Science degree requirements, as outlined here: http://politicalscience.columbian.gwu.edu/psc-major-requirements.

Admission to the dual degree program allows the student to substitute three courses of the undergraduate Political Science major for Global Advocacy required courses (see "Required Core Courses" below) . These courses will count toward three of the four upper level elective courses in Political Science required for the major and may be taken during the second semester of junior year and during senior year.

Degree Requirements, M.P.S. in Advocacy in the Global Environment

REQUIRED CORE COURSES (21 credit hours)

PSAD 6225 Fundamentals of Global Political Management
PMGT 6403 Political Data & Analysis
PMGT 6402 Applied Political Communications
PMGT 6404 Principled Political Leadership
PSAD 6240 Global Advocacy: Strategies, Tools, and Tactics OR
PSAD 6270 International Public Relations and Global Advocacy
PSAD 6250 Cultural Aspects of Global Engagement
PSAD 6260 Comparative Political Management Environments

GLOBAL PERSPECTIVE RESIDENCIES (12 credit hours)

PSAD 6200 Advocating in North America (Washington, DC)
PSAD 6200 Advocating in Europe (Brussels)
PSAD 6200 Advocating in Turkey and its Region (Istanbul, Ankara)
PSAD 6200 Advocating in Asia (Hong Kong)
PSAD 6200 Advocating in Latin America (Sao Paulo, Brasilia)
PSAD 6200 Advocating in the United Kingdom (London, Oxford)
PSAD 6200 Advocating in the East Asian Capitals (Seoul, Beijing, Tokyo)

ELECTIVE COURSES (6 credit hours)

Flexible Electives: With advisor approval, students may take electives from the Legislative Affairs, Strategic Public Relations or Political Management programs. Some students also take courses at the Elliott School of Global Affairs, Trachtenberg School of Public Policy and Public Administration, and the School of Business.

BACHELOR OF ARTS IN POLITICAL SCIENCE AND MASTER OF PROFESSIONAL STUDIES IN LEGISLATIVE AFFAIRS

The George Washington University's Department of Political Science (http://www.gwu.edu/~psc) and the Graduate School of Political Management (GSPM) offer a dual degree B.A./M.P.S. program designed for highly-qualified undergraduate students majoring in political science who are interested in careers in the field of legislative affairs (http://gspm.gwu.edu/node/139). The program allows students to take a specified number of graduate credits as part of their undergraduate degree, thereby allowing both degrees to be earned more quickly and at a lower cost.

Consult the Department of Political Science (http://www.gwu.edu/~psc) for admissions requirements and other details.

BACHELOR OF ARTS IN POLITICAL SCIENCE AND MASTER OF PROFESSIONAL STUDIES IN POLITICAL MANAGEMENT

The George Washington University's Department of Political Science (http://www.gwu.edu/~psc) and the Graduate School of Political Management (https://gspm.gwu.edu) (GSPM) offer a dual degree B.A./M.P.S. program designed for highly-qualified undergraduate students majoring in political science who are interested in careers in the field of political management. The program allows students to take a specified number of graduate credits as part of their undergraduate degree, thereby allowing both degrees to be earned more quickly and at a lower cost. Students pursuing the dual program must complete all political science degree requirements (http://politicalscience.columbian.gwu.edu/psc-major-requirements). To meet the requirements of the dual program, students take 9 credits in graduate-level courses as part of their B.A. program of study.

Consult the Department of Political Science (http://www.gwu.edu/~psc) for admissions requirements and other details.

GRADUATE PROGRAMS

Master's programs

Admission Requirements

Applicants must hold a baccalaureate degree from a regionally accredited institution of higher learning or international equivalent. Applicants should have a strong academic background, normally with a *B* grade-point average or above (3.0 GPA on a 4.0 scale). Additional application requirements can be found on the Graduate Programs Finder (http://www.gwu.edu/all-graduate-programs).

- Master of Professional Studies in the field of b (p. 851)ioinformatics and biotechnology
- Master of Professional Studies in the field of cybersecurity strategy and information management (p. 852)
- Master of Professional Studies in the field of homeland security (p. 852)
- Master of Professional Studies in the field of landscape design (p. 854)
- Master of Professional Studies in the field of law firm management (p. 854)
- Master of Professional Studies in the field of paralegal studies (p. 855)
- Master of Professional Studies in the field of paralegal studies with a concentration in health care corporate compliance (p. 857)
- Master of Professional Studies in the field of publishing (p. 858)
- Master of Professional Studies in the field of sustainable urban planning (p. 859)

The Graduate School of Political Management, through the College of Professional Studies, offers the following:

- Master of Professional Studies in the field of advocacy in the global environment (p. 862)
- Master of Professional Studies in the field of legislative affairs (p. 863)
- Master of Professional Studies in the field of political management (p. 864)
- Master of Professional Studies in the field of political communication and governance ((p. 869)*Offered in Spanish only*)
- Master of Professional Studies in the field of strategic public relations (p. 870)
- Dual Master of Professional Studies in the field of political management and graduate certificate in survey design and analysis (p. 870)

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF BIOINFORMATICS AND BIOTECHNOLOGY

The master of professional studies in bioinformatics and biotechnology degree program prepares students to excel through a cross-disciplinary approach, delivering both academic knowledge and practical experience (within wet labs and computational labs) about bioinformatics and biotechnology. The curriculum integrates components of molecular biology, genetics, bioinformatics, computer programming, molecular modeling, and ultimately the business and entrepreneurship skills necessary to bring new discoveries to the marketplace.

Graduates are prepared with in-demand skills, including data analysis, programming, new product commercialization, and data generation as well as career skills in the bioinformatics and biotechnology fields.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs). (http://www.gwu.edu/all-graduate-programs)

Visit the program website (https://cps.gwu.edu/bioinformatics-and-biotechnology) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits in required courses.

Code	Title	Credits
Required		
PSMB 6101	Introduction to Bioinformatics	
PSMB 6102	Scripting	
PSMB 6103	Genomics	
PSMB 6104	Research Orientation	
PSMB 6105	Seminar in Computational Biology	
PSMB 6252	Biomolecular Modeling	
PSMB 6261	Introduction to Quantitative Biotechnology	
PSMB 6262	Bionanotechnology	
PSMB 6263	Management of Biotechnology Innovation	
PSMB 6264	Entrepreneurship and Technology Venture Creation	

PSMB 6266	Capstone Project

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF CYBERSECURITY STRATEGY AND INFORMATION MANAGEMENT

The Master of Professional Studies in the field of cybersecurity strategy and information management degree program is for working professionals from the military, homeland security, and private sectors who wish to gain the expertise to address current and emerging challenges in information technology security. Students learn strategies and practices that empower them to manage critical information in the fight against hackers, terrorists, and cyber criminals. The program also enhances the skills of current homeland security and criminal justice professionals, preparing leaders to secure the country's digital infrastructure.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs). (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://cps.gwu.edu/cybersecurity) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits in required courses.

Code	Title	Credits
Required:		
PSCS 6244	Information Systems Protection	
PSCS 6245	Cybersecurity Law and Policy	
PSCS 6246	Cyber Intelligence and Strategic Analysis	
PSCS 6247	Cyber Defense Strategy	
PSCS 6248	Introduction to Cyber Conflicts	
PSCS 6255	Information Management for Justice and Public Safety Professionals	
PSCS 6256	Application of Technology to Data Analytics	
PSCS 6257	Enterprise Architecture and Standards	
PSCS 6258	Information Sharing and Safeguarding	
PSCS 6259	Strategic Information Technology Investment and Performance Management	
PSSL 6260	Methods of Analysis in Security	
PSSL 6270	Capstone Project	

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF HOMELAND SECURITY

The master of professional studies in the field of homeland security is a 36-credit program designed for industry professionals—including those in the military—who wish to develop leadership skills as well as an in-depth understanding of current and emerging homeland security issues. The program provides a pioneering education on counter-terrorism, intelligence analysis, emerging security threats, and relevant legislation, enhancing the implementation of security practices in both public and private sectors.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs). (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 36 credits in required courses.

Code	Title	Credits
Required		
PSHS 6240	Political Violence and Terrorism	
PSHS 6241	Globalization of Threats and International Security	
PSHS 6242	Security and Civil Liberties	
PSHS 6243	Intelligence and Strategic Analysis	
PSHS 6244	Information Systems Protection	
PSHS 6250	Strategic Planning and Budgeting	
PSHS 6251	Inter-Agency Cooperation	
PSHS 6252	Emergency Management and Crisis Communication	
PSHS 6253	Managing the Politics of Leadership	
PSHS 6254	Strategic Change Management	
PSHS 6260	Methods of Analysis in Security	
PSHS 6270	Capstone Project	

FACULTY

Director F. Lemieux

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSHS 6240. Political Violence and Terrorism. 3 Credits.
The evolution of terrorism and politically motivated violence; causes and origins in regional, national, and international terrorist and insurgent groups and so-called terrorist states; trends in terrorist modus operandi, including asymmetric attacks; formulating effective counterterrorist strategies. Restricted to students in the MPS in homeland security program.

PSHS 6241. Globalization of Threats and International Security. 3 Credits.
The intersection of globalization and national and international security; how globalization may create new threats while amplifying existing threats; the relationship of specific forms of globalized threat to globalization; responses of states and non-state actors to such threats; the role of international organizations. Restricted to students in the MPS in homeland security program.

PSHS 6242. Security and Civil Liberties. 3 Credits.
Examination of U.S. government activities designed to protect the security of American citizens while balancing those interests against citizens' civil liberties; limitations placed on government activities by the First and Fourth Amendments of the Constitution; complexities associated with the characterization of criminals and terrorists. Restricted to students in the MPS in homeland security program.

PSHS 6243. Intelligence and Strategic Analysis. 3 Credits.
The structure and components of the national intelligence community and law enforcement communities; international intelligence comparison; analysis of intelligence policies and strategies at the international, national, and regional levels. Restricted to students in the MPS in homeland security program.

PSHS 6244. Information Systems Protection. 3 Credits.
Exploration of the major areas of information security including risk management, cybercrime, cyberconflict, and the technologies involved in both cyberattacks and information systems protection; creating, implementing, and maintaining an information security program; root causes of insecurity in information systems.

PSHS 6250. Strategic Planning and Budgeting. 3 Credits.
The adaptation of strategic planning and performance measures beyond budgeting by government agencies dealing with long-term security issues; integrative approach to strategic planning and management, focusing on the implementation, evaluation, and oversight of strategy and policy; development of budgets, accountability plans, and risk management to ensure compliance with stated goals; analytical tools and techniques that inform organizational strategies and actions. Restricted to students in the MPS in homeland security program.

PSHS 6251. Inter-Agency Cooperation. 3 Credits.
In-depth study of interagency cooperation issues relevant to the U.S. Department of Homeland Security's organizational structure; cooperative initiatives through mutual assistance agreements and regional, national, and international structures; technology interoperability, legal, and interorganizational challenges. Restricted to students in the MPS in homeland security program.

PSHS 6252. Emergency Management and Crisis Communication. 3 Credits.
The role of crisis communications in the overall management of emergency operations; critical communications tasks, functions, and operations of the emergency operations center, incident command, and associated emergency personnel; strategies and tactics to enhance and promote effective crisis communications among government emergency managers. Restricted to students in the MPS in homeland security program.

PSHS 6253. Managing the Politics of Leadership. 3 Credits.
The role of power and influence in organizations; complexity and challenges of developing political strategies and mobilizing the political support and resources needed to implement objectives. Restricted to students in the MPS in homeland security program.

PSHS 6254. Strategic Change Management. 3 Credits.
The challenges, techniques, burdens, and successes associated with initiating and implementing major change within organizations; the process of organizational change from multiple theoretical perspectives. Restricted to students in the MPS in homeland security program.

PSHS 6260. Methods of Analysis in Security. 3 Credits.
Methods and problems of data collection in security fields; analytical design, instrument utilization, sampling, and measurement; data analysis techniques. Restricted to students in the MPS in homeland security program. Prerequisite: None.

PSHS 6270. Capstone Project. 3 Credits.
Students refine their conception of leadership and knowledge of the homeland security field. Participants experience leadership in action and enhance independent learning while working in both small and large group dynamics. Restricted to students enrolled in the PSHS cohort. Prerequisites: All the curriculum in the PSHS must be completed before registering for this course.

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF LANDSCAPE DESIGN

The Master of Professional Studies in the field of landscape design program is ideally suited for landscape professionals seeking to upgrade skills, individuals who wish to become professional landscape designers, amateurs with an interest in the art of garden design, institutional horticultural staff, nursery employees and garden-design writers. Courses are geared to small-scale landscape design applications with emphasis on sound design principles, good site engineering methods, and creative use of plant materials.

The 46-credit program combines the 28-credit landscape design graduate certificate program with the 18-credit graduate certificate in sustainable landscapes. Students acquire an understanding of best practices in landscape conservation and sustainability, adapted to the small-scale landscape.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs). (http://www.gwu.edu/all-graduate-programs)

Visit the program website (https://cps.gwu.edu/landscape-design) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 46 credits in required courses.

Code	Title	Credits
PSLD 6100	Landscape Graphics	
PSLD 6201	Introduction to Design	
PSLD 6202	Site Analysis	
PSLD 6203	Site Engineering	
PSLD 6204	Construction Methods and Materials	
PSLD 6212	History of Landscape Design	
PSLD 6213	Contemporary Themes in the Landscape	
PSLD 6221	Landscape Plants for Fall	
PSLD 6223	Landscape Plants for Spring	
PSLD 6225	Landscape Plants for Summer	
PSLD 6231	Site Design Studio	
PSLD 6236	Planting Design Studio	
PSLD 6240	Comprehensive Project	
PSLD 6260	Introduction to Sustainable Design	
PSLD 6261	Ecology of the Built Environment	
PSLD 6262	Tools for Sustainable Design	
PSLD 6264	Native Plants I	
PSLD 6265	Native Plants II	
PSLD 6266	Ecological Restoration	
PSLD 6268	Sustainable Design Methods	
PSLD 6269	Sustenance and the Landscape	
PSLD 6270	Sustainable Design Charrette	
Electives*		
PSLD 6229	Herbaceous Plants	
CPS 6291	Special Topics	

*Elective credits are taken in addition to those required for the degree. Special Topics courses address new developments in the field (e.g., Vectorworks I and II).

See CPS regulations (p. 843) for additional information regarding enrollment status and time limits.

FACULTY

Director L. Wheeler

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF LAW FIRM MANAGEMENT

The master of professional studies in law firm management degree program responds to the need for highly skilled and adaptable leadership in law firms and companies providing services to law firms. This unique, flexible program provides law firm professionals with the business and leadership knowledge they need to succeed in the law firm industry. The program consists of 30 credits and can be completed in 18 months. The program, which begins in June each year, is specially designed for those working full-time, with a combination of distance learning and short-term residencies at GW's Alexandria Graduate Education Center.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (https://cps.gwu.edu/law-firm-management) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits in required courses.

Code	Title	Credits
PSLM 6201	Theories, Principles, and Practices of Law Firm Management	
PSLM 6202	ApplyingStrategic&BusPlanning	
PSLM 6203	Practical Applications of Law Firm Management	
PSLM 6204	Principles of Leadership	
PSLM 6205	Application of Leadership Frameworks	
PSLM 6206	Strategic Leadership for Sustainability and Change	
PSLM 6207	Process Improvement in Law Firms	
PSLM 6208	Legal Technology and Knowledge Management	

See CPS regulations (p. 843) for additional information regarding enrollment status and time limits.

FACULTY

Director C. Leonard

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSLM 6201. Theories, Principles, and Practices of Law Firm Management. 6 Credits.

PSLM 6202. ApplyingStrategic&BusPlanning. 3 Credits.
Team projects using a simulated law firm case study, including practice group and office profitability analysis, market assessments, creation of strategic plans, and merger analyses. Prerequisite: PSLM 6201.

PSLM 6203. Practical Applications of Law Firm Management. 3 Credits.
Presentation of strategic plans, analyses, and recommendations developed in PSLM 6202 before a panel of faculty, managing partners, and law firm professionals. Prerequisite: PSLM 6202.

PSLM 6204. Principles of Leadership. 6 Credits.
An intensive course focused on theories and principles of leadership within firms, including leading organizational change. Prerequisite: PSLM 6203.

PSLM 6205. Application of Leadership Frameworks. 3 Credits.
Concepts and frameworks that highlight leadership roles in firms. Prerequisite: PSLM 6204.

PSLM 6206. Strategic Leadership for Sustainability and Change. 3 Credits.
Integration of the content of PSLM 6204 and PSLM 6205 through a focus on strategic leadership. Prerequisite: PSLM 6205.

PSLM 6207. Process Improvement in Law Firms. 3 Credits.
Development of charters for major projects in law firms, applying skills pertaining to managing change and conflict. Prerequisite: PSLM 6206.

PSLM 6208. Legal Technology and Knowledge Management. 3 Credits.
Key elements of knowledge management, including development of a knowledge management strategy. Prerequisite: PSLM 6207.

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF PARALEGAL STUDIES

The Master of Professional Studies in the field of paralegal studies is an advanced credential for those who wish to lead the profession in a variety of settings such as law, finance, insurance, consulting, and healthcare. The program curriculum balances a focus on analysis and critical thinking with the applied skills that employers seek: written and oral communication, research, and managing complex tasks and teams.

The master's is a 32-credit program that students complete in four semesters. GW's College of Professional Studies also offers an 18-credit graduate certificate, which is completed in two semesters. Credits earned in the graduate certificate

program may be applied toward master's degree requirements.

Students may attend classes in the evenings on GW's Foggy Bottom campus (http://nearyou.gwu.edu/kstreet) or in a distance learning (http://paralegalstudiesmasters.online.gwu.edu/?Access_Code=GW-MPL-SEO2&utm_source=seo2&utm_medium=referral&utm_campaign=GW-MPL-SEO2) format.

Visit the program website (http://cps.gwu.edu/paralegal) for additional information.

REQUIREMENTS

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

The following requirements must be fulfilled: 32 credits, including 20 credits in required courses and 12 credits in courses from one track.

Required	
CPS 6294	Independent Research
CPS 6298	Practicum
PSLX 6210	American Jurisprudence
PSLX 6211	Legal Research and Writing
PSLX 6212	Litigation
PSLX 6223	Contracts
PSLX 6224	Advanced Legal Writing
PSLX 6225	Business Entities
All courses from one track:	
Legal practice track	
PSLX 6214	Administrative Law
PSLX 6215	Government Contracts Law
PSLX 6226	International Law
PSLX 6227	Intellectual Property Law
Healthcare corporate compliance track	
PSHC 6201	Introduction to Health Care Corporate Compliance
PSHC 6202	Compliance with Laws and Regulations I
PSHC 6204	Compliance with Laws and Regulations II
PSHC 6206	Case Studies in Health Care Corporate Compliance

See CPS regulations for additional information regarding enrollment status and time limits.

FACULTY

Director T. Marsh

Assistant Director E. Badawi

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSLX 6210. American Jurisprudence. 3 Credits.
An introduction to the foundations, theories, history, and applications of the American legal system; local, state, and federal courts and sources of law; and ethics and professionalism issues of especial importance to paralegals.

PSLX 6211. Legal Research and Writing. 3 Credits.
Fundamentals of legal research using print and online tools.

PSLX 6212. Litigation. 3 Credits.
Legal technology and the rules of court, procedure, and evidence; technical and substantive skills necessary for effective litigation support.

PSLX 6213. Corporations and Contracts Law. 3 Credits.

PSLX 6214. Administrative Law. 3 Credits.
An introduction to administrative and regulatory law; history and development of administrative law; agency, due process, agency actions, administrative investigation and hearings, and judicial review.

PSLX 6215. Government Contracts Law. 3 Credits.
The law of procuring, forming, and executing government contracts, including drafting and litigation; competition requirements, contract changes, and contract terminations; researching and drafting documents common to a government contracts practice.

PSLX 6216. Elements of Intellectual Property Law. 3 Credits.

PSLX 6217. Prosecution and Litigation in Intellectual Law Practice. 3 Credits.

PSLX 6218. International Trade and Finance. 3 Credits.

PSLX 6219. International Litigation. 3 Credits.

PSLX 6221. Tanzanian Legal System. 3 Credits.

PSLX 6222. Tanzanian Community Law. 3 Credits.

PSLX 6223. Contracts. 3 Credits.
Contract elements, their attendant legal ramifications, and the processes necessary to make such determinations. Development of legal reasoning skills in evaluating issues arising from contract law.

PSLX 6224. Advanced Legal Writing. 3 Credits.
Advanced legal writing techniques and drafting for legal practice. Legal writing in plain English; strategies for effective writing; emphasis on legal memoranda, legal correspondence, and preparing and drafting legal pleadings and documents for court. Refines and advances skills in written legal analysis and legal citation.

PSLX 6225. Business Entities. 3 Credits.
Overview of business organizations, including partnerships, limited liability companies, and corporations. Key concepts applicable to business organizations, including regulation, business formation, document preparation. Application of legal analysis within the context of business entities and other topics applicable to paralegals in all disciplines.

PSLX 6226. International Law. 3 Credits.
Introduction and survey of international law, including international trade law and litigation. Rules and principles governing relations among sovereign states, international organizations, and sources of international law. Analysis of the rules and customs for handling international trade. International courts and tribunals; overview of the treaties, customary principles, and institutional structures governing international human rights law.

PSLX 6227. Intellectual Property Law. 3 Credits.
Introduction to the legal structure of an intellectual property practice. Trademarks, copyrights, and patents and the supporting practice concomitant to each element. Analysis of the processes, supporting documentation, laws, and rules regarding patent prosecution and litigation. This course complements and builds upon the legal issues and analysis introduced in the courses on contracts, business entities, and litigation.

PSLX 6294. Independent Research in Legal Studies. 2 Credits.
Guided, independent research to demonstrate the higher level of competency in research, analysis, writing, and oral presentation. Restricted to master's degree candidates in the paralegal studies programs.

PSLX 6298. Paralegal Practicum. 0-3 Credits.
Students work in legal environments while completing their studies, taking active roles to obtain, manage, and maximize the value of their positions. Restricted to master's degree candidates in the paralegal studies programs.

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF PARALEGAL STUDIES WITH A CONCENTRATION IN HEALTHCARE CORPORATE COMPLIANCE

The master of professional studies (M.P.S.) in the field of paralegal studies with a concentration in healthcare corporate compliance degree program allows paralegal students to enroll in the master of paralegal studies (p. 855) program and the healthcare corporate compliance graduate certificate (http://cps.gwu.edu/healthcare-compliance) program concurrently and receive both credentials. The M.P.S. is an advanced credential for those who wish to lead the profession in a variety of settings such as law, finance, insurance, consulting, and healthcare; the graduate certificate is the nationally-recognized industry standard.

At the completion of the program, graduates will have acquired the skills, knowledge, and abilities required to enter the field of healthcare law. The rigorous curriculum balances analysis and critical thinking with applied skills, and focuses on written and oral communication, research, and managing complex tasks and teams---all skills that employers demand. The program is offered in both campus (http://cps.gwu.edu/paralegal) and distance learning (http://paralegalstudiesmasters.online.gwu.edu) formats.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (http://cps.gwu.edu/healthcare-compliance) for additional information.

REQUIREMENTS

Applicants must hold a baccalaureate degree from a regionally accredited institution of higher learning or international equivalent. Additional admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Required:

PSLX 6210	American Jurisprudence
PSLX 6211	Legal Research and Writing
PSLX 6212	Litigation

PSLX 6223	Contracts
PSLX 6224	Advanced Legal Writing
PSLX 6225	Business Entities
PSHC 6201	Introduction to Health Care Corporate Compliance
PSHC 6202	Compliance with Laws and Regulations I
PSHC 6204	Compliance with Laws and Regulations II
PSHC 6206	Case Studies in Health Care Corporate Compliance
CPS 6294	Independent Research
CPS 6298	Practicum

See CPS regulations for additional information regarding enrollment status and time limits.

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF PUBLISHING

The Master of Professional Studies in the field of publishing is designed for current and aspiring professionals. The 30-credit program is offered on a part-time basis; students finish the course of study in two years. Classroom instruction and distance learning options are available.

Core coursework provides a foundation in current industry practices, while advanced courses provide preparation for the future of publishing through in-depth study in the areas of editorial management, technology and design, or business and marketing.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs). (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://cps.gwu.edu/publishing) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 16 credits in required courses and all courses in one track; the remaining credits are taken in elective courses, with at least one elective taken in each of the two remaining tracks.

Code	Title	Credits
Required		
PSPB 6201	Book and Journal Publishing	
PSPB 6203	Business of Publishing	
PSPB 6205	CopyrightLaw/Print&Cyberspace	
PSPB 6207	Marketing Strategies	
PSPB 6232	Production Management	
PSPB 6251	Fundamentals of Electronic Publishing	
PSPB 6281	Ethics in Publishing	
All courses in one track		
Editorial Track		
PSPB 6261	Editorial Content, Rights, and Permissions	
PSPB 6262	Editing for Books, Journals, and Electronic Products	
PSPB 6265	Managing Editorial Staff	
Business and Marketing Track		
Four of the following:		
PSPB 6221	Publishing Management, Organization, and Strategy	
PSPB 6222	Accounting and Finance for Publishers	
PSPB 6224	Budgeting, Fulfillment, and Distribution	
PSPB 6258	User-Centric Design for Print and Electronic Publications	
PSPB 6271	Sales Management, Strategy, and Positioning	
PSPB 6272	Book Publicity & Promotion	
PSPB 6273	Managing the Marketing Portfolio	
Technology and Design Track		
Four of the following:		
PSPB 6213	Book Design	
PSPB 6253	Electronic Publishing Theory & Practice	
PSPB 6255	Electronic Publishing: Infrastructure and Architecture	
PSPB 6257	Designing/E-publishing Success	
PSPB 6258	User-Centric Design for Print and Electronic Publications	
Electives		

Credits beyond those for all required courses are taken as electives; at least one elective must be taken in each of the two remaining tracks.

FACULTY

Director A. Grossblatt

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSPB 6201. Book and Journal Publishing. 3 Credits.
Overview of the book and journal publishing industry and the opportunities and challenges it presents. Major functions of a publishing house and stages of publishing, including editorial, design, production, sales, marketing, and distribution. Publishing house finances.

PSPB 6203. Business of Publishing. 2 Credits.

PSPB 6205. CopyrightLaw/Print&Cyberspace. 3 Credits.

PSPB 6207. Marketing Strategies. 2 Credits.

PSPB 6213. Book Design. 2 Credits.

PSPB 6221. Publishing Management, Organization, and Strategy. 2 Credits.

PSPB 6222. Accounting and Finance for Publishers. 2 Credits.

PSPB 6224. Budgeting, Fulfillment, and Distribution. 2 Credits.

PSPB 6232. Production Management. 3 Credits.
Managing the production process from initial design and editing to a final printed and distributed publication. Aspects of traditional production, including printing basics, manufacturing savings, prepress and composition, paper, postage, and best practices. Emerging trends in digital products and delivery.

PSPB 6235. Essentials of Web Publishing. 2 Credits.

PSPB 6237. Business Models Online. 2 Credits.

PSPB 6251. Fundamentals of Electronic Publishing. 2 Credits.

PSPB 6253. Electronic Publishing Practice. 2 Credits.
Pragmatic, economic, and ethical aspects of electronic publishing for responsible decision making. Prerequisite: PSPB 6251.

PSPB 6255. Electronic Publishing: Infrastructure and Architecture. 3 Credits.
Emerging content technologies, including software and hardware components of a typical publishing system, the enabling standards, and an introduction to publishing systems architecture. Prerequisite: PSPB 6251.

PSPB 6257. Designing/E-publishing Success. 2 Credits.
Principles of digital design: usability testing, search engine optimization, iterative design, and multiple presentational models. Prerequisite: PSPB 6251.

PSPB 6258. User-Centric Design for Print and Electronic Publications. 2 Credits.

PSPB 6261. Editorial Content, Rights, and Permissions. 2 Credits.

PSPB 6262. Editing for Books, Journals, and Electronic Products. 2 Credits.
An overview of the editorial roles, functions, and workflows used in creating publications for print and electronic formats; peer review and online tools for manuscript submission and tracking.

PSPB 6265. Managing Editorial Staff. 2 Credits.

PSPB 6271. Sales Management, Strategy, and Positioning. 2 Credits.

PSPB 6272. Book Publicity & Promotion. 2 Credits.

PSPB 6273. Managing the Marketing Portfolio. 2 Credits.

PSPB 6281. Ethics in Publishing. 1 Credit.

PSPB 6298. Digital Publishing Practicum. 2 Credits.
Application of theory and practice acquired in prior courses to a real-world problem. Each semester the topic reflects a selected area of current importance in digital publishing. Restricted to students in the MPS in Publishing program during their final semester of study.

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF SUSTAINABLE URBAN PLANNING

The master of professional studies in sustainable urban planning degree program is dedicated to helping students acquire the skills they need to face the challenges of modern urbanization, both in the United States and around the globe. The program offers an array of high-level theoretical, philosophical, and historical courses in planning, urban issues,

and new technological approaches that aim to prepare new planning professionals for success in the burgeoning field. Above all, the program gives students the ability to use their ideas to help forge better cities.

The complete sequence of classes required for the master's degree is offered each calendar year, including the summer session, and students may enroll on a full- or part-time basis.

The program also offers graduate certificates in sustainable urban planning (p. 876) and climate change management and policy (p. 872), which are designed for students who are not in need of a complete master's degree.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://cps.gwu.edu/master-professional-studies-sustainable-urban-planning-0) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits, including 30 credits in required courses and 18 credits in courses in one track.

The following requirements must be fulfilled: 48 credits, including 30 credits in required courses and 18 credits taken in one track.

Code	Title	Credits
Required		
PSUS 6201	Principles of Sustainable Urban and Regional Planning	
PSUS 6202	Urban and Environmental Economics	
PSUS 6203	Research Methods I: Geospatial and Econometric Analysis	
PSUS 6204	Land Use Law	
PSUS 6210	Transportation Planning in City Systems	
PSUS 6211	Regional Development and Agricultural Economics	
PSUS 6212	Sustainable Communities I: Housing and Design	
PSUS 6213	Research Methods II: Advanced Geospatial and Econometric Analysis	
PSUS 6230	Sustainable Comm Design Studio	
PSUS 6233	Capstone Studio	
Climate Change Management Track		
PSUS 6221	The Scientific Basis of Climate Change	
PSUS 6222	Sustainable Building: Energy Demand, Efficiency, and Supply	
PSUS 6223	Sustainable Communities II: Tools for Assessment and Transformation	
PSUS 6224	Sustainable Energy for Cities and the Environment	
PSUS 6231	Practicum:ClimateChangeMgt&Pol	
PSUS 6235	Adv Topics in Urban Sust	
Sustainable Landscapes Track		
PSUS 6260	Intro to Sustainable Design	
PSUS 6261	Ecology of the Built Env.	
PSUS 6262	Tools for Sustainable Design	
PSUS 6264	Native Plants I	
PSUS 6265	Native Plants II	
PSUS 6268	Sustainable Design Methods	
PSUS 6269	Sustenance and the Landscape	
PSUS 6266	Ecological Restoration	
PSUS 6270	Sustainable Design Charrette	

FACULTY

Director J. Carruthers

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSUS 6201. Principles of Sustainable Urban and Regional Planning. 3 Credits.
The environmental, social, and economic elements of sustainability. Present and future challenges, including environmental management, energy policy, financial crises, global warming, inequality, public education, third and first world slums, the success and failure of nations, urban agriculture, urban economics, and more. The implications of sustainable development and conducting research based on evidenced-based policy. Students focus on the work of researchers outside of the planning field as they write a series of research essays containing reviews of relevant scientific literature.

PSUS 6202. Urban and Environmental Economics. 3 Credits.
The application of neoclassical economics to problems faced by practitioners of the field of sustainable urban and regional planning. Key economic concepts including supply and demand, consumption and production, markets and market failure, and measurement of environmental and other non-market commodities. An economist's perspective on the principals and methods for understanding urban and environmental challenges and solutions, urban growth, environmental quality, public policy, and other issues fundamental to contemporary development.

PSUS 6203. Research Methods I: Geospatial and Econometric Analysis. 3 Credits.
Focus on developing proficiency in geographic information systems (GIS) and econometric analysis, a method of statistical analysis for measuring the relationships at work in socioeconomic phenomena. Building and analyzing spatial datasets, specifically using ArcGIS and Stata statistical software.

PSUS 6204. Land Use Law. 3 Credits.

PSUS 6210. Transportation Planning in City Systems. 3 Credits.
Transportation planning with long-run goals in mind, including reducing greenhouse gas emissions. The role of planning at local and regional scales within the broader framework of transportation engineering.

PSUS 6211. Regional Development and Agricultural Economics. 3 Credits.
The economics of land use patterns and development processes in the United States and elsewhere in the world. Introduction to the field of agricultural economics and examination of food deserts and other food-related problems relevant to the field of sustainable urban planning.

PSUS 6212. Sustainable Communities I: Housing and Design. 3 Credits.
Community development with a focus on policy and the various sectors of interest that affect contemporary urbanization. How policies, planning techniques, and implementation strategies form the core work of planning practitioners. Topics include water supply, food deserts, public health, and urban resilience. Pathways to more sustainable communities are explored through the policy arenas in which key decisions are made; key sectors that make up the fabric of communities; and special topics that have emerged as critical challenges for sustainable community development.

PSUS 6213. Research Methods II: Advanced Geospatial and Econometric Analysis. 3 Credits.
Builds upon the skills learned in PSUS 6203. Application of econometric and geospatial analysis in the field of sustainable urban and regional planning. Emphasis on objectivity and use of the scientific method to form defensible, evidence-based policy. Prerequisite: PSUS 6203.

PSUS 6220. Planning Resilient and Low-Carbon Cities. 3 Credits.
International perspectives on urban planning, taking into consideration increased global temperatures resulting from greenhouse gas emissions-induced climate change. The course is taught with reference to the findings of the Intergovernmental Panel on Climate Change (IPCC) and considers how urbanization around the world must adapt to the reality of global warming and its consequences.

PSUS 6221. The Scientific Basis of Climate Change. 3 Credits.
The science underlying climate change policy and decision making. Earth systems, climate change projections, the need for mitigation, and impact assessment. Designed for non-scientists.

PSUS 6222. Climate Change Economics. 3 Credits.
Energy use in built environments with an emphasis on fundamental drivers of energy demand, strategies to promote energy efficiency, and essential features of energy supply; the relationship between energy demand and supply in development.; how advances in construction technology can help counter greenhouse gas emissions.

PSUS 6223. Sustainable Communities II: Tools for Assessment and Transformation. 3 Credits.
Builds on PSUS 6212 by further detailing the theory and tools relevant to the assessment and transformation of neighborhood and communities. Geospatial analysis explore the fundamental drivers of urban form, advanced transportation systems, theories of change, and various impact assessment tools used to inform policy implementation.

PSUS 6224. Sustainable Energy for Cities and the Environment. 3 Credits.
Resource management and renewable energy technologies. Vulnerabilities of existing urban structures, particularly the energy grid. Implications of and solutions to energy-related problems likely to arise in present and future cities.

PSUS 6230. Sustainable Comm Design Studio. 3 Credits.

PSUS 6231. Practicum:ClimateChangeMgt&Pol. 3 Credits.

PSUS 6233. Capstone Studio. 3 Credits.

PSUS 6235. Adv Topics in Urban Sust. 3 Credits.

PSUS 6260. Intro to Sustainable Design. 2 Credits.

PSUS 6261. Ecology of the Built Env.. 2 Credits.

PSUS 6262. Tools for Sustainable Design. 3 Credits.

PSUS 6264. Native Plants I. 2 Credits.

PSUS 6265. Native Plants II. 1 Credit.

PSUS 6266. Ecological Restoration. 1 Credit.

PSUS 6268. Sustainable Design Methods. 2 Credits.

PSUS 6269. Sustenance and the Landscape. 2 Credits.

PSUS 6270. Sustainable Design Charrette. 3 Credits.
Preparation of a final project that demonstrates students' understanding of how to select and use sustainable site principles in a landscape design. Building and expanding upon techniques learned in previous coursework, students show comprehension of how their project site has boundaries within its surrounding ecosystem, but is still part of a larger life cycle. Students work in a concentrated charrette format to develop a site design that is fully sustainable and buildable.

GRADUATE SCHOOL OF POLITICAL MANAGEMENT

The Graduate School of Political Management, through the College of Professional Studies, offers the master of professional studies in the fields of political management, legislative affairs, strategic public relations, and advocacy in a global environment. Each program has a prerequisite of a bachelor's degree with a minimum *B* grade-point average from an accredited college or university and is subject to the CPS regulations (http://www.cps.gwu.edu) that appear under the respective programs. In addition, graduate certificate programs are offered in campaign strategy, digital politics, community advocacy, public relations, PACs and political management, and global public relations. The master of professional studies in political communication and governance; and graduate certificates in both political management and strategic governance, and strategic communications and campaigns are offered in Spanish to closed cohorts of students in Latin America and in Spain.

GRADUATE

Master's programs

- Master of Professional Studies in the field of advocacy in the global environment (p. 862)
- Master of Professional Studies in the field of legislative affairs (p. 863)
- Master of Professional Studies in the field of political management (p. 864)
- Master of Professional Studies in the field of political communication and governance (offered only in Spanish) (p. 869)
- Master of Professional Studies in the field of strategic public relations (p. 870)

Combined program

- Dual Master of Professional Studies in the field of political management and graduate certificate in survey design and analysis (p. 870)

COURSES

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

- Political Management (PMGT) (p. 1387)
- Legislative Affairs (LGAF) (p. 1327)
- Professional Studies Public Relations (PSPR) (p. 1407)

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF ADVOCACY IN THE GLOBAL ENVIRONMENT

The Master of Professional Studies in the field of advocacy in the global environment offers innovative experiential learning opportunities for professionals involved in all aspects of global politics and advocacy, from lobbying to strategic public relations, campaigns, and influence building. The program can be completed in as little as one year; however, the usual pace is two courses per semester over two years. Twelve credits of coursework are dedicated to the global immersion residencies in regions around the globe: North America (Washington, D.C.), Europe (Brussels), Middle East and Africa (Istanbul), Asia (Hong Kong), and Latin America (São Paulo).

Specific admission requirements are shown on the Graduate Program (http://www.gwu.edu/all-graduate-programs)Finder.

Visit the program website (http://gspm.gwu.edu/advocacy-global-environment) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 39 credits, including 21 credits in required courses, 12 credits in global residencies, and 6 credits in elective courses.

Requirements for the major:

Core courses	
PSAD 6225	Fundamentals of Global Political Management
PMGT 6403	Political Data and Analytics
PMGT 6402	Applied Political Communications
PMGT 6404	Principled Political Leadership
PSAD 6240	Global Advocacy: Strategies, Tools, and Tactics
or PSAD 6270	International Public Relations and Global Advocacy
PSAD 6250	Cultural Aspects of Global Engagement
PSAD 6260	Comparative Political Management Environments
Four global residences	
PSAD 6200	Global Perspective Residencies
Six credits of electives selected in consultation with advisor*	

*Electives may be chosen from course offerings of the Legislative Affairs, Strategic Public Relations, or Political Management programs. Some students may take courses in the Elliott School of International Affairs, Trachtenberg School of Public Policy and Public Administration, the School of Business, or create an independent study course with the permission of the program director and approval of the director.

Scholarship Requirements

A grade-point average of 3.0 is required for award of a master's degree. Students who receive a grade of *C* in more than 6 credits are subject to suspension. Students who receive a grade of *F* must confer with the dean before enrollment for further coursework is allowed. See CPS regulations (p. 843) for additional information regarding enrollment status and time limits .

FACULTY

Professors M. Kennedy

Associate Professors M. Cornfield, S. Billet, L. Parnell, S. Wiley

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF LEGISLATIVE AFFAIRS

The Master of Professional Studies in the Field of Legislative Affairs centers on the study of applied politics in the legislative arena, offering students the perspective of both political scholars and working professionals. The curriculum focuses on how Congress operates, how legislative procedures shape outcomes, and how entities like the executive branch, lobbyists, and constituents influence the work of the legislature.

The program is designed for both working professionals and full-time students, with classes meeting Monday through Thursday evenings in the Washington, D.C. metro area. The required 33 credits can be completed in as little as one year; however, the usual pace is two courses per semester completed in two years.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs). (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gspm.gwu.edu/legislative-affairs) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 33 credits, including 12 credits in required courses; at least 6 credits in courses in each of two elective areas; either 6 credits in thesis or 6 additional credits in one or both of the two elective areas; and successful completion of a master's comprehensive examination.

Code	Title	Credits
Required		
LGAF 6201	Politics and Public Policy	
LGAF 6202	Legislative Politics	
LGAF 6203	Executive–Legislative Relations	
LGAF 6204	Research Methods for Legislative Affairs Specialists	
Elective areas		
American Political Process		
At least two courses from the following:		

LGAF 6217	Budgetary Politics
LGAF 6218	Judicial Politics
LGAF 6219	American Presidency
LGAF 6222	Parties and Elections
LGAF 6223	Public Opinion/Pol Socializatn
LGAF 6224	Interest Group Politics
LGAF 6228	Media and Congressional Politics
LGAF 6233	Comparative Legislatures
LGAF 6234	PACs and Congress
Public Policy Analysis	
At least two courses from the following:	
LGAF 6246	Congress & Foreign Policy
LGAF 6249	Congress and National Security Policy
LGAF 6251	Budgetary Policy
LGAF 6260	Special Topics: Domestic Policy
LGAF 6270	Special Topics: Congress and Foreign Policy
Thesis option	
LGAF 6998	Thesis
LGAF 6999	Thesis
Non-thesis option	
Six additional credits in one or both of the elective areas, above.	

*With prior approval of the academic advisor, students may take up to three of the required number of elective courses in related disciplines.

Successful completion of a master's comprehensive examination is required.

See CPS regulations for additional information regarding enrollment status and time limits.

FACULTY

Director S. Billet

Associate Professors D. Johnson, M. Cornfield, S. Billet, L. Parnell, S. Wiley

Professorial Lecturers J. Weinberg, R. Whitlock, C. Veillette

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF POLITICAL MANAGEMENT

The master of professional studies in the field of political management degree program teaches students how to win campaigns, advocate effectively on issues, and formulate sophisticated communication strategies for candidates, causes, and corporations. Instructors are political and communications professionals who are passionate about educating students in their areas of expertise. Graduates of the program are prepared to assume decision-making positions as communications directors, digital directors, campaign managers, media consultants, chiefs of staff, and office-holders.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs). (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gspm.gwu.edu/node/120) for additional information.

REQUIREMENTS

Non-thesis and thesis options are available.

The following requirements must be fulfilled: Non-thesis option—36 credits, including 15 credits in required courses and 21 credits in elective courses; thesis option—36 credits, including 18 credits in required courses and 18 credits in elective courses.

Code	Title	Credits
Required		
PMGT 6401	Fundamentals of Political Management	
PMGT 6402	Applied Political Communications	
PMGT 6403	Political Data and Analytics	
PMGT 6404	Principled Political Leadership	
Electives		
Six courses from the following:		
PMGT 6410	Grassroots Engagement	
PMGT 6412	Issues Management	
PMGT 6422	State and Intergovernmental Politics	
PMGT 6430	Campaign Strategy	
PMGT 6432	Managing Campaigns	
PMGT 6434	Running for Office	

PMGT 6436	National Campaign Dynamics
PMGT 6438	State and Local Campaigns
PMGT 6440	Targeting and Voter Contact
PMGT 6442	Campaigns Around the World
PMGT 6450	Rules, Laws, and Strategy
PMGT 6452	Digital Strategy
PMGT 6454	Fundraising and Budgeting
PMGT 6456	Speechcraft
PMGT 6458	Crisis Management
PMGT 6460	Audience Research
PMGT 6462	Opposition Research
PMGT 6464	Influencing the Media
PMGT 6466	Political Advertising
PMGT 6468	Digital Advertising and Action
PMGT 6470	Digital Content Creation
PMGT 6472	Maximizing Social Media
PMGT 6474	Stereotypes and Political Strategy
PMGT 6476	Political Consulting
PMGT 6490	Special Topics
PMGT 6496	Independent Study
PMGT 6497	Graduate Internship
Non-thesis option	
Students who select the non-thesis option take the capstone course, PMGT 6495, and one additional elective in either their penultimate or final semester.	
PMGT 6495	Political Power & Practice
Thesis option	
Students who select the thesis option take PMGT 6498 and PMGT 6499 over the course of their final two terms.	
PMGT 6498	Thesis I
PMGT 6499	Thesis II
Distance learning	
Distance learning students take PMGT 6480 or PMGT 6482 as part of their program of study.	
PMGT 6480	Washington Residency
PMGT 6482	Applied Research Project

FACULTY

Director M. Kennedy

Professor F.C. Arterton

Associate Professors S. Billet (Program Director), L. Brown (Program Director), M. Cornfield (Research), D. Niven, L. Matos, L. Parnell (Program Director), S. Wiley

Assistant Professors M. Dallek, G. Lebel, D. Rehr (Program Director)

Professorial Lecturers J. Babb, T. Bawidamann, P. Bell, N. Bocksor, M. Braden, S. Bush, M. Crannell , B. Carr, D. Cantor, J. Chandler, J. Dube, M. Edwards, L. Ellenbogen, W. Feltus, P. Fenn, K. Gage, S. Gagen, C. Giddins, E. Grefe, J. Halls, S. Herness, J. Hobson, R. Johnson, M. Kline, D. McGroarty, M. Meissner, G. Nordlinger, D. Payne, B. DiResta, R. Schriefer, C. Shank, E. Tracey, B. Tringali, M. Ward

COURSES

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PMGT 1000. Dean's Seminar. 3 Credits.

PMGT 4101. Electoral&LegislativeProcesses. 3,4 Credits.

PMGT 4107. Practicum in Political Mgt. 3,4 Credits.

PMGT 4187. Professional Internship. 3-4 Credits.

PMGT 4192. Tutorial-Amer Elect& PolMvmnts. 3-4 Credits.

PMGT 6401. Fundamentals of Political Management. 3 Credits.
Main concepts, arenas, developments, roles, and practices in the field of political management. Assess rhetorical situations, write strategy memos, create and critique campaign messages, and engage citizens, professional colleagues and decision-makers. Taken in first semester of program. (Professors M. Cornfield and TBD.).

PMGT 6402. Applied Political Communications. 3 Credits.
Models and methods by which professionals plan, produce, and adjust strategic communication messages in democratic politics. Use a variety of communication forms and media, such as, fact sheets, blog posts, video releases, and public addresses, under typical constraints of time, money, information, reputation, talent, audience attentiveness, and institutional procedure. Students to enroll by their sixth course in the program. Core requirement; Must be completed before a student reaches 18 credit hours.

PMGT 6403. Political Data and Analytics. 3 Credits.
Introduction to the uses of quantitative data and statistics in politics. Learn to evaluate research designs, statistical associations, causal reasoning, methods for hypothesis testing, multivariate regression analyses, and data analytics. Consume and critique data and statistics for strategic purposes. Students to enroll by their sixth course in the program. Core requirement. Must be completed before a student reaches 18 credit hours.

PMGT 6404. Principled Political Leadership. 3 Credits.
Theory and practice of ethically grounded political leadership. Consideration of the recurrent dilemmas, philosophical principles, management techniques, codes of conduct, and professional norms in the political management field. Application through self-assessment exercises, case study analysis, and individual and group simulations. Students to enroll by their sixth course in the program. Core requirement. Must be completed before a student reaches 18 credit hours.

PMGT 6410. Grassroots Engagement. 3 Credits.
Strategies and techniques to build advocacy support among and across general civic populations. Identification of potential supporters through database targeting and individual outreach. Motivation and training of interested supporters for grassroots action in campaigns, at public forums, and before decision-makers. Coalition and protest options; analytics of ongoing efforts. (Professors E. Grefe, S. Gagen).

PMGT 6412. Issues Management. 3 Credits.
Track, influence, and alter politically significant issue-related discourses and policy developments. Legislative, executive, and judicial venues and processes for policymaking; state referendum, initiative, and recall ballot opportunities; organizational structures, including digital procedures, for issue management. (Professors M. Edwards, E. Grefe).

PMGT 6414. Lobbying. 3 Credits.
Survey of and training for lobbying in the U.S. federal system. Students design a detailed lobbying plan for implementation and practice a variety of influence techniques, including those associated with digital media and communications technologies. Legal compliance, organizational and public accountability, professional standards and practices. (Professor J. Hobson).

PMGT 6416. International Lobbying. 3 Credits.
Survey of international lobbying practices, analysis of strategic models and best practices in a variety of different countries and political systems (e.g., EU, China, Brazil, and Turkey). Trends and innovations in lobbying techniques and communications technologies. Investigation and application of appropriate research to improve practice. (Professor TBD by AGE program) (Same as PSAD 6240).

PMGT 6418. Budget Politics. 3 Credits.
Politics of the budget process, including formal and informal mechanisms of appropriating U.S. federal funds. Lobbying strategies and tactics employed by private and public organizations seeking to influence budgetary agenda-setting in the White House; decision-making in Congress; and funding negotiations within and between executive agencies. (Professor M. Edwards).

PMGT 6420. Corporate Public Affairs. 3 Credits.
Exploration of major functional areas in corporate public affairs with a focus on the political and policy dynamics operating in the United States and other democracies. Development and deployment of appropriate strategies, research, and tactics for corporations managing the complexities related to a global economy and shifting political alliances.

PMGT 6422. State and Intergovernmental Politics. 3 Credits.
Examination of the electoral pressures on state and local legislators. Methods and techniques for advocacy in various state capitals. The governing responsibilities of constitutionally-delegated to states and the ever-changing historical relationship between states and the federal government. (Professors C. Shank).

PMGT 6430. Campaign Strategy. 3 Credits.
Orientation to the basic systems and technologies that must be created and managed to produce electoral victory. The campaign plan and campaign budget as the foundation for management of campaigns. Focus on development of a campaign plan. (Professor M. Meissner).

PMGT 6432. Managing Campaigns. 3 Credits.
Understanding the role of a campaign manager in staffing and running a campaign, while executing the campaign plan. Candidate handling, fundraising, website and technology, geographic and demographic targeting, field organization, canvassing, get-out-the-vote, press operations, budget control, and liaison with the party and interest groups. (Professors TBD) Prerequisites: PMGT 6430.

PMGT 6434. Running for Office. 3 Credits.
Electoral politics from the perspective of the candidate, strategic and personal factors involved in the decision to run and the consequences of victory or defeat. (Professor R. Faucheux).

PMGT 6436. National Campaign Dynamics. 3 Credits.
Examination of the historical and systematic patterns in national elections. Differences between presidential and midterm elections; House and Senate contests; party nomination races and general elections; primaries and caucuses; Democratic and Republican party delegate selection rules; causes for "wave" elections; effect of the economy on election outcomes; and standard vice presidential selection models. The political and partisan structural conditions that exist before any of the candidates or the campaigns get involved.

PMGT 6438. State and Local Campaigns. 3 Credits.
Application of campaign strategy and management principles to electoral races at the state and local levels. Staffing, budgeting, and strategic challenges for what are typically lower-visibility contests that involve state and local candidates. Coordinated campaigns and the impact of the national party's reputation on these down-ballot races. (Professor TBD).

PMGT 6440. Targeting and Voter Contact. 3 Credits.
How to find voters for electoral and advocacy campaigns and tailor communications to them. Database analytics, list management, questionnaire design, target weighting, predictive modeling. Review of randomized and natural experiments in light of theoretic principles and findings from public opinion research. Skill development in use of spreadsheets and basic statistical packages. Lab fee. (Professors B. Russell, A. Strauss) Prerequisites: PMGT 6403.

PMGT 6442. Campaigns Around the World. 3 Credits.
Comparative examination of national-level campaigns in democratic countries outside of the United States. Strategies, techniques, and practices used in multi-party and/or parliamentary systems. Professional conduct, consulting rules and norms.

PMGT 6450. Rules, Laws, and Strategy. 3 Credits.
U.S. federal and state laws and regulations governing recognition of political parties and political organizations, campaign finance, political broadcasting and cablecasting, lobbying registration. Ballot access and voter registration. Ethical and strategic considerations (opportunities and constraints; benefits and drawbacks) related to rule construction. (Professor M. Braden).

PMGT 6452. Digital Strategy. 3 Credits.
Development of an integrated digital strategy for use in advocacy and electoral campaigns. Introduction to the theoretical concepts, distinctive technologies, applied skills, and managerial challenges associated with digital campaigning. Search engine optimization, GPS, online payment systems, customizing back- and front-end systems to meet strategic goals and budget parameters, working with IT vendors and distance volunteers, legal and cultural considerations in US and other regimes, site rollout and scaling, security and privacy. (Professor TBD).

PMGT 6454. Fundraising and Budgeting. 3 Credits.
Raising and spending money in political campaigns, referenda contests, issue advocacy, and lobbying efforts. Budgeting process, standard controls to check expenditures, accounting procedures, and general strategies for use in effective fundraising. (Professor N. Bocskor).

PMGT 6456. Speechcraft. 3 Credits.
Analysis and techniques used in speechwriting and presentations for public officials and candidates. Managing the political optics and understanding a speech's visual context and non-verbal communication capabilities (Rose Garden, Oval Office, campaign stump speech, ceremonial occasion, congressional testimony). Modulating speaker style, tone, and pacing, and staging the speech for effect. (Professors D. McGroarty, R. Lehrman).

PMGT 6458. Crisis Management. 3 Credits.
Management of crisis situations and defining moments in electoral, legislative, and public policy campaigns. Exploration of the causes and consequences of political scandals. Professional responsibilities and ethical considerations of crisis management and rapid response decisions. (Professor M. Edwards).

PMGT 6460. Audience Research. 3 Credits.
Processes by which citizens acquire political information and make decisions in politics. Survey research uses in electoral campaigns and issue advocacy. Designing and drawing samples, constructing and pretesting questionnaires, modes of interviewing, financial implications, practical problems in selecting and monitoring polling organizations, and interpretation of data. Focus groups and small-sample interviews; relationship between qualitative and quantitative research; reliability and validity. (Professors R. Johnson, D. Cantor, B. Tringali, M. Ward) Prerequisites: PMGT 6403.

PMGT 6462. Opposition Research. 3 Credits.
Practices and techniques associated with investigative opposition research. Public document and website searches, candidate tracking, and methods for information dissemination. Changes in practice as a result of technological innovations and a changing media environment. Professional responsibilities and ethics expected from opposition researchers.

PMGT 6464. Influencing the Media. 3 Credits.
Organization, practices, and norms of the major media; media coverage of public officials, political campaigns, legislative battles, interest groups, and issues of public policy. Formulation of strategies for getting favorable news coverage for the issue or candidate and for ending a media crisis. (Professor L. Ellenbogen).

PMGT 6466. Political Advertising. 3 Credits.
Strategies and techniques for using the various media (print, radio, television, cable, Internet) in political and advocacy campaigns, with emphasis on the use of television. Impact and uses of paid advertising; development of campaign messages; production, timing, and placement of television advertising; explanation of media markets. Students design print ads and brochures and produce a 30-second television spot. (Professor P. Fenn).

PMGT 6468. Digital Advertising and Action. 3 Credits.
Strategies and techniques for developing and leveraging digital advertising for mobilization. Manage an effective online ad campaign from initial concept to creation and from targeting to measuring the results. Prepare, design, and launch a variety of online ad types, including search, social, display, and video. Analyze success or failure based on analytics and benchmarking. Prerequisites: PMGT 6452: Digital Strategy.

PMGT 6470. Digital Content Creation. 3 Credits.
Developing and creating effective digital content that promotes campaign narratives and furthers strategic messages. Construct portfolios of original and aggregated digital media content. Skill development in infographics, video, GPS, photo collage, page and site architecture, and texts from 140 characters to blog posts and file attachments. Versioning for different communities, functionalities, and channels including mobile applications. Prerequisites: PMGT 6452: Digital Strategy.

PMGT 6472. Maximizing Social Media. 3 Credits.
Creating and integrating owned digital platforms and social media assets for political persuasion and action. Cultivation of online political communities, moderating and curating outside-generated content, integration and alignment with campaign message; event, reputation and crisis management. Review of constraints and potentials intrinsic to specific social media sites (e.g. Facebook, Google, LinkedIn, Twitter). Prerequisites: PMGT 6452: Digital Strategy.

PMGT 6474. Stereotypes and Political Strategy. 3 Credits.
Accounting for psychological constructs, social stereotypes, media framing, and the impression formation process in developing a political strategy. Review of empirical research; investigation of effective techniques or postures for overcoming biases; self-assessment of perceptual assumptions.

PMGT 6476. Political Consulting. 3 Credits.
Management principles, technical procedures, and legal requirements for starting and running a political consulting business. Effective practices for gaining a positive reputation, sustaining profitability across the variable political environment, and engaging on the international front. Start-up funding, mergers and acquisitions, exit strategies. (Professors G. Nordlinger, L. Purpuro, M. Meissner).

PMGT 6480. Washington Residency. 3 Credits.
Capstone experience equivalent to PMgt 6495 for students in the online Political Management program. Exposure to and interaction with political consultants, advocacy specialists, elected officials, and applied researchers in Washington, D.C. Integration of program curriculum toward an understanding of the federal political ecosystem and development of a robust political network. Restricted to Taken by PMGT online students in last or penultimate term, or with approval by instructor.

PMGT 6482. Applied Research Project. 3 Credits.
A research option for students in the online Political Management program. Development of a campaign-relevant research report and related communications on behalf of a mock political client. The report will describe the status quo of a political situation, analyze the factors and actors sustaining that status quo, identify what and who is potentially moveable in the direction the client seeks to go, and outline practical first steps a campaign can take in that direction. Restricted to For students in the PMGT online program; taken either in the penultimate or last term in the program.

PMGT 6490. Special Topics. 3 Credits.
Topic to be announced in the Schedule of Classes.

PMGT 6495. Political Power & Practice. 3 Credits.
Capstone seminar that develops and integrates knowledge of political strategies, tactics, and situational considerations, and applies that knowledge to advanced political problems. Topics include: gaining and wielding power, the complexity associated with making democracy work, conflict resolution, negotiation and bargaining skills, grappling with the consequences of winning and losing. Students to enroll during their last or penultimate term. (Professor L. Brown).

PMGT 6496. Independent Study. 0-3 Credits.
Independent research with a Political Management faculty member. Registration must be approved in advance by the supervising faculty member and the director of the political management program.

PMGT 6497. Graduate Internship. 0 Credits.
Limited to Political Management M.P.S. degree candidates. Experience at an organization focused on applied politics.

PMGT 6498. Thesis I. 3 Credits.
Master's degree candidates must apply to the program committee for thesis approval and have completed 24 credit hours with a 3.3 GPA.

PMGT 6499. Thesis II. 3 Credits.
Master's degree candidates must apply to the program committee for thesis approval and have completed 24 credit hours with a 3.3 GPA. Prerequisites: PMGT 6498.

PMGT 6501. Politics and Public Policy. 3 Credits.
Examination of political processes that influence policy formulation, policy implementation, and the uses of policy analysis. Topics include political and policy decision making, actors, and process.

PMGT 6502. ConfrontManag&AllianceBldg. 3 Credits.

PMGT 6503. Communication Strategy. 3 Credits.
Formulation of political communications strategies. Elements necessary to create, introduce, and maintain an effective political profile in issue advocacy campaigns, candidate elections, and legislative advocacy campaigns. Application of principles of research, advertising, and marketing to the political landscape.

PMGT 6504. PolMgt & StrategicGovernance. 3 Credits.

PMGT 6505. Politica de bases. 3 Credits.
Use of microtargeting and database-layering technology to identify potential advocates. Motivational techniques to mobilize volunteers for political campaigns, lobbying efforts, and community advocacy. Techniques used by grassroots organizers to help corporations, unions, civic and nonprofit organizations, and special interest groups achieve strategic goals.

PMGT 6506. Practicum. 3 Credits.

PMGT 6507. Democracia y elections en LA. 3 Credits.
This course will focus on the recent history of Latin America, underscoring the struggle to establish and consolidate democracy and the preeminence of elections as the legitimate process to select and replace authorities at the national, regional and local levels. The course will provide the student with concepts to understand the different types of democratic settings that exist in the region, that is the coexistence of fairly established and solid democracies, with low intensity democracies, and semi-authoritarian regimes, all of which utilize electoral processes to select public authorities. The main message of this course is that campaign designers need to understand and take a strategic advantage of the political context and the rules governing the political competition in order to obtain the most effective results.

PMGT 6508. Estrategia de campana LA. 3 Credits.
Organization of political campaigns. Strategic decisionmaking. Formulation of political communications strategies. Aspects necessary to introduce and maintain an effective political profile in the electoral campaigns in Latin America, including the specialized forms of communication which political professionals use to win support for their candidates. This course will be taught entirely in Spanish.

PMGT 6509. Las encuestas-America Latina. 3 Credits.
The use of survey research in campaigns. Quantitative and qualitative survey research for political management in Latin America. The proper use of polls; methodology and survey design; reviewing poll results; drawing conclusions and recommendations from polls; and the practical problems of administering and interpreting survey data of public opinion in Latin America. PMGT 6509 will be taught entirely in Spanish.

PMGT 6510. Organizacion y ejecucion-LA. 3 Credits.
Organizational choices facing campaign management teams in Latin America as they attempt to combine the resources and activities of a modern campaign into a winning effort.

PMGT 6511. Propoganda politica, La campan. 3 Credits.
The strategies, techniques, design and impact of paid political communications directed toward target audiences in Latin America, focusing upon the role of political advertising in a campaign, including radio, direct mail, print and internet, but with specific emphasis on television commercials.

PMGT 6512. Los medios, la politica-LA. 3 Credits.
The role of the media in the politics of Latin America. Who the media are, how they make their decisions, and how they influence outcomes in campaigns and other political situations. Strategic planning in dealing with the media as well as the particular dynamics that surround electronic, print, and the new media. Effective practices of media engagement. This course will be taught entirely in Spanish.

PMGT 6513. Comunicacion Politica,Gobernon. 3 Credits.
The course builds upon the Practicum course of the Certificate in Governance and integrates the two processes of politics: campaigning and governing. PMGT 6513 will be taught entirely in Spanish.

PMGT 6514. Manejo de Crisis. 3 Credits.
Manejo de Crisis. Management of crisis situations and defining moments in electoral, legislative, and public policy campaigns. Exploration of the causes and consequences of political scandals. Professional responsibilities and ethical considerations of crisis management and rapid response decisions.

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF POLITICAL COMMUNICATION AND GOVERNANCE (OFFERED IN SPANISH ONLY)

GW's Graduate School of Political Management offers the Master of Professional Studies in the field of political communication and governance to closed cohorts of students in Latin America and Spain. The program combines several subjects divided into two modules: political communication and election campaign and political management and governance. The opportunity to pursue an individualized master's research project is also available. The programs are offered in Spanish only.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program's website (http://www.gspminternational.org) for additional information.

See CPS regulations (p. 843) for additional information regarding enrollment status and time limits.

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF STRATEGIC PUBLIC RELATIONS

The master of professional studies in the field of strategic public relations prepares its graduates to work at major public relations firms or in communication roles with nonprofits, corporations, on Capitol Hill, or in the executive branch. The 30-credit program is offered at GW's Alexandria Education Center as well as via distance learning.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://gspm.gwu.edu/strategic-public-relations) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 18-21 credits in required courses and 9-12 credits in elective courses.

The following requirements must be fulfilled: 30 credits in required and elective courses.

Code	Title	Credits
Required		
PSPR 6201	Public Relations Principles and Practices	
PSPR 6202	Advanced Writing for PR Professionals (see note below)	
PSPR 6203	Research Methods for Public Relations and Public Affairs Managers	
PSPR 6204	Media Relations in the New Media World	
PSPR 6205	Fundamentals of Business and Management for Public Relations and Public Affairs	
PSPR 6206	Ethical Standards in Public Relations and Public Affairs	
CPS 6300	Capstone Research Project	
Electives		
9-12 credits in elective courses chosen in consultation with the program director.		

Note: Students may place out of PSPR 6202 based upon review of their transcript and required writing samples. Such students take an additional elective course.

FACULTY

Director L. Parnell

DUAL MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF POLITICAL MANAGEMENT AND GRADUATE CERTIFICATE IN SURVEY DESIGN AND ANALYSIS

The dual graduate master of professional studies degree/graduate certificate program teaches students to design and conduct public opinion surveys, analyze the data that those surveys impart, and use that data to craft winning political campaigns and advocacy initiatives. The program helps students understand not only when it is appropriate to procure and design public opinion surveys, but also how to generate useful questions, analyze responses, and craft communications about the data in a manner that is consistent and aligned with a political strategy. Students also learn to analyze both publicly available and privately commissioned survey opinion data to develop and contextualize a campaign's or an advocacy group's strategic plan.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs). (http://www.gwu.edu/all-graduate-programs)

Visit program website (https://gspm.gwu.edu/dual-degree-programs) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 42 credits, including 33 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
Required		
PMGT 6401	Fundamentals of Political Management	
PMGT 6402	Applied Political Communications	
PMGT 6403	Political Data and Analytics	
PMGT 6404	Principled Political Leadership	
PMGT 6495	Political Power & Practice	
STAT 6233	Questionnaire Design	
STAT 6234	Intermediate Statistical Laboratory: Statistical Computing Packages	
STAT 6236	Applied Sampling Techniques	

STAT 6238	Survey Management
Electives	
9 credits in Political Management (PMGT) courses	

CERTIFICATE PROGRAMS

Undergraduate certificates

- Cyber Attacks and Cyber Threats Analysis
- Investigation of Cyber Security Incidents (p. 871)
- Protection and Defense of Computer Networks (p. 872)

Graduate certificates

The College of Professional Studies offers the following graduate certificates. Requirements are listed on the College of Professional Studies website (http://www.cps.gwu.edu). In addition to those listed, graduate certificates in political management and strategic governance and in strategic communications campaigns are offered in Spanish to closed cohorts of students in Latin America and in Spain.

- Climate Change Management and Policy (p. 872)
- Digital Politics (p. 872)
- Global Public Relations (p. 873)
- Health Care Corporate Compliance (p. 873)
- Justice and Public Safety Information Management (p. 874)
- Landscape Design (p. 874)
- PACs and Political Management (p. 874)
- Paralegal Studies (p. 875)
- Strategic Management and Executive Leadership for Law Enforcement
- Sustainable Landscapes (p. 876)
- Sustainable Urban Planning (p. 876) (p. 876)

UNDERGRADUATE CERTIFICATE IN CYBER ATTACKS AND CYBER THREATS ANALYSIS

The undergraduate certificate in cyber attacks and cyber threats analysis is intended for students with associate's or non-technical bachelor's degrees who wish to learn about highly specialized review and evaluation of incoming cyber security attacks and breaches. Upon the completion of this program, students will be able to investigate cyber security incidents, and identify and correct computer network vulnerabilities through penetration testing and hacking techniques.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (https://cps.gwu.edu/cybersecurity-bachelors) for admissions requirements and other additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
PSCS 4201		
PSCS 4202	Cyber Attack Tools and Techniques	
PSCS 4203	Analysis of the Intelligence Cycle	
PSCS 4204	Computer Network Attack and Exploitation	
PSCS 4205	Practicum: Cyber Attack Techniques	

UNDERGRADUATE CERTIFICATE IN INVESTIGATION OF CYBER SECURITY INCIDENTS

The undergraduate certificate in investigation of cyber security incidents is designed for students who are looking to learn about investigation of cyber events and crimes that impact information technology systems and computer networks. Upon the completion of this program, students are able to investigate and analyze cyber security incidents and collect digital evidence for analysis.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (https://cps.gwu.edu/undergraduate-certificates) for admission requirements and additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required		
PSCS 2301	Cyber Investigation	
PSCS 2302	Digital Forensics	
PSCS 2303	Compliance and Risk Management	
PSCS 2304	Incident Response	

PSCS 2305	Practicum: Incident Response Techniques

UNDERGRADUATE CERTIFICATE IN PROTECTION AND DEFENSE OF COMPUTER NETWORKS

The certificate in protection and defense of computer networks is designed for students with associate's or non-technical bachelor's degrees who are looking to learn about current, state-of-the-art protection technologies. Upon the completion of this program, students will be able to identify, analyze, and mitigate potential threats to information technology systems or computer networks.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (https://cps.gwu.edu/undergraduate-certificates) for admissions requirements and additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required		
PSCS 4101	Introduction to Protection Technologies	
PSCS 4102	Intrusion Detection and Vulnerability Management	
PSCS 4103		
PSCS 4104	Securing Network Devices	
PSCS 4105	Cyber Defense Techniques Practicum	

GRADUATE CERTIFICATE IN CLIMATE CHANGE MANAGEMENT AND POLICY

The graduate certificate in climate change policy and management is intended for students with a master's degree in planning or an allied field—including public policy and the social sciences—who seek expertise in planning for climate change and climate change adaptation. Graduates of the program are able to apply their knowledge in public and private sector planning, policy, design, and/or engineering agencies, both inside and outside the United States.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (https://cps.gwu.edu/sustainable-urban-planning/graduate-certificate-climate-change-management-policy) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 12 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
PSUS 6220	Planning Resilient and Low-Carbon Cities	
PSUS 6221	The Scientific Basis of Climate Change	
PSUS 6222	Climate Change Economics	
PSUS 6224	Sustainable Energy for Cities and the Environment	
Electives		
6 credits in professional studies urban sustainability (PSUS) courses.		

See CPS regulations (p. 843) for additional information regarding enrollment status and time limits

GRADUATE CERTIFICATE IN DIGITAL POLITICS

Digital platforms and high-tech tools that assist with political fundraising, grassroots organizing, and policy issue advocacy have become central to success in politics, and especially in electoral campaigns. The graduate certificate in digital politics teaches students how to master the world of online communications, advertising, social media networking, and fundraising. In the rapidly changing world of politics, this certificate targets students seeking to gain expertise in the most current tools and tactics.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (https://gspm.gwu.edu/digital-politics) for additional information

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 9 credits in required courses and 9 credits in elective courses

Code	Title	Credits
Required		

PMGT 6402	Applied Political Communications
PMGT 6403	Political Data and Analytics
PMGT 6452	Digital Strategy
Electives	
9 credits from the following:	
PMGT 6440	Targeting and Voter Contact
PMGT 6468	Digital Advertising and Action
PMGT 6470	Digital Content Creation
PMGT 6472	Maximizing Social Media

Specific admission requirements can be found on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (https://gspm.gwu.edu/digital-politics) for additional information.

GRADUATE CERTIFICATE IN GLOBAL PUBLIC RELATIONS

Designed for working professionals, the global public relations graduate certificate program teaches students the strategic and tactical skills needed to excel in the challenging world of global public relations. The 6-course, 18 credit program includes a global perspective residency. The course work completed in the certificate program can be applied to the master's degree in Strategic Public Relations (https://gspm.gwu.edu/node/140) or Advocacy in the Global Environment. (https://gspm.gwu.edu/node/1068)

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (https://gspm.gwu.edu/global-public-relations) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses; or, with the advisor's approval, 12 credits in required courses and one 3-credit elective.

Code	Title	Credits
Required		
PMGT 6402	Applied Political Communications	
PMGT 6403	Political Data and Analytics	
PSPR 6204	Media Relations in the New Media World	
PSAD 6270	International Public Relations and Global Advocacy	
PSAD 6200	Global Perspective Residencies	
Electives		
In lieu of one required course, students may take, with the program director's approval, a 3-credit elective selected from the curricula of the graduate certificate in strategic public relations, legislative affairs, or political management programs or from another GW school or college.		

GRADUATE CERTIFICATE IN HEALTH CARE CORPORATE COMPLIANCE

Designed for professionals working in the field of healthcare compliance or who aspire to work in the field, the 12-credit graduate certificate program provides students with a uniquely comprehensive view of health care corporate compliance. Drawing from both GW's Department of Health Policy in the Milken Institute School of Public Health and a leading health care law firm in Washington, D.C., the program offers education in health care laws and regulations as well as tools and strategies for creating effective corporate compliance programs. As the center of federal health care policy and enforcement, Washington provides the ideal backdrop for study, allowing unparalleled access to experts in the field, including current and former regulators and policymakers, and other compliance professionals. No other course or program can offer this level of expertise.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (https://cps.gwu.edu/healthcare-compliance) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
PSHC 6201	Introduction to Health Care Corporate Compliance	
PSHC 6202	Compliance with Laws and Regulations I	
PSHC 6204	Compliance with Laws and Regulations II	
PSHC 6206	Case Studies in Health Care Corporate Compliance	

See CPS regulations (p. 843) for additional information regarding enrollment status, grade-point average requirements, and time limits.

GRADUATE CERTIFICATE IN JUSTICE AND PUBLIC SAFETY INFORMATION MANAGEMENT

The graduate certificate in justice and public safety information management curriculum has been tailored to address the rising demand for professionals with a comprehensive and strategic knowledge of policy, best practices, and strategies related to IT and data management for use by public and private sector homeland security and justice organizations.

The program combines classroom-based and online instruction delivered via Blackboard, GW's web-based educational platform. The online component allows students to fit a full course load into their busy schedules, making it possible to complete the degree in three semesters.

Specific admission requirements can be found on the Graduate (http://www.gwu.edu/all-graduate-programs)Program Finder.

Visit the program website (https://cps.gwu.edu/justice-info-management) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 15 credits in required courses.

Code	Title	Credits
Required		
PSSL 6255	Info. Mgt. Just. & Pub. Safety	
PSSL 6256	Applied Tech in Data Analytics	
PSSL 6257	Enterprise Arch. & Standards	
PSSL 6258	Info Sharing & Safeguarding	
PSSL 6259	Strat. IT Invsmt. & Perf. Mgmt	

See CPS regulations (p. 843) for additional information regarding enrollment status and time limits.

GRADUATE CERTIFICATE IN LANDSCAPE DESIGN

The graduate certificate program in landscape design is ideally suited for landscape professionals seeking to upgrade skills, individuals who wish to become professional landscape designers, amateurs with an interest in the art of garden design, institutional horticultural staff, nursery employees, and garden-design writers. Courses are geared to small-scale landscape design applications with emphasis on sound design principles, good site engineering methods, and creative use of plant materials.

Specific admission requirements can be found on the Graduate (http://www.gwu.edu/all-graduate-programs)Program Finder.

Visit the program website (https://cps.gwu.edu/landscape-design) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 28 credits in required courses.

Code	Title	Credits
Required		
PSLD 6100	Landscape Graphics	
PSLD 6201	Introduction to Design	
PSLD 6202	Site Analysis	
PSLD 6203	Site Engineering	
PSLD 6204	Construction Methods and Materials	
PSLD 6212	History of Landscape Design	
PSLD 6213	Contemporary Themes in the Landscape	
PSLD 6221	Landscape Plants for Fall	
PSLD 6223	Landscape Plants for Spring	
PSLD 6225	Landscape Plants for Summer	
PSLD 6231	Site Design Studio	
PSLD 6236	Planting Design Studio	
PSLD 6240	Comprehensive Project	

See CPS regulations (p. 843) for additional information regarding enrollment status and time limits.

GRADUATE CERTIFICATE IN PACS AND POLITICAL MANAGEMENT

This unique graduate certificate teaches the fundamentals required to effectively run an organization's Political Action Committee (PAC). The challenges of coordinated political action and campaign finance uncertainty make it more important than ever that professionally trained and savvy leaders manage PACs. The program is designed to give

PAC managers the skills necessary to successfully tackle the daunting realities of political finance and action.

Specific admission requirements can be found on the Graduate (http://www.gwu.edu/all-graduate-programs)Program Finder.

Visit the program website (https://gspm.gwu.edu/pacs-and-political-management) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 15 credits, including 3 credits in a required course and 12 credits in elective courses.

Code	Title	Credits
Required		
LGAF 6234	PACs and Congress	
Electives		
Two political management courses selected from the following:		
PMGT 6454	Fundraising and Budgeting	
PMGT 6221	Fundraising for Organizations	
PMGT 6412	Issues Management	
PMGT 6410	Grassroots Engagement	
PMGT 6450	Rules, Laws, and Strategy	
Two legislative affairs courses selected from the following:		
LGAF 6202	Legislative Politics	
LGAF 6222	Parties and Elections	
LGAF 6224	Interest Group Politics	
LGAF 6260	Special Topics: Domestic Policy	

See CPS regulations (p. 843) for additional information regarding enrollment status and time limits.

GRADUATE CERTIFICATE IN PARALEGAL STUDIES

The graduate certificate in paralegal studies is for students who wish to enter the paralegal profession, where the certificate is universally recognized as the standard entry-level credential. GW's approach is academic and practical, emphasizing leadership and teamwork, written and oral communication skills, ethics, and time management in addition to substantive law and legal technology skills.

Specific admission requirements can be found on the Graduate (http://www.gwu.edu/all-graduate-programs)Program Finder.

Visit the program website (https://cps.gwu.edu/paralegal) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required		
PSLX 6210	American Jurisprudence	
PSLX 6211	Legal Research and Writing	
PSLX 6212	Litigation	
PSLX 6223	Contracts	
PSLX 6224	Advanced Legal Writing	
PSLX 6225	Business Entities	

See CPS regulations (p. 843) for additional information regarding enrollment status and time limits.

GRADUATE CERTIFICATE IN PUBLIC RELATIONS

REQUIREMENTS

Specific admission requirements can be found on the Graduate (http://www.gwu.edu/all-graduate-programs)Program Finder.

Required courses:	
PSPR 6201	Public Relations Principles and Practices
PSPR 6202	Advanced Writing for PR Professionals
PSPR 6203	Research Methods for Public Relations and Public Affairs Managers
PSPR 6204	Media Relations in the New Media World
PSPR 6205	Fundamentals of Business and Management for Public Relations and Public Affairs
PSPR 6206	Ethical Standards in Public Relations and Public Affairs

See CPS regulations (p. 843) for additional information regarding enrollment status and time limits.

GRADUATE CERTIFICATE IN STRATEGIC MANAGEMENT AND EXECUTIVE LEADERSHIP FOR LAW ENFORCEMENT

The graduate certificate in strategic management and executive leadership for law enforcement is offered jointly by GW and American University. The curriculum is tailored to address the rising demand for law enforcement professionals with a comprehensive set of leadership and strategic thinking skills. Three courses are taken at GW and three at American University.

Specific admission requirements can be found on the Graduate (http://www.gwu.edu/all-graduate-programs)Program Finder.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required		
PSSL 6250	Strategic Planning and Budgeting	
PSSL 6253	Managing the Politics of Leadership	
PSSL 6270	Capstone Project	
PUAD 620 *		
PUAD 638 *		
PUAD 639 *		

*Course taken at American University

See CPS regulations (p. 843) for additional information regarding enrollment status and time limits.

GRADUATE CERTIFICATE IN SUSTAINABLE LANDSCAPES

The graduate certificate in sustainable landscapes addresses the growing need for landscape and allied professionals with the knowledge and skills to design and/or manage ecologically sensitive, regenerative landscapes that are hospitable to humans and wildlife alike. Students acquire an understanding of best practices in landscape conservation and sustainability, adapted to the small-scale landscape.

Specific admission requirements can be found on the Graduate (http://www.gwu.edu/all-graduate-programs)Program Finder.

Visit the program website (https://cps.gwu.edu/sustainable-landscapes) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required		
PSUS 6260	Intro to Sustainable Design	
PSUS 6261	Ecology of the Built Env.	
PSUS 6262	Tools for Sustainable Design	
PSUS 6264	Native Plants I	
PSUS 6265	Native Plants II	
PSUS 6268	Sustainable Design Methods	
PSUS 6269	Sustenance and the Landscape	
PSUS 6266	Ecological Restoration	
PSUS 6270	Sustainable Design Charrette	

See CPS regulations (p. 843) for additional information regarding enrollment status and time limits.

GRADUATE CERTIFICATE IN SUSTAINABLE URBAN PLANNING

The graduate certificate in sustainable urban planning is tailored to students seeking a credential in the field, but who are not in need of a complete master's degree. This certificate can be combined with the graduate certificate in climate change management and policy (p. 872) and four core planning courses to earn the master of professional studies in sustainable urban planning (p. 859) degree.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (https://cps.gwu.edu/sustainable-urban-planning/graduate-certificate-sustainable-urban-planning) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 12 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		

PSUS 6201	Principles of Sustainable Urban and Regional Planning
PSUS 6202	Urban and Environmental Economics
PSUS 6210	Transportation Planning in City Systems
PSUS 6211	Regional Development and Agricultural Economics
Electives	
6 credits in elective Professional Studies Urban Sustainability (PSUS) courses	

See CPS regulations (p. 843) for additional information regarding enrollment status and time limits.

MILKEN INSTITUTE SCHOOL OF PUBLIC HEALTH

Dean L.R. Goldman
Associate Deans J. DeLoia, K. Horn, G.H. Taylor, P. Vigilance
Assistant Dean H. Klepac, M. Turner

Established in July 1997 as the School of Public Health and Health Services, the school brought together three longstanding university programs in the schools of medicine, business, and education. In 2014, the school was renamed Milken Institute School of Public Health (Milken Institute SPH) after receiving three gifts totaling $80 million from the Milken Institute, the Sumner M. Redstone Charitable Foundation, and the Milken Family Foundation, the largest ever received by The George Washington University. The only school of public health in the nation's capital, Milken Institute SPH enrolls more than 1,800 students, who come from nearly every U.S. state and many other nations to pursue undergraduate, graduate, and doctoral-level degrees in public health. The student body is one of the most ethnically diverse among the nation's private schools of public health. Six departments form the school: Environmental and Occupational Health, Epidemiology and Biostatistics, Exercise and Nutrition Sciences, Global Health, Health Policy and Management, and Prevention and Community Health.

Degree Programs

The Milken Institute SPH offers the following degree programs:

- Bachelor of Science with majors in exercise science and public health
- Master of Public Health in the fields of biostatistics; community oriented primary care; environmental health science and policy; epidemiology; global environmental health; global health communication; global health epidemiology and disease control; global health program design, monitoring, and evaluation; global health policy; health policy; health promotion; maternal and child health; physical activity in public health; public health communication and marketing; and public health nutrition
- Master of Public Health: MPH@GW (online)
- Master of Science in the fields of biostatistics; epidemiology; exercise science with a concentration in strength and conditioning; health policy; management of health informatics and analytics and public health microbiology and emerging infectious diseases (Columbian College of Arts and Sciences confers the Masters of Science in biostatistics)
- Master of Health Administration; Master of Health Administration; MHA@GW (hybrid/executive program)
- Health Services Administration Specialist
- Special (Joint) Programs: Doctor of Medicine and Master of Public Health; Juris Doctor/Master of Laws in the field of law and Master of Public Health; Master of Arts in the field of international affairs and Master of Public Health; Master of Health Administration with a certificate in healthcare corporate compliance; Master of Public Health in the field of health policy with certificate in healthcare corporate compliance; Master of Science in Health Policy with a certificate in healthcare corporate compliance; Master of Science in Health Sciences in the field of physicians assistant and Master of Public Health; Peace Corp Master's International Program and Master of Public Health
- Doctor of Public Health in the fields of environmental and occupational health; global health; health behavior; and health policy
- Doctor of Philosophy in the fields of biostatistics; epidemiology; and social and behavioral sciences in public health (Columbian College of Arts and Sciences confers the Doctor of Philosophy in biostatistics and public policy and public policy and administration (health policy track))

Mission

Our mission is to provide the best public health educational experience incorporating our core values of scholarship and leadership, scientific rigor and policy analysis, and training to foster the next generation of thought leaders, practitioners, policy makers, and scientists who will transform public health worldwide, especially for underserved and poor populations.

Vision

As complex global health challenges continue to threaten our health and future, the Milken Institute SPH will be preeminent in training tomorrow's leaders for improving the public's health. We aspire to become one of the top five private schools of public health in the world.

Accreditation

The public health programs of the Milken Institute SPH are fully accredited by the Council on Education for Public Health (CEPH). In 2016, the Milken Institute SPH was awarded a seven-year accreditation through July 1, 2023. The program in health administration is fully accredited by the Commission on Accreditation of Healthcare Management Education (CAHME). Milken Institute SPH is a member of the Association of Schools and Programs of Public Health.

REGULATIONS

- **Undergraduate Regulations (p. 879)**
  - Graduation Requirements (p. 879)
  - Enrollment Status (p. 879)
  - Advising (p. 879)
  - Timely Progress Toward the Degree (p. 879)
  - Incompletes (p. 880)
  - Pass/No Pass Option (p. 880)
  - Academic Workload (p. 880)
  - Applying for Readmission to a Program (p. 880)

- International Students---Less than Full-Time Status (p. 880)
- Special Honors (p. 880)
- Independent Study Course Requirements (p. 880)
- Preparation for Medical School (p. 880)
- Preparation for Law School (p. 881)
- Other Regulations (p. 881)

- **Graduate Regulations (p. 881)**
  - Enrollment Status (p. 881)
  - Advising (p. 881)
  - Academic Standing (p. 881)
  - Provisional Admission (p. 881)
  - Semester Warning (p. 881)
  - Probation (p. 882)
  - Grade of F (p. 882)
  - Suspension (p. 882)
  - Timely Progress Toward the Degree (p. 882)
  - Summary of Academic Standing Policies for Graduate Students (p. 882)
  - Incompletes (p. 882)
  - Changing an Incomplete (I) (p. 882)
  - In Progress (IP) (p. 882)
  - Applying for Readmission to a Program (p. 883)
  - International Students---Less than Full-Time Status (p. 883)
  - Independent Study Course Requirements (p. 883)
  - Graduation (p. 883)

Undergraduate Regulations

Graduation Requirements

Depending on the Milken Institute SPH degree program, students must complete 120 to 124 credits. Students in the B.S. in exercise science degree programs must have a minimum cumulative GPA of 2.5 in courses in the Exercise Science core; those in the B.S. in public health program must have a minimum overall cumulative GPA of 2.5. The University General Education Requirement and major and other curriculum requirements are listed under each program's regulations tab in this Bulletin.

While degrees are awarded at the end of each semester, formal commencement ceremonies occur only in May. Students are eligible to graduate only after they have completed all degree requirements and have no financial obligations to the University. Students may include degree designations (B.S., M.S., M.P.H., M.H.A., Dr.PH., or Ph.D.) after their name only when they have completed all degree requirements.

Enrollment Status

Once entered in an undergraduate degree program, students are expected to be registered continuously for at least 1 credit during all fall and spring semesters and to be engaged actively in fulfilling the requirements for their degree.

- In the fall and spring semesters, students must register for 1 or more credits to maintain enrollment status.
- During the summer session, students do not have to be enrolled unless they are graduating during the summer; in this case, they should register for Continuous Enrollment.
- Some additional activities, such as study abroad programs, qualify as continuous enrollment.

Degree students who need to interrupt active pursuit of the degree may petition to take a leave of absence for a period of no more than one calendar year during their program. Students who discontinue active enrollment in degree studies without being granted a leave of absence, or students who are granted a leave but do not return to active study at the close of the period of approved absence, are no longer in status and must apply for readmission and be subject to the regulations and program requirements then in effect. Readmission to any program is a competitive process and not guaranteed.

Advising

Students are responsible for building a support system to help ensure their own academic success. Each student is assigned a faculty advisor who may assist not only with academic counseling, but also in areas ranging from understanding University requirements to finding campus resources to help individual students connect with the GW the community. Other members of the faculty, professional advisors, tutors, and/or counselors also should be part of the support system. The University Career Center and The Writing Center offer walk-in and by-appointment assistance. Personal counseling is available through the office of the Dean of Student Affairs, Mental Health Services, Disability Support Services, Multicultural Student Services Center, and International Services Office.

Timely Progress Toward the Degree

Students who fail to make adequate and timely progress toward the degree, through repeated leaves of absence or repeated failure to complete an appropriate number of credits per semester, may be dismissed from the University (see Right to Dismiss Students under University Regulations). Students dismissed on these grounds may apply for readmission after supplying sufficient evidence of academic promise. Additionally, students must attain grades no lower than C– in required major field courses. If a student receives a grade of D +, D, or D– in a course specifically required for the major, the student will be required to repeat the course until a satisfactory grade (C– or better) is earned. Once the student has completed the course with a satisfactory grade, credits earned the first time the course was taken will count toward the minimum number of credits required for the major. Credits earned toward the repetition do not count toward the degree.

Incompletes

Conditions under which the symbol *I*, Incomplete, may be assigned are described under University Regulations (http://bulletin.gwu.edu/university-regulations). In the Milken Institute SPH, the conditions for granting a notation of *I* are documented with a written contract (http://publichealth.gwu.edu/pdf/gwsph_incomplete_contract.pdf) between the faculty member and the student.

The Incomplete work must be completed as specified in the contract but no later than one calendar year from the end of the semester in which the course was taken. In cases of well-documented extenuating circumstances, an instructor and a student may jointly petition the dean for additional time in which to complete the work of the course. Such petitions should be submitted within one year of the assignment of the symbol *I*.

Pass/No Pass Option

Junior or senior students in good standing may, with the approval of the instructor and program director, take one course each semester for a grade of *P*, Pass, or *NP*, No Pass. No student will be allowed to take more than a total of four courses on a P/NP basis under this regulation. Students may, however, also receive grades of P/NP in courses that are graded only on that basis. Courses required for the University General Education Requirement or in the student's major or minor field (including those courses required for the major that are offered by other departments) may not be taken on the P/NP basis. A transfer student may not choose this option until the second semester of enrollment in the University. Under no circumstances may a student change from P/NP status to graded status, or vice versa, after the end of the eighth week of class. The Milken Institute SPH does not allow LSPA courses to be counted toward the degree.

Academic Workload

To encourage academic performance of high quality, the Milken Institute SPH places limits on the number of credits a student may take. After freshman year, a full-time student who is not on probation may take a course load of up to 19 credits. The 18th and all subsequent credits require additional tuition charges. A full-time student who, during the immediately preceding semester, has received no grades below B− and has earned grades of A or A− in three courses totaling at least 9 credits may take up to 21 credits. Students may not register for more than 21 credits without the approval of the dean.

Applying for Readmission to a Program

Undergraduate students who previously were registered in a SPH program but who did not register during the immediately preceding semester (summer sessions excluded) are out of status and must apply for readmission by completing an admissions petition. Filing the petition does not guarantee that the student will be readmitted. Milken Institute SPH departments are responsible for readmitting students and can do so only if the student is not in violation of other Milken Institute SPH or University policies. Students who have attended one or more academic institutions while absent from this University must have complete, official transcripts from each institution sent directly to the Milken Institute SPH Office of Admissions. Applicants for readmission are considered on the basis of policies and program requirements currently in effect and if readmitted, will be subject to the policies and program requirements then in effect.

International Students--Less than Full-Time Status

International students on an F-1 or J-1 Visa are responsible for enrolling as a full-time student (minimum 12 credits for undergraduate students) for spring and fall semesters according to U.S. Immigration and Naturalization rules governing registration requirements. In certain circumstances, a reduced course load may be allowed; students should contact the International Services Office (http://internationalservices.gwu.edu) to request approval for this exception.

Special Honors

In addition to meeting the general requirements stated under University Regulations, a candidate for graduation with Special Honors in exercise science must have a minimum GPA of 3.5 in required courses in the major and a minimum overall GPA of 3.25. The candidate must submit an honors paper; the student will be recommended for graduation with special honors only if a committee of at least two faculty members approves the paper.

Independent Study Course Requirements

Independent study is designed to provide the student with an opportunity to gain or enhance public health knowledge and to explore an area of interest related to public health research or the delivery and/or administration of health services. Forms and instructions for registration are available online (http://publichealth.gwu.edu/academics/forms). Independent study projects may not be used as a substitute for an available required or elective course and may not cover substantially the same subject matter that is available in a required or elective course.

Preparation for Medical School

A student who plans to apply to medical school fulfills the general requirements of their program. The health professions advisors in the Columbian College Office of Undergraduate Studies provide advice about academic preparation for medical school. For admission to most medical schools, the student must earn a bachelor's degree that includes the following course work: Biology—8 credits of introductory biology, including laboratory. Students who receive credit for AP biology must complete 8 credits of upper-level biology course work, including laboratory; chemistry—8 credits of general inorganic chemistry, including laboratory; organic Chemistry—8 credits, including laboratory; biochemistry—3

credits; physics—8 credits, including laboratory; and English—6 credits in introductory English composition courses (fulfilled by the University Writing Program). Many medical schools have additional entrance requirements, which may include courses in biochemistry, genetics, and mathematics; even when such courses are not required, they are strongly recommended. With the exception of the specified requirements, applicants are urged to follow their personal interests in developing their course of study.

Preparation for Law School

A broad liberal arts education is the best undergraduate preparation for law school. Students are encouraged to use elective credit to increase the breadth of their program of study. Advice about academic preparation for law school is provided by the pre-law advisor in the Columbian College Office of Undergraduate Studies (http://columbian.gwu.edu/undergraduate/advising).

Other Regulations

Other regulations applicable to undergraduate students of the University can be found under University Regulations (http://bulletin.gwu.edu/university-regulations).

Graduate Regulations

The Milken Institute SPH provides an online Graduate Student Handbook (http://publichealth.gwu.edu/pdf/Handbook.pdf), which contains additional updated information on policies, regulations, and other matters of concern to enrolled or admitted students. It is the responsibility of the student to be aware of the information contained in both this Bulletin and the Handbook. Students should also consult departmental handbooks and guidelines.

Enrollment Status

Once entered in a graduate degree program, students are expected to be registered continuously for at least one credit during all fall and spring semesters and engaged actively in fulfilling the requirements for the degree.

- In the fall and spring semester, students must register for 1 or more credits to maintain enrollment status.
- During the summer session, students do not have to be enrolled unless they are graduating during the summer; in this case, they should register for Continuous Enrollment.
- Some additional activities, such as Master's International, qualify as continuous enrollment.

Degree students who need to interrupt active pursuit of the degree may petition to take a Leave of Absence for a period of no more than one calendar year during the their program. Students who discontinue active enrollment in degree studies without being granted a leave of absence, or students who granted a leave but does not return to active study at the close of the period of approved absence, are no longer in status and must apply for readmission and be subject to the regulations and program requirements then in effect. Readmission to any program is a competitive process and not guaranteed.

Advising

Students are responsible for building a support system to help ensure their own academic success. Each student is assigned a faculty advisor who may assist not only with academic counseling, but also in areas ranging from understanding University requirements to finding campus resources to help individual students connect with the GW the community. Other members of the faculty, professional advisors, tutors, and/or counselors also should be part of the support system. The University Career Center (http://publichealth.gwu.edu/services/career-center) and Writing Center (http://www.gwu.edu/%7Egwriter) offer walk-in and by-appointment assistance. Personal counseling is available through the office of the Dean of Student Affairs (http://students.gwu.edu), Mental Health Services (http://counselingcenter.gwu.edu), Disability Support Services (http://gwired.gwu.edu/dss), the Multicultural Student Services Center (http://gwired.gwu.edu/mssc/?url=mssc), and the International Services Office (http://internationalservices.gwu.edu).

Academic Standing

Graduate students who are not suspended, on academic probation, or under extended provisional admission status are considered to be in good standing. Maintenance of a minimum GPA of 3.0 is required for the degree. All courses taken for graduate credit after matriculation as a degree candidate—including those the Milken Institute SPH transferred in from non-degree status, but excluding those audited or taken for the grade of *CR/NC*—will be used to calculate the GPA.

Provisional Admission

Graduate program applicants with credentials that are weaker than expected for graduate study, but who nonetheless show promise of successful graduate work, occasionally are granted provisional admission by the Milken Institute SPH Admissions Committee. While on provisional admission status, students are required to see their advisors each semester prior to registration. Provisionally admitted graduate students must demonstrate their ability to maintain a minimum GPA of 3.0 in the first 9 credits of coursework attempted, and during this time are not allowed to receive an Incomplete or a grade lower than a 3.0; provisionally admitted students who meet these requirements are granted good standing. Provisionally admitted students who do not meet these requirements are subject to suspension.

Semester Warning

Graduate students whose cumulative GPA is below 3.0 after attempting a minimum of 1 credit and a maximum of 8 credits will be issued a warning at the end of the semester and will be required to take corrective measures, such as meeting with their academic advisor to outline steps to raise the GPA.

Probation

Graduate students whose GPA falls below 3.0 at any point after completing 9 credits will be placed on probation. This probation extends through the period in which the student next attempts up to 12 credits of work, including prescribed courses. A student's program may be restricted by the program director if deemed necessary. During this period, the student's performance will be monitored to determine suitability for continued study. A student who fails to raise the cumulative GPA to 3.0 or above during the period of probation is subject to suspension. Incompletes and grades of B- or below are not permitted during the probationary period and are grounds for automatic suspension. A student who is subject to probation for a second time at any point during their degree program may be suspended automatically.

Grade of F

Graduate student who receive a grade of *F* are subject to suspension. If such students wish to remain enrolled, they must present cause, for consideration by the dean and the director of his/her degree program, as to why continued study should be permitted. Once a grade of *F* is earned in a core, required, or elective course, it remains a part of the student's permanent record and is calculated into the GPA. A graduate student who receives the grade of *F* in a core or other required course and is permitted to continue in graduate studies must repeat the course and achieve a minimum grade of 3.0. The repetition does now, however, expunge the grade of F, which remains part of the student's record. If the student receives a grade below 3.0 in the repeated course, he or she will be suspended from the degree program.

Suspension

Graduate student who receive an *F* or do not meet the conditions of probation are subject to suspension. Suspended students may not register for or complete any courses at The George Washington Dean's Office, in consultation with the student's academic advisor, may continue a student on probation (in lieu of suspension) if satisfactory progress is demonstrated during the probationary period, and sufficient evidence of academic promise, by way of a statement of appeal, is offered by the student. A student who is suspended or withdraws under these conditions may apply for readmission after one semester. To be readmitted, the student must submit evidence that suggests the probability of academic success. A student who is readmitted will continue on academic probation and must achieve a minimum GPA of 3.5 in the next 12 credits of graduate study. Should the student fail to achieve this GPA, he or she will be suspended and will not be readmitted.

Timely Progress Toward the Degree

A graduate student who fails to make adequate and timely progress toward the degree, through repeated leaves of absence or repeated failure to complete an appropriate number of credits per semester, may be suspended. Students suspended on these grounds may apply for readmission after supplying sufficient evidence of academic promise.

Summary of Academic Standing Policies for Graduate Students

- Provisional Admission—A student who receives a grade of *I* or of *B-* or lower while on provisional admission status is subject to suspension.
- Semester Warning—A student with a cumulative GPA below 3.0 (with fewer than 9 credits completed) must take corrective action.
- Academic Probation—A student with a cumulative GPA below 3.0 (with 9 or more credits completed) is placed on academic probation. A student on academic probation who receives an unacceptable grade (*B-, C, F, I, Z*) or fails to raise the cumulative GPA to 3.0 within the next 12 credits taken is subject to suspension.
- Grade of F—A student who receives a grade of F is subject to suspension. If a student wishes to remain enrolled he or she must present cause as to why continued study should be permitted. If permitted to continue in graduate studies, the student must repeat the course (if core or required) and achieve at least the grade of B.
- Suspension—A student who is suspended may not register for or complete any courses at GW. A student who is suspended or withdraws under these conditions may apply for readmission after one semester.

Incompletes

Conditions under which the symbol *I*, Incomplete, may be assigned are described under University Regulations (http://bulletin.gwu.edu/university-regulations). In the Milken Institute SPH, the conditions for granting a notation of *I* are documented with a written contract (http://publichealth.gwu.edu/pdf/gwsph_incomplete_contract.pdf) between the faculty member and the student.

Changing an Incomplete (I)

Conditions under which the symbol *I*, Incomplete, may be changed to a letter grade are described under University Regulations (http://bulletin.gwu.edu/university-regulations). In the Milken Institute SPH, incomplete work must be completed as specified in the contract but no later than six months from the end of the semester in which the course was taken. In cases of well-documented extenuating circumstances, an instructor and a student may jointly petition the dean for additional time in which to complete the work of the course. Such petitions should be submitted within six months of the assignment of the symbol *I*.

In Progress (IP)

The notation In Progress (*IPG*) is assigned for all thesis, residency, advanced reading, independent study, culminating experience, practicum, and dissertation research courses until the coursework is completed. Upon the satisfactory completion, the grade replaces the notation *IPG* on the

transcript. An *IPG* may not be assigned to regular, semester-length courses.

Applying for Readmission to a Program

Students Who Have Taken Classes Within the Past Year:
Milken Institute SPH graduate degree or certificate students who were previously registered in the university but did not register during the immediate preceding semester/module (excluding summer sessions) are out of status and must apply for readmission by completing an admissions petition. (http://publichealth.gwu.edu/academics/forms)

Students Who Have Not Taken Classes in More Than a Year:
Students who have not taken any courses at GW in more than one year must apply for readmission using SOPHAS Express (https://sophasexpress.liaisoncas.com).

Students Who Have Been Suspended:
Students who were suspended from the Milken Institute SPH must apply for readmission through SOPHAS Express (https://sophasexpress.liaisoncas.com). Students may only apply for readmission after at least one academic year has passed. Students should consult with the advisor concerning readmission requirements.

International Students---Less than Full-Time Status

International students on an F-1 or J-1 Visa are responsible for enrolling as full-time student (minimum 9 credits for graduate students) for the spring and fall semesters according to the U.S. Immigration and Naturalization rules governing registration requirements. Under certain circumstances, a reduced course load may be allowed. To request approval for a course reduction, students should submit the F-1/J-1 Request for Reduced Course Load Form (http://bulletin.gwu.edu/public-health/%20http://gwired.gwu.edu/iso/CurrentStudents/formscopy). More information is available by calling the ISO at (202) 994-4477.

Independent Study Course Requirements

Independent study is designed to provide students with an opportunity to gain or enhance public health knowledge and to explore an area of interest related to public health research or the delivery and/or administration of health services. Instructions and forms required for registration (http://publichealth.gwu.edu/academics/forms) are available Independent study projects may not be used as a substitute for an available required or elective course and may not cover substantially the same subject matter that is available in a required or elective course.

Graduation

While degrees are awarded at the end of each semester, formal commencement ceremonies occur only in May. Students are eligible to graduate only after they have completed all degree requirements and have no financial obligations to the University. Students may include degree designation (B.S., M.S., M.P.H., M.H.A., Dr.PH., or Ph.D.) after their name only when they have completed all degree requirements.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science with a major in exercise science (p. 885)
- Bachelor of Science with a major in exercise science, pre-athletic training/sports medicine concentration (p. 887)
- Bachelor of Science with a major in exercise science, pre-medical professional concentration (p. 890)
- Bachelor of Science with a major in exercise science, pre-physical therapy concentration (p. 892)
- Bachelor of Science with a major in public health (p. 895)

Combined program

- Dual Bachelor of Science in public health and Master of Public Health

Minors

- Minor in exercise science (p. 897)
- Minor in nutrition
- Minor in public health

GRADUATE

Master of Public Health

- Master of Public Health in the field of biostatistics (p. 925)
- Master of Public Health in the field of community oriented primary care (p. 1003)
- Master of Public Health in the field of environmental health science and policy (p. 912)
- Master of Public Health in the field of epidemiology
- Master of Public Health in the field of global environmental health (p. 916)
- Master of Public Health in the field of global health communication (p. 955)
- Master of Public Health in the field of global health program design, monitoring, and evaluation (p. 962)
- Master of Public Health in the field of global health policy (p. 960)
- Master of Public Health in the field of global health epidemiology and disease control (p. 958)
- Master of Public Health in the field of health policy (p. 972)
- Master of Public Health in the field of health promotion (p. 1007)
- Master of Public Health in the field of maternal and child health (p. 1009)
- Master of Public Health in the field of physical activity in public health (p. 941)

- Master of Public Health in the field of public health communication and marketing (p. 1011)
- Master of Public Health in the field of public health nutrition (p. 944)
- Master of Public Health: MPH@GW (p. 900)

Master of Science

- Master of Science in the field of biostatistics (p. 930)
- Master of Science in the field of epidemiology (p. 931)
- Master of Science in the field of exercise science with a concentration in strength and conditioning (p. 947)
- Master of Science in the field of health policy (p. 978)
- Master of Science in the field of public health microbiology and emerging infectious diseases (p. 933)
- Master of Science in the field of management of health informatics and analytics (p. 979)

Master of Health Administration

- Master of Health Administration (p. 968)
- Master of Health Administration – online/executive program (p. 971)

Specialist program

- Health Services Administration Specialist (p. 979)

Joint/Dual programs

- Doctor of Medicine and Master of Public Health (p. 909)
- Juris Doctor/Master of Laws in the field of law and Master of Public Health (p. 909)
- Master of Arts in the field of international affairs and Master of Public Health (p. 899)
- Master of Health Administration with a certificate in health care corporate compliance (p. 902)
- Master of Public Health in the field of health policy with a certificate in health care corporate compliance (p. 907)
- Master of Science in Health Policy with a certificate in health care corporate compliance (p. 903)
- Master of Science in Health Sciences in the field of physicians assistant and Master of Public Health (p. 903)
- Peace Corp Masters International Program and Master of Public Health

Doctoral programs

- Doctor of Public Health in the field of environmental and occupational health (p. 920)
- Doctor of Public Health in the field of global health (p. 965)
- Doctor of Public Health in the field of health behavior (p. 1013)
- Doctor of Public Health in the field of health policy (p. 981)
- Doctor of Philosophy in the field of biostatistics (p. 935)
- Doctor of Philosophy in the field of epidemiology (p. 937)
- Doctor of Philosophy in the field of public policy and administration (health policy track) (p. 980)
- Doctor of Philosophy in the field of social and behavioral sciences in public health (p. 1014)

CERTIFICATES

- Graduate certificate in health administration generalist (p. 982)
- Graduate certificate in long-term care
- Graduate certificate in (p. 983)health policy
- Graduate certificate in public health (p. 910)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

The letters and and range of numbers below indicate the department in which the course is offered.

PUBH 6000 - 6099: MPH Core & MPH@GW Program-Specific Courses
PUBH 6100 - 6199: Environmental and Occupational Health Courses
PUBH 6200 - 6299: Epidemiology and Biostatistics Courses
PUBH 6300 - 6399: Health Policy Courses
PUBH 6400 - 6499: Global Health Courses
PUBH 6500 - 6599: Prevention and Community Health Courses
PUBH 6600 - 6699: Public Health Nutrition and Miscellaneous Courses
PUBH 8000 - 9000: Doctoral Level Courses
EXSC 6000 - 7000: Exercise Science Courses
HSML 6200 - 6300: Health Services Management and Leadership Courses

- Epidemiology (EPID) (p. 1214)
- Exercise and Nutrition Sciences (EXNS) (p. 1214)
- Health and Wellness (HLWL) (p. 1253)
- Health Services Management and Leadership (HSML) (p. 1250)
- Lifestyle, Sports, and Physical Activity (LSPA) (p. 1328)
- Public Health (PUBH) (p. 1420)

UNDERGRADUATE PROGRAMS

Bachelor's programs

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- Bachelor of Science with a major in public health (p. 895)

Combined program

- Dual Bachelor of Science in public health and Master of Public Health

Minors

- Minor in exercise science (p. 897)
- Minor in nutrition
- Minor in public health

BACHELOR OF SCIENCE WITH A MAJOR IN EXERCISE SCIENCE

Program Advisor and Director B. Westerman

The bachelor of science with a major in exercise science degree program prepares individuals for careers in medicine and other health related professions including athletic training/sports medicine, physical therapy, physician's assistant or nursing, exercise physiology and rehabilitation, sport psychology as well as fitness and health promotion.

Students in the exercise science major may select the pre-medical professional concentration (for those planning to enter a medical, physician assistant, or nursing program upon graduation), the pre-physical therapy concentration, or the pre-athletic training/sports medicine concentration. The exercise science major may also be taken without a concentration.

REQUIREMENTS

The following requirements must be fulfilled:

124 credits and maintenance of a minimum grade point average of 2.5 in the exercise science core requirements.

University General Education Requirements*

Code	Title	Credits
Required (26 credits)		
UW 1020	University Writing	
or HONR 1015	Honors Proseminar: UW 1020: Origins and Evolution of Modern Thought	
Two writing-in the disciplines (WID) courses (may also be counted in another category)		
One critical analysis in the humanities course		
One quantitative reasoning course (must be satisfied with STAT 1051, STAT 1053, or STAT 1127 for Exercise Science majors)		
One scientific reasoning course with laboratory experience (must be satisfied with BISC 1111 for Exercise Science majors)		
Two critical analysis in the social sciences courses (must be satisfied with ANTH 1002, ANTH 1003, or ANTH 1004; and COMM 1040, or COMM 1041 for Exercise Science majors)		

*A list of approved courses can be found on the General Education Requirement page (p. 38).

Exercise Science Core Requirements

Code	Title	Credits
Required (40 credits)		
EXNS 1103	Professional Foundations in Exercise Science	
EXNS 1110	Applied Anatomy and Physiology I	
EXNS 1111	Applied Anatomy and Physiology II	
EXNS 2111	Exercise Physiology I	
EXNS 2112	Exercise Physiology II	
EXNS 2113	Kinesiology	
EXNS 2116	Exercise and Health Psychology	
EXNS 2119	Introduction to Nutrition Science	
EXNS 3110	Field Experience- Exercise & Nutrition Sciences	
EXNS 4110	Current Issues in Exercise Science	
PSYC 1001	General Psychology	
PUBH 1101	Introduction to Public Health & Health Svcs	
or PUBH 1102	History of Public Health	
Course Requirements also fulfilling University General Education Requirements (13 credits)		
ANTH 1002	Sociocultural Anthropology	
or ANTH 1003	Archaeology	
or ANTH 1004	Language in Culture and Society	

BISC 1111	Introductory Biology: Cells and Molecules
COMM 1040	Public Communication
or COMM 1041	Interpersonal Communication
STAT 1051	Introduction to Business and Economic Statistics
or STAT 1053	Introduction to Statistics in Social Science
or STAT 1127	Statistics for the Biological Sciences

Concentration Requirements

Code	Title	Credits
Electives (58 credits)		
40 credits of guided electives planned with the advisor		
18 credits of general electives		

Guided Electives

Code	Title	Credits
BIOC 3261	Course BIOC 3261 Not Found	
BIOC 3560	Course BIOC 3560 Not Found	
BISC 1112	Introductory Biology: The Biology of Organisms	
BISC 2202	Cell Biology	
BISC 2207	Genetics	
BISC 2213	Biology of Cancer	
BISC 2214	Developmental Biology	
BISC 2220	Developmental Neurobiology	
BISC 2320	Neural Circuits and Behavior	
BISC 2322	Human Physiology	
BISC 2337	Introductory Microbiology	
or BISC 2337W	Introductory Microbiology	
BISC 2581	Human Gross Anatomy	
BISC 3165	Biochemistry I	
BISC 3166	Biochemistry II	
BISC 3209	Molecular Biology	
BISC 3262	Biochemistry Laboratory	
BISC 3263	Special Topics in Biochemistry	
or BISC 3263W	Course BISC 3263W Not Found	
BISC 3320	Human Neurobiology	
CHEM 1111	General Chemistry I	
CHEM 1112	General Chemistry II	
CHEM 2151	Organic Chemistry I	
CHEM 2153	Organic Chemistry Laboratory I	
CHEM 2152	Organic Chemistry II	
CHEM 2154	Organic Chemistry Laboratory II	
CHEM 3165	Biochemistry I	
CHEM 3262	Biochemistry Laboratory	
CHEM 3166	Biochemistry II	
or CHEM 3166W	Biochemistry II	
EHS 1002	CPR & First Aid	
EHS 1040	Emergncy Medical Tech-Basic	
EHS 1041	EMT - Basic Lab	
EHS 1058	EMT Instructor Development	
EHS 2108	Emergncy Med Clinical Scribe	
EXNS 1112	Current Issues in Coaching	
EXNS 1114	Community Nutrition	
EXNS 1117	Principles of Coaching (2 different courses)	
EXNS 1118	Sport and Nutrition	
EXNS 1119W	Children and Sport	
EXNS 1199	Topics in Exercise and Nutrition Sciences	
EXNS 2117	Sport Psychology	
or EXNS 2117W	Sport Psychology	
EXNS 2110	Injury Prevention and Control	
EXNS 2121	Orthopaedic Taping and Bracing	
EXNS 2122	Food Systems in Public Health	
EXNS 3101	Independent Study	
EXNS 3102	Applied Sport Psychology	

EXNS 3117	Injury Assessment
EXNS 3118	Therapeutic Modalities in Sports Medicine
EXNS 3119	Therapeutic Exercise in Sports Medicine
EXNS 3121	Medical Issues in Sports Medicine
EXNS 3123W	Psychology of Injury and Rehabilitation
HLWL 1101	Special Topics
HLWL 1102	Stress Management
HLWL 1103	Issues in Men's Health
HLWL 1104	Outdoor and Environmental Education
HLWL 1105	Yoga & the Meaning of Life
HLWL 1106	Drug Awareness
HLWL 1108	Weight and Society
or HLWL 1108W	Weight and Society
HLWL 1109	Human Sexuality
HLWL 1110	Issues in Alternative Medicine
HLWL 1112	Issues in Women's Health
HLWL 1114	Personal Health and Wellness
HLWL 1117	Functional Fitness
HSCI 2112	Writing in the Health Sciences
HSCI 2102	Pathophysiology
PHYS 1011	General Physics I
PHYS 1012	General Physics II
PSYC 2011	Abnormal Psychology
or PSYC 2011W	Abnormal Psychology
PSYC 2013	Developmental Psychology
PSYC 2014	Cognitive Psychology
PSYC 2015	Biological Psychology
PUBH 1101	Introduction to Public Health & Health Svcs
PUBH 1102	History of Public Health
PUBH 2110	Public Health Biology
PUBH 2113	Impact of Culture upon Health
PUBH 2117	Service Learning in Public Health
PUBH 3137	Global Public Health Nutrition
PUBH 3151	Current Issues in Bioethics

Note: LSPA courses do not count towards the academic requirements for the Bachelor of Science with a major in exercise science.

BACHELOR OF SCIENCE WITH A MAJOR IN EXERCISE SCIENCE, PRE-ATHLETIC TRAINING/SPORTS MEDICINE

Program Advisor and Director B. Westerman

The bachelor of science with a major in exercise science degree program prepares individuals for careers in medicine and other health related professions including athletic training/sports medicine, physical therapy, physician's assistant or nursing, exercise physiology and rehabilitation, sport psychology as well as fitness and health promotion.

Students in the exercise science major may select the pre-medical professional concentration (for those planning to enter a medical, physician assistant, or nursing program upon graduation), the pre-physical therapy concentration, or the pre-athletic training/sports medicine concentration. The exercise science major may also be taken without a concentration.

REQUIREMENTS

The following requirements must be fulfilled:

124 credits and maintenance of a minimum grade point average of 2.5 in the exercise science core requirements.

University General Education Requirements*

Code	Title	Credits
Required (26 credits)		
UW 1020	University Writing	
or HONR 1015	Honors Proseminar: UW 1020: Origins and Evolution of Modern Thought	
Two writing-in the disciplines (WID) courses (may also be counted in another category)		
One critical analysis in the humanities course		
One quantitative reasoning course (must be satisfied with STAT 1051, STAT 1053, or STAT 1127 for Exercise Science majors)		

One scientific reasoning course with laboratory experience (must be satisfied with BISC 1111 for Exercise Science majors)	
Two critical analysis in the social sciences courses (must be satisfied with ANTH 1002, ANTH 1003, or ANTH 1004; and COMM 1040, or COMM 1041 for Exercise Science majors)	

*A list of approved courses can be found on the General Education Requirement page (p. 38).

Exercise Science Core Requirements

Code	Title	Credits
Required (40 credits)		
EXNS 1103	Professional Foundations in Exercise Science	
EXNS 1110	Applied Anatomy and Physiology I	
EXNS 1111	Applied Anatomy and Physiology II	
EXNS 2111	Exercise Physiology I	
EXNS 2112	Exercise Physiology II	
EXNS 2113	Kinesiology	
EXNS 2116	Exercise and Health Psychology	
EXNS 2119	Introduction to Nutrition Science	
EXNS 3110	Field Experience- Exercise & Nutrition Sciences	
EXNS 4110	Current Issues in Exercise Science	
PSYC 1001	General Psychology	
PUBH 1101	Introduction to Public Health & Health Svcs	
or PUBH 1102	History of Public Health	
Course Requirements also fulfilling University General Education Requirements (13 credits)		
ANTH 1002	Sociocultural Anthropology	
or ANTH 1003	Archaeology	
or ANTH 1004	Language in Culture and Society	
BISC 1111	Introductory Biology: Cells and Molecules	
COMM 1040	Public Communication	
or COMM 1041	Interpersonal Communication	
STAT 1051	Introduction to Business and Economic Statistics	
or STAT 1053	Introduction to Statistics in Social Science	
or STAT 1127	Statistics for the Biological Sciences	

Pre-athletic Training/Sports Medicine Concentration Requirements

Code	Title	Credits
Required (25 credits)		
EXNS 2110	Injury Prevention and Control	
EXNS 2121	Orthopaedic Taping and Bracing	
EXNS 3117	Injury Assessment	
EXNS 3118	Therapeutic Modalities in Sports Medicine	
EXNS 3119	Therapeutic Exercise in Sports Medicine	
EXNS 3121	Medical Issues in Sports Medicine	
EXNS 3123W	Psychology of Injury and Rehabilitation	
EXNS 3125	Athletic Training Practicum	
Electives (33 credits)		
15 credits of guided electives planned with the advisor		
18 credits of general electives		

Guided Electives

Code	Title	Credits
BISC 1112	Introductory Biology: The Biology of Organisms	
BISC 2202	Cell Biology	
BISC 2207	Genetics	
BISC 2213	Biology of Cancer	
BISC 2214	Developmental Biology	
BISC 2220	Developmental Neurobiology	
BISC 2320	Neural Circuits and Behavior	
BISC 2322	Human Physiology	
BISC 2337	Introductory Microbiology	
or BISC 2337W	Introductory Microbiology	
BISC 2581	Human Gross Anatomy	
BISC 3165	Biochemistry I	

BISC 3166	Biochemistry II
BISC 3209	Molecular Biology
BISC 3262	Biochemistry Laboratory
BISC 3263	Special Topics in Biochemistry
BISC 3320	Human Neurobiology
CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
CHEM 2151	Organic Chemistry I
CHEM 2153	Organic Chemistry Laboratory I
CHEM 2152	Organic Chemistry II
CHEM 2154	Organic Chemistry Laboratory II
CHEM 3165	Biochemistry I
CHEM 3262	Biochemistry Laboratory
CHEM 3166	Biochemistry II
or CHEM 3166W	Biochemistry II
EHS 1002	CPR & First Aid
EHS 1040	Emergncy Medical Tech-Basic
EHS 1041	EMT - Basic Lab
EHS 1058	EMT Instructor Development
EHS 2108	Emergncy Med Clinical Scribe
EXNS 1112	Current Issues in Coaching
EXNS 1114	Community Nutrition
EXNS 1117	Principles of Coaching (2 different courses)
EXNS 1118	Sport and Nutrition
EXNS 1119W	Children and Sport
EXNS 1199	Topics in Exercise and Nutrition Sciences
EXNS 2117	Sport Psychology
or EXNS 2117W	Sport Psychology
EXNS 2110	Injury Prevention and Control
EXNS 2121	Orthopaedic Taping and Bracing
EXNS 2122	Food Systems in Public Health
EXNS 3101	Independent Study
EXNS 3102	Applied Sport Psychology
EXNS 3117	Injury Assessment
EXNS 3118	Therapeutic Modalities in Sports Medicine
EXNS 3119	Therapeutic Exercise in Sports Medicine
EXNS 3121	Medical Issues in Sports Medicine
EXNS 3123W	Psychology of Injury and Rehabilitation
HLWL 1101	Special Topics
HLWL 1102	Stress Management
HLWL 1103	Issues in Men's Health
HLWL 1104	Outdoor and Environmental Education
HLWL 1105	Yoga & the Meaning of Life
HLWL 1106	Drug Awareness
HLWL 1108	Weight and Society
or HLWL 1108W	Weight and Society
HLWL 1109	Human Sexuality
HLWL 1110	Issues in Alternative Medicine
HLWL 1112	Issues in Women's Health
HLWL 1114	Personal Health and Wellness
HLWL 1117	Functional Fitness
HSCI 2112	Writing in the Health Sciences
HSCI 2102	Pathophysiology
PHYS 1011	General Physics I
PHYS 1012	General Physics II
PSYC 2011	Abnormal Psychology
or PSYC 2011W	Abnormal Psychology
PSYC 2013	Developmental Psychology
PSYC 2014	Cognitive Psychology
PSYC 2015	Biological Psychology
PUBH 1101	Introduction to Public Health & Health Svcs
PUBH 1102	History of Public Health

PUBH 2110	Public Health Biology
PUBH 2113	Impact of Culture upon Health
PUBH 2117	Service Learning in Public Health
PUBH 3137	Global Public Health Nutrition
PUBH 3151	Current Issues in Bioethics

Note: LSPA courses do not count towards the academic requirements for the Bachelor of Science with a major in exercise science, pre-athletic training/sports medicine concentration.

BACHELOR OF SCIENCE WITH A MAJOR IN EXERCISE SCIENCE, PRE-MEDICAL PROFESSIONAL CONCENTRATION

Program Advisor and Director B. Westerman

The bachelor of science with a major in exercise science degree program prepares individuals for careers in medicine and other health related professions including athletic training/sports medicine, physical therapy, physician's assistant or nursing, exercise physiology and rehabilitation, sport psychology as well as fitness and health promotion.

Students in the exercise science major may select the pre-medical professional concentration (for those planning to enter a medical, physician assistant, or nursing program upon graduation), the pre-physical therapy concentration, or the pre-athletic training/sports medicine concentration. The exercise science major may also be taken without a concentration.

REQUIREMENTS

The following requirements must be fulfilled:

124 credits and maintenance of a minimum grade point average of 2.5 in the exercise science core requirements.

University General Education Requirements*

Code	Title	Credits
Required (26 credits)		
UW 1020	University Writing	
or HONR 1015	Honors Proseminar: UW 1020: Origins and Evolution of Modern Thought	
Two writing-in the disciplines (WID) courses (may also be counted in another category)		
One critical analysis in the humanities course		
One quantitative reasoning course (must be satisfied with STAT 1051, STAT 1053, or STAT 1127 for Exercise Science majors)		
One scientific reasoning course with laboratory experience (must be satisfied with BISC 1111 for Exercise Science majors)		
Two critical analysis in the social sciences courses (must be satisfied with ANTH 1002, ANTH 1003, or ANTH 1004; and COMM 1040, or COMM 1041 for Exercise Science majors)		

*A list of approved courses can be found on the General Education Requirement page (p. 38).

Exercise Science Core Requirements

Code	Title	Credits
Required (40 credits)		
EXNS 1103	Professional Foundations in Exercise Science	
EXNS 1110	Applied Anatomy and Physiology I	
EXNS 1111	Applied Anatomy and Physiology II	
EXNS 2111	Exercise Physiology I	
EXNS 2112	Exercise Physiology II	
EXNS 2113	Kinesiology	
EXNS 2116	Exercise and Health Psychology	
EXNS 2119	Introduction to Nutrition Science	
EXNS 3110	Field Experience- Exercise & Nutrition Sciences	
EXNS 4110	Current Issues in Exercise Science	
PSYC 1001	General Psychology	
PUBH 1101	Introduction to Public Health & Health Svcs	
or PUBH 1102	History of Public Health	
Course Requirements also fulfilling University General Education Requirements (13 credits)		
ANTH 1002	Sociocultural Anthropology	
or ANTH 1003	Archaeology	
or ANTH 1004	Language in Culture and Society	
BISC 1111	Introductory Biology: Cells and Molecules	
COMM 1040	Public Communication	

or COMM 1041	Interpersonal Communication
STAT 1051	Introduction to Business and Economic Statistics
or STAT 1053	Introduction to Statistics in Social Science
or STAT 1127	Statistics for the Biological Sciences

Pre-medical Professional Concentration Requirements

Code	Title	Credits
Required (31 credits)		
BISC 1112	Introductory Biology: The Biology of Organisms	
CHEM 1111	General Chemistry I	
CHEM 1112	General Chemistry II	
CHEM 2151	Organic Chemistry I	
CHEM 2152	Organic Chemistry II	
CHEM 2153	Organic Chemistry Laboratory I	
CHEM 2154	Organic Chemistry Laboratory II	
MATH 1220	Calculus with Precalculus I (or higher)	
PHYS 1011	General Physics I	
PHYS 1012	General Physics II	
Electives (27 credits)		
9 credits of guided electives planned with the advisor		
18 credits of general electives		

Guided Electives

Code	Title	Credits
BIOC 3261	Course BIOC 3261 Not Found	
BIOC 3560	Course BIOC 3560 Not Found	
BISC 1112	Introductory Biology: The Biology of Organisms	
BISC 2202	Cell Biology	
BISC 2207	Genetics	
BISC 2213	Biology of Cancer	
BISC 2214	Developmental Biology	
BISC 2220	Developmental Neurobiology	
BISC 2320	Neural Circuits and Behavior	
BISC 2322	Human Physiology	
BISC 2337	Introductory Microbiology	
or BISC 2337W	Introductory Microbiology	
BISC 2581	Human Gross Anatomy	
BISC 3165	Biochemistry I	
BISC 3166	Biochemistry II	
BISC 3209	Molecular Biology	
BISC 3262	Biochemistry Laboratory	
BISC 3263	Special Topics in Biochemistry	
or BISC 3263W	Course BISC 3263W Not Found	
BISC 3320	Human Neurobiology	
CHEM 1111	General Chemistry I	
CHEM 1112	General Chemistry II	
CHEM 2151	Organic Chemistry I	
CHEM 2153	Organic Chemistry Laboratory I	
CHEM 2152	Organic Chemistry II	
CHEM 2154	Organic Chemistry Laboratory II	
CHEM 3165	Biochemistry I	
CHEM 3262	Biochemistry Laboratory	
CHEM 3166	Biochemistry II	
or CHEM 3166W	Biochemistry II	
EHS 1002	CPR & First Aid	
EHS 1040	Emergncy Medical Tech-Basic	
EHS 1041	EMT - Basic Lab	
EHS 1058	EMT Instructor Development	
EHS 2108	Emergncy Med Clinical Scribe	
EXNS 1112	Current Issues in Coaching	
EXNS 1114	Community Nutrition	
EXNS 1117	Principles of Coaching (2 different courses)	
EXNS 1118	Sport and Nutrition	
EXNS 1119W	Children and Sport	

EXNS 1199	Topics in Exercise and Nutrition Sciences
EXNS 2117	Sport Psychology
or EXNS 2117W	Sport Psychology
EXNS 2110	Injury Prevention and Control
EXNS 2121	Orthopaedic Taping and Bracing
EXNS 2122	Food Systems in Public Health
EXNS 3101	Independent Study
EXNS 3102	Applied Sport Psychology
EXNS 3117	Injury Assessment
EXNS 3118	Therapeutic Modalities in Sports Medicine
EXNS 3119	Therapeutic Exercise in Sports Medicine
EXNS 3121	Medical Issues in Sports Medicine
EXNS 3123W	Psychology of Injury and Rehabilitation
HLWL 1101	Special Topics
HLWL 1102	Stress Management
HLWL 1103	Issues in Men's Health
HLWL 1104	Outdoor and Environmental Education
HLWL 1105	Yoga & the Meaning of Life
HLWL 1106	Drug Awareness
HLWL 1108	Weight and Society
or HLWL 1108W	Weight and Society
HLWL 1109	Human Sexuality
HLWL 1110	Issues in Alternative Medicine
HLWL 1112	Issues in Women's Health
HLWL 1114	Personal Health and Wellness
HLWL 1117	Functional Fitness
HSCI 2112	Writing in the Health Sciences
HSCI 2102	Pathophysiology
PHYS 1011	General Physics I
PHYS 1012	General Physics II
PSYC 2011	Abnormal Psychology
or PSYC 2011W	Abnormal Psychology
PSYC 2013	Developmental Psychology
PSYC 2014	Cognitive Psychology
PSYC 2015	Biological Psychology
PUBH 1101	Introduction to Public Health & Health Svcs
PUBH 1102	History of Public Health
PUBH 2110	Public Health Biology
PUBH 2113	Impact of Culture upon Health
PUBH 2117	Service Learning in Public Health
PUBH 3137	Global Public Health Nutrition
PUBH 3151	Current Issues in Bioethics

Note: LSPA courses do not count towards the academic requirements for the Bachelor of Science with a major in exercise science, pre-medical professional concentration.

BACHELOR OF SCIENCE WITH A MAJOR IN EXERCISE SCIENCE, PRE-PHYSICAL THERAPY CONCENTRATION

Program Advisor and Director B. Westerman

The bachelor of science with a major in exercise science degree program prepares individuals for careers in medicine and other health related professions including athletic training/ sports medicine, physical therapy, physician's assistant or nursing, exercise physiology and rehabilitation, sport psychology as well as fitness and health promotion.

Students in the exercise science major may select the pre-medical professional concentration (for those planning to enter a medical, physician assistant, or nursing program upon graduation), the pre-physical therapy concentration, or the pre-athletic training/sports medicine concentration. The exercise science major may also be taken without a concentration.

REQUIREMENTS

The following requirements must be fulfilled:

124 credits and maintenance of a minimum grade point average of 2.5 in the exercise science core requirements.

University General Education Requirements*

Code	Title	Credits
Required (26 credits)		

UW 1020	University Writing
or HONR 1015	Honors Proseminar: UW 1020: Origins and Evolution of Modern Thought
Two writing-in the disciplines (WID) courses (may also be counted in another category)	
One critical analysis in the humanities course	
One quantitative reasoning course (must be satisfied with STAT 1051, STAT 1053, or STAT 1127 for Exercise Science majors)	
One scientific reasoning course with laboratory experience (must be satisfied with BISC 1111 for Exercise Science majors)	
Two critical analysis in the social sciences courses (must be satisfied with ANTH 1002, ANTH 1003, or ANTH 1004; and COMM 1040, or COMM 1041 for Exercise Science majors)	

*A list of approved courses can be found on the General Education Requirement page (p. 38).

Exercise Science Core Requirements

Code	Title	Credits
Required (40 credits)		
EXNS 1103	Professional Foundations in Exercise Science	
EXNS 1110	Applied Anatomy and Physiology I	
EXNS 1111	Applied Anatomy and Physiology II	
EXNS 2111	Exercise Physiology I	
EXNS 2112	Exercise Physiology II	
EXNS 2113	Kinesiology	
EXNS 2116	Exercise and Health Psychology	
EXNS 2119	Introduction to Nutrition Science	
EXNS 3110	Field Experience- Exercise & Nutrition Sciences	
EXNS 4110	Current Issues in Exercise Science	
PSYC 1001	General Psychology	
PUBH 1101	Introduction to Public Health & Health Svcs	
or PUBH 1102	History of Public Health	
Course Requirements also fulfilling University General Education Requirements (13 credits)		
ANTH 1002	Sociocultural Anthropology	
or ANTH 1003	Archaeology	
or ANTH 1004	Language in Culture and Society	
BISC 1111	Introductory Biology: Cells and Molecules	
COMM 1040	Public Communication	
or COMM 1041	Interpersonal Communication	
STAT 1051	Introduction to Business and Economic Statistics	
or STAT 1053	Introduction to Statistics in Social Science	
or STAT 1127	Statistics for the Biological Sciences	

Pre-physical Therapy Concentration Requirements

Code	Title	Credits
Required (26 credits)		
BISC 1112	Introductory Biology: The Biology of Organisms	
CHEM 1111	General Chemistry I	
CHEM 1112	General Chemistry II	
MATH 1220	Calculus with Precalculus I (or higher)	
PHYS 1011	General Physics I	
PHYS 1012	General Physics II	
PSYC 2011	Abnormal Psychology	
or PSYC 2013	Developmental Psychology	
Electives (32 credits)		
14 credits of guided electives planned with the advisor		
18 credits of general electives		

Guided Electives

Code	Title	Credits
BIOC 3261	Course BIOC 3261 Not Found	
BIOC 3560	Course BIOC 3560 Not Found	
BISC 1112	Introductory Biology: The Biology of Organisms	
BISC 2202	Cell Biology	
BISC 2207	Genetics	

BISC 2213	Biology of Cancer
BISC 2214	Developmental Biology
BISC 2220	Developmental Neurobiology
BISC 2320	Neural Circuits and Behavior
BISC 2322	Human Physiology
BISC 2337	Introductory Microbiology
or BISC 2337W	Introductory Microbiology
BISC 2581	Human Gross Anatomy
BISC 3165	Biochemistry I
BISC 3166	Biochemistry II
BISC 3209	Molecular Biology
BISC 3262	Biochemistry Laboratory
BISC 3263	Special Topics in Biochemistry
or BISC 3263W	Course BISC 3263W Not Found
BISC 3320	Human Neurobiology
CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
CHEM 2151	Organic Chemistry I
CHEM 2153	Organic Chemistry Laboratory I
CHEM 2152	Organic Chemistry II
CHEM 2154	Organic Chemistry Laboratory II
CHEM 3165	Biochemistry I
CHEM 3262	Biochemistry Laboratory
CHEM 3166	Biochemistry II
or CHEM 3166W	Biochemistry II
EHS 1002	CPR & First Aid
EHS 1040	Emergncy Medical Tech-Basic
EHS 1041	EMT - Basic Lab
EHS 1058	EMT Instructor Development
EHS 2108	Emergncy Med Clinical Scribe
EXNS 1112	Current Issues in Coaching
EXNS 1114	Community Nutrition
EXNS 1117	Principles of Coaching (2 different courses)
EXNS 1118	Sport and Nutrition
EXNS 1119W	Children and Sport
EXNS 1199	Topics in Exercise and Nutrition Sciences
EXNS 2117	Sport Psychology
or EXNS 2117W	Sport Psychology
EXNS 2110	Injury Prevention and Control
EXNS 2121	Orthopaedic Taping and Bracing
EXNS 2122	Food Systems in Public Health
EXNS 3101	Independent Study
EXNS 3102	Applied Sport Psychology
EXNS 3117	Injury Assessment
EXNS 3118	Therapeutic Modalities in Sports Medicine
EXNS 3119	Therapeutic Exercise in Sports Medicine
EXNS 3121	Medical Issues in Sports Medicine
EXNS 3123W	Psychology of Injury and Rehabilitation
HLWL 1101	Special Topics
HLWL 1102	Stress Management
HLWL 1103	Issues in Men's Health
HLWL 1104	Outdoor and Environmental Education
HLWL 1105	Yoga & the Meaning of Life
HLWL 1106	Drug Awareness
HLWL 1108	Weight and Society
or HLWL 1108W	Weight and Society
HLWL 1109	Human Sexuality
HLWL 1110	Issues in Alternative Medicine
HLWL 1112	Issues in Women's Health
HLWL 1114	Personal Health and Wellness
HLWL 1117	Functional Fitness
HSCI 2112	Writing in the Health Sciences
HSCI 2102	Pathophysiology

PHYS 1011	General Physics I
PHYS 1012	General Physics II
PSYC 2011	Abnormal Psychology
or PSYC 2011W	Abnormal Psychology
PSYC 2013	Developmental Psychology
PSYC 2014	Cognitive Psychology
PSYC 2015	Biological Psychology
PUBH 1101	Introduction to Public Health & Health Svcs
PUBH 1102	History of Public Health
PUBH 2110	Public Health Biology
PUBH 2113	Impact of Culture upon Health
PUBH 2117	Service Learning in Public Health
PUBH 3137	Global Public Health Nutrition
PUBH 3151	Current Issues in Bioethics

Note: LSPA courses do not count towards the academic requirements for the Bachelor of Science with a major in exercise science, pre-physical therapy concentration.

BACHELOR OF SCIENCE WITH A MAJOR IN PUBLIC HEALTH

Program Director S. Wilensky

The bachelor of science with a major in public health degree program is intended to convey to students technical detail and analytic skills with a liberal arts philosophical base. It also has the educational objectives of nurturing critical thinking, analysis, and synthesis of information, and recognizing the historical and societal associations of current trends in public health and health care delivery. While nurturing students' capacity to think analytically and creatively, the program strives to deepen students' commitment to improving the public's health.

Students may apply to enter the 120-credit public health major during the semester prior to completing 60 credits. Applicants should have a minimum grade point average of 3.0.

Visit the program website (http://publichealth.gwu.edu/programs/public-health-bs) for additional information.

COMPETENCIES

The following competencies are designed to be achieved by all public health majors through the indicated courses:

Upon completion of the bachelor of science with a major in public health, students will be able to:

Assess the impact of historical, cultural, political, environmental, behavioral, and socioeconomic factors on population/community health and health status

Relevant courses:

PUBH 1101	Introduction to Public Health & Health Svcs
PUBH 1102	History of Public Health
PUBH 2110	Public Health Biology
PUBH 2112	Principles of Health Education and Health Promotion
PUBH 3132	Health and Environment
PUBH 3133	Global Health and Development
PUBH 3135W	Health Policy
PUBH 4140W	Senior Seminar

Describe the organization, financing, and delivery of health services and public health systems

Relevant courses:

PUBH 1101	Introduction to Public Health & Health Svcs
PUBH 3130	Health Services Management and Economics
PUBH 3133	Global Health and Development
PUBH 3135W	Health Policy

Describe the underlying biological factors relating to prominent public health and health care issues and discuss how these factors inform interventions to improve individual and population health

Relevant courses:

PUBH 1101	Introduction to Public Health & Health Svcs
PUBH 2112	Principles of Health Education and Health Promotion
PUBH 2110	Public Health Biology
PUBH 3131	Epidemiology: Measuring Health and Disease
PUBH 3132	Health and Environment
PUBH 3133	Global Health and Development

PUBH 4140W	Senior Seminar

Critically review multiple types of research, develop an understanding of data and research, and develop and evaluate public health interventions based on available evidence

Relevant courses:

PUBH 1101	Introduction to Public Health & Health Svcs
PUBH 2110	Public Health Biology
PUBH 3131	Epidemiology: Measuring Health and Disease
PUBH 3132	Health and Environment
PUBH 3133	Global Health and Development
PUBH 4140W	Senior Seminar

Evaluate policy, behavioral, environmental, and systems options for addressing current public health and health care concerns

Relevant courses:

PUBH 1101	Introduction to Public Health & Health Svcs
PUBH 2110	Public Health Biology
PUBH 2112	Principles of Health Education and Health Promotion
PUBH 3130	Health Services Management and Economics
PUBH 3132	Health and Environment
PUBH 3133	Global Health and Development
PUBH 3135W	Health Policy
PUBH 4140W	Senior Seminar

Communicate public health concepts and analysis clearly and persuasively. (all courses relevant).
Use an interdisciplinary integrative approach to address public-health research issues

Relevant courses:

PUBH 1101	Introduction to Public Health & Health Svcs
PUBH 2110	Public Health Biology
PUBH 3131	Epidemiology: Measuring Health and Disease
PUBH 3132	Health and Environment
PUBH 3133	Global Health and Development
PUBH 3135W	Health Policy
PUBH 4140W	Senior Seminar

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
Prerequisites		
One of the following as a prerequisite to PUBH 2110:		
BISC 1005	The Biology of Nutrition and Health	
BISC 1111	Introductory Biology: Cells and Molecules	
or equivalent course with approval from the PUBH 2110 instructor		
As a prerequisite to PUBH 3131:		
One semester of statistics (STAT 1127 preferred)		
As a prerequisite to PUBH 3130:		
ECON 1011	Principles of Economics I	
or equivalent course with approval from the PUBH 3130 instructor.		

Code	Title	Credits
Required for the major		
30 credits in public health core courses		
PUBH 1101	Introduction to Public Health & Health Svcs	
PUBH 1102	History of Public Health	
PUBH 2110	Public Health Biology	
PUBH 2112	Principles of Health Education and Health Promotion	
PUBH 3130	Health Services Management and Economics	
PUBH 3131	Epidemiology: Measuring Health and Disease	
PUBH 3132	Health and Environment	
PUBH 3133	Global Health & Development	
PUBH 3135W	Health Policy	

PUBH 4140W	Senior Seminar
12 credits in approved elective courses from the following. No more than 9 credits may be taken through study abroad programs and/or non-GW domestic courses.	
HLWL 1106	Drug Awareness
HLWL 1109	Human Sexuality
HLWL 1110	Issues in Alternative Medicine
EXNS 1114	Community Nutrition
EXNS 2119	Introduction to Nutrition Science
EXNS 2122	Food Systems in Public Health
ANTH 3504	Illness, Healing, and Culture
HIST 3363	Race, Medicine & Public Health
ANTH 3513	Anthropology of Human Rights
ANTH 6302	Issues in Development
BIOC 3560	Diet, Health, and Longevity
GEOG 2127	Population Geography
GEOG 2137	Environmental Hazards
HSCI 2101	Psychosocial Aspects of Health and Illness
PUBH 2113	Impact of Culture upon Health
PUBH 2114	Environment, Health, and Development
PUBH 2115	Health, Human Rights, and Displaced Persons
PUBH 2116	Global Delivery of Health Systems
PUBH 2117	Service Learning in Public Health
PUBH 3136	Health Law
PUBH 3137	Global Public Health Nutrition
PUBH 3150	Sustainable Energy & Env Hlth
PUBH 3151	Current Issues in Bioethics
PUBH 3199	Topics in Public Health

Students must take all required courses at GW unless an exception is granted by the SPH Director of Undergraduate Programs. Permission will be granted only if there are strong extenuating circumstances that call for such an exception.

Students must comply with policies and procedures as outlined in University and SPH regulations. Students should pay particular attention to SPH requirements for completing human research training, completing 8 hours of professional enhancement activities, and passing the academic integrity quiz.

COMBINED BACHELOR OF SCIENCE IN PUBLIC HEALTH AND MASTER OF PUBLIC HEALTH

Program Director S. Wilensky
Program Advisor M. Wilson

The Milken Institute School of Public Health (SPH) accepts a small number of outstanding students who demonstrate academic excellence and a strong commitment to public health into its dual bachelor of science in public health/master of public health (B.S./M.P.H.) degree program each year. The program is designed to help students become public health leaders who are committed to lifelong learning and improving the health and well-being of local, national, and international communities.

The B.S./M.P.H. program allows students to take a specified number of graduate credits as part of their undergraduate degree, thereby decreasing the number of credits normally required for the master's degree. The program is appropriate for pre-professional students who are interested in public health issues. Interested students may apply to any of the M.P.H. programs, with the exception of public health management.

Specific master's program admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://publichealth.gwu.edu/programs/public-health-bsmph) for additional information.

MINOR IN EXERCISE SCIENCE

REQUIREMENTS

The following requirements must be fulfilled: 15 credits in required courses and 3-4 credits in elective courses.

Code	Title	Credits
Required		
EXNS 1103	Professional Foundations in Exercise Science	
EXNS 1110	Applied Anatomy and Physiology I	
EXNS 1111	Applied Anatomy and Physiology II	
EXNS 2111	Exercise Physiology I	
Electives		

3-4 credits from the following:	
EXNS 1118	Sport and Nutrition
EXNS 2110	Injury Prevention and Control
EXNS 2112	Exercise Physiology II
EXNS 2113	Kinesiology
EXNS 2116	Exercise and Health Psychology
EXNS 2119	Introduction to Nutrition Science

MINOR IN NUTRITION

REQUIREMENTS

The following requirements must be fulfilled: 15 credits in required courses.

Code	Title	Credits
Required		
EXNS 1114	Community Nutrition	
EXNS 1118	Sport and Nutrition	
EXNS 2119	Introduction to Nutrition Science	
Two of the following:		
SUST 2003	The Sustainable Plate	
BISC 1007	Food, Nutrition, and Service	
GEOG 2133	People, Land, and Food	
HLWL 1116	Lifestyle Nutrition	
HLWL 1108	Weight and Society	

MINOR IN PUBLIC HEALTH

Program Director S. Wilensky

Advisor M. Wilson

The following requirements must be fulfilled: 18 credits, including 9 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
Required		
PUBH 1101	Introduction to Public Health & Health Svcs	
PUBH 3131	Epidemiology: Measuring Health and Disease	
PUBH 3133	Global Health & Development *	
Electives		
9 credits in elective courses.		

Students may fulfill the eletive requirement by taking any PUBH course (excluding PUBH 4140W) or any course from the School of Public Health's approved PUBH elective course list from the bachlor of science in public health program. In addition, students may take up to 3 elective credits from the SPH approved study abroad or non-GW course lists.*

9 credits from the following:	
ANTH 3504	Illness, Healing, and Culture
ANTH 3513	Anthropology of Human Rights
ANTH 6302	Issues in Development
BIOC 3560	Diet, Health, and Longevity
EXNS 1114	Community Nutrition
EXNS 2119	Introduction to Nutrition Science
EXNS 2122	Food Systems in Public Health
GEOG 2127	Population Geography
GEOG 2137	Environmental Hazards
HIST 3363	Race, Medicine & Public Health
HLWL 1106	Drug Awareness
HLWL 1109	Human Sexuality
HLWL 1110	Issues in Alternative Medicine
HSCI 2101	Psychosocial Aspects of Health and Illness
PUBH 2113	Impact of Culture upon Health
PUBH 2114	Environment, Health, and Development
PUBH 2115	Health, Human Rights, and Displaced Persons
PUBH 2116	Global Delivery of Health Systems
PUBH 2117	Service Learning in Public Health
PUBH 3136	Health Law
PUBH 3137	Global Public Health Nutrition
PUBH 3150	Sustainable Energy & Env Hlth

PUBH 3151	Current Issues in Bioethics
PUBH 3199	Topics in Public Health

*Advising documents are maintained by and available from the SPH Undergraduate Program Advisor.

GRADUATE PROGRAMS

Master of Public Health

- Master of Public Health in the field of biostatistics (p. 925)
- Master of Public Health in the field of community oriented primary care (p. 1003)
- Master of Public Health in the field of environmental health science and policy (p. 912)
- Master of Public Health in the field of epidemiology
- Master of Public Health in the field of global environmental health (p. 916)
- Master of Public Health in the field of global health communication (p. 955)
- Master of Public Health in the field of global health program design, monitoring, and evaluation (p. 962)
- Master of Public Health in the field of global health policy (p. 960)
- Master of Public Health in the field of global health epidemiology and disease control (p. 958)
- Master of Public Health in the field of health policy (p. 972)
- Master of Public Health in the field of health promotion (p. 1007)
- Master of Public Health in the field of maternal and child health (p. 1009)
- Master of Public Health in the field of physical activity in public health (p. 941)
- Master of Public Health in the field of public health communication and marketing (p. 1011)
- Master of Public Health in the field of public health nutrition (p. 944)
- Master of Public Health: MPH@GW (p. 900)

Master of Science

- Master of Science in the field of biostatistics (p. 930)
- Master of Science in the field of epidemiology (p. 931)
- Master of Science in the field of exercise science with a concentration in strength and conditioning (p. 947)
- Master of Science in the field of health policy (p. 978)
- Master of Science in the field of public health microbiology and emerging infectious diseases (p. 933)
- Master of Science in the field of management of health informatics and analytics (p. 979)

Master of Health Administration

- Master of Health Administration (p. 968)
- Master of Health Administration – online/executive program (p. 971)

Specialist program

- Health Services Administration Specialist (p. 979)

Joint/Dual programs

- Doctor of Medicine and Master of Public Health (p. 909)
- Juris Doctor/Master of Laws in the field of law and Master of Public Health (p. 909)
- Master of Arts in the field of international affairs and Master of Public Health (p. 899)
- Master of Health Administration with a certificate in health care corporate compliance (p. 902)
- Master of Public Health in the field of health policy with a certificate in health care corporate compliance (p. 907)
- Master of Science in Health Policy with a certificate in health care corporate compliance (p. 903)
- Master of Science in Health Sciences in the field of physicians assistant and Master of Public Health (p. 903)
- Peace Corp Masters International Program and Master of Public Health

Doctoral programs

- Doctor of Public Health in the field of environmental and occupational health (p. 920)
- Doctor of Public Health in the field of global health (p. 965)
- Doctor of Public Health in the field of health behavior (p. 1013)
- Doctor of Public Health in the field of health policy (p. 981)
- Doctor of Philosophy in the field of biostatistics (p. 935)
- Doctor of Philosophy in the field of epidemiology (p. 937)
- Doctor of Philosophy in the field of public policy and administration (health policy track) (p. 980)
- Doctor of Philosophy in the field of social and behavioral sciences in public health (p. 1014)

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS AND MASTER OF PUBLIC HEALTH

SPH *Program Coordinator* E. Uretsky

The Elliott School of International Affairs and Milken Institute School of Public Health collaborate in offering a dual degree program leading to a Master of Public Health (M.P.H.) and the Master of Arts (M.A.) for the following academic programs:

M.A./M.P.H. Area of Combined Study

- Milken Institute School of Public Health
  Master of Public Health
  - Global Health Communication
  - Global Health Program Design, Monitoring and Evaluation
  - Global Health Policy
- Elliott School of International Affairs
  Master of Arts
  - Asian Studies
  - European and Eurasian Studies
  - International Affairs
  - International Development Studies
  - Latin American & Hemispheric Studies

The dual degree requires a total of 67 credits. Students electing Global Health as their Elliott School M.A. major field can use the 12 major field credits (taken in the Department of Global Health) to fulfill both the M.A. and M.P.H. requirements. Six additional credits of course work in the Elliott School may also be applied toward the M.P.H. as electives.

Students applying to the M.A./M.P.H. program must submit application materials to both the Elliott School of International Affairs and the Milken Institute School of Public Health and be accepted by both schools. A full-time student (taking an average of 10 credits per semester) may be able to complete both degrees within three years by attending summer sessions. Students accepted into the dual degree program may complete each degree separately.

Visit the program website (http://publichealth.gwu.edu/programs/joint-mamph) for additional information.

REQUIREMENTS

Curriculum

The requirements for each program are found in the program information on the Milken Institute SPH (http://publichealth.gwu.edu/academics) website and Elliot School of International Affairs (http://elliott.gwu.edu/graduate-programs) website.

Dual Degree Rules and Regulations

Students in the dual degree program must fulfill the requirements of both degrees. Students are expected to work with program directors or advisors in each School to insure that all requirements are completed. Approval by program directors or advisors in both Schools is required for any overlap courses designated as meeting the requirements of both degree programs.

Graduation

Students completing the requirements of one degree program may apply to graduate with that degree prior to completing the second degree. Students may also formally request withdrawal from either program at any time to pursue a single degree in the other program. All work on each degree must be completed within five years from the student's entry into that degree program.

MASTER OF PUBLIC HEALTH: MPH@GW

Program Director M. Turner

Program Description

This distance education track for the master of public health (M.P.H.) degree emphasizes local, national, and global health practice. The program emphasizes interdisciplinary teaching, and focuses on core competencies/skills and uses cases/other materials from both the U.S. and abroad. The pedagogy allows students to tailor their education to community level, national, or global interests in the U.S. and countries around the world, emphasizing interdisciplinary public health competencies, including biostatistics and epidemiology; cultural competency; health communication; leadership; professionalism; planning, implementation and evaluation methods; public health biology; and systems thinking.

The MPH@GW track is taught in 10-week quarters across the calendar year (4 quarters per year).

Mission

Provide a practice-oriented M.P.H. curriculum that enables graduates to be leaders in the design of population and community health programs in the US and globally.

Visit the program website (http://publichealthonline.gwu.edu) for additional information.

COMPETENCIES

Program-Specific Competencies

Upon completion of the program, students should possess the following functional competencies.

- Describe biological mechanisms of major diseases causing death and disability in the US and globally from a public health perspective.

  Relevant course:

PUBH 6001	Biological Concepts in Public Health

- Define communities and identify and assess relevant population health needs.

  Relevant courses:

PUBH 6007	Social and Behavioral Approaches to Public Health

PUBH 6500	Planning and Implementing Health Promotion Programs

- Assess the functions, capacities, management and governance of governmental, international and non-state organizations that comprise health systems. Translate scientific and program evidence to inform the development of public health programs and policies within the context of health systems.

Relevant courses:

PUBH 6006	Management and Policy Approaches to Public Health
PUBH 6442	Comparative Global Health Systems

- Apply public health theory and experiential evidence to develop and manage project, program and institutional strategies to reduce community and individual health risks to mitigate the impact of disease.

Relevant courses:

PUBH 6007	Social and Behavioral Approaches to Public Health
PUBH 6503	Introduction to Public Health Communication and Marketing

- Conduct core program evaluations and complete an assessment of program outcomes, achievements, impacts and shortcomings. Communicate findings to stakeholders.

Relevant courses:

PUBH 6501	Program Evaluation
PUBH 6437	Global Health Program Evaluation

- Apply relevant qualitative and quantitative tools and concepts to inform policy analyses for different audiences and topics.

Relevant courses:

PUBH 6002	Biostatistical Applications for Public Health
PUBH 6003	Principles and Practices of Epidemiology
PUBH 6502	Practical Data Analysis: PCH

- Develop concise written and oral policy analyses for different audiences; identify the key strategies required to protect and advance health.

Relevant course:

PUBH 6006	Management and Policy Approaches to Public Health

- Describe how health systems performance is affected by various approaches to health care organization, health law, health workforce development and health care financing.

Relevant courses:

HSML 6202	Intro/Health Services Delivery
PUBH 6442	Comparative Global Health Systems

- Develop knowledge and skills in fundamentals of environmental health including the connection between population health and exposures to chemical, physical, and biological agents in the environment.

Relevant course:

PUBH 6004	Environmental and Occupational Health in a Sustainable World

- Develop communication campaigns and strategies to disseminate health promotion information through media channels.

Relevant course:

PUBH 6503	Introduction to Public Health Communication and Marketing

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 15 credits in core courses, 16 credits in program-specific courses, 10 credits in elective courses, 2 credits in a practicum, and 2 credits in a culminating experience.

Code	Title	Credits
Required		
Core		
PUBH 6001	Biological Concepts in Public Health	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	

PUBH 6006	Management and Policy Approaches to Public Health
PUBH 6007	Social and Behavioral Approaches to Public Health
Program specific	
PUBH 6050	Introduction to Health Services Delivery
PUBH 6052	Practical Data Management and Analysis for Public Health
PUBH 6054	Community Engagement and Advocacy
PUBH 6437	Case Study Methods for Global Health Evaluation
PUBH 6442	Comparative Global Health Systems
PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6503	Introduction to Public Health Communication and Marketing
Practicum and culminating experience	
PUBH 6014	Practicum (professionals already working in public health may substitute an elective with appropriate approval)
PUBH 6015	Culminating Experience (taken for 1 credit twice)
Electives	
10 credits in any SPH graduate courses	

Visit the MPH@GW website for an updated list of electives.

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits
2. Course requirements: Successful completion of core and program-specific courses
3. Grade point requirement: 3.0 (B average) overall grade point average
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF HEALTH ADMINISTRATION WITH A CERTIFICATE IN HEALTH CARE CORPORATE COMPLIANCE

Program Director J. Thorpe

GW's College of Professional Studies offers a 12-credit graduate certificate program in corporate compliance (https://cps.gwu.edu/healthcare-compliance) that draws from the Milken Institute School of Public Health's Department of Health Policy and a leading health care law firm in Washington, D.C. The program focuses on health care laws and regulations as well as the tools and strategies for creating effective corporate compliance programs.

Students who successfully complete the requirements for the certificate program may apply those credits as electives in the master of heath administration (M.H.A.) degree program**.** All other degree requirements for the M.H.A. (p. 968) must be fulfilled. Visit the program website (p. 968) for additional information.

REQUIREMENTS

Program Requirements

Designed for working professionals, the 12-credit Graduate Certificate in Healthcare Corporate Compliance (GW HCC Program or Program) provides students with a uniquely comprehensive education in healthcare corporate compliance. The Program is designed for current or aspiring corporate compliance officers and other working in compliance-related fields. The course of study, offered in just over seven months, is divided into three segments: Five-day, In-classroom Residency at GW's Graduate Education Center in Alexandria,VA (three credits); Six-month, Online Distance Learning segment (six credits); and Three-day, In-classroom Capstone back in Alexandria, VA (three credits).

The Graduate Certificate in Heathcare Corporate Compliance can be awarded in conjunction with a Master of Heath Administration (MHA)**.** The 12 credits earned through the Graduate Certificate in Healthcare Corporate Compliance may be applied as electives in this program.

All other degree requirements for the MHA Master's program must be fulfilled as noted on the MHA program page (p. 968).

College of Professional Studies

The Graduate Certificate in Healthcare Corporate Compliance is awarded through the GW College of Professional Studies. Visit the CPS website (http://cps.gwu.edu/healthcare-compliance) for more information.

MASTER OF SCIENCE IN HEALTH POLICY WITH A CERTIFICATE IN HEALTHCARE CORPORATE COMPLIANCE

Program Director J. Thorpe

GW's College of Professional Studies offers a 12-credit graduate certificate program in corporate compliance (https://cps.gwu.edu/healthcare-compliance) that draws from the Milken Institute School of Public Health's Department of Health Policy and a leading health care law firm in Washington, D.C. The program focuses on health care laws and regulations as well as the tools and strategies for creating effective corporate compliance programs.

Students who successfully complete the requirements for the certificate program may apply those credits as electives in the master of science (M.S.) in health policy degree program**.** All other degree requirements for the M.S. program (p. 972) must be fulfilled. Visit the program website (http://publichealth.gwu.edu/programs/health-policy-ms) for additional information.

REQUIREMENTS

Program Requirements

Designed for working professionals, the 12-credit Graduate Certificate in Healthcare Corporate Compliance (GW HCC Program or Program) provides students with a uniquely comprehensive education in healthcare corporate compliance. The Program is designed for current or aspiring corporate compliance officers and other working in compliance-related fields. The course of study, offered in just over seven months, is divided into three segments: Five-day, In-classroom Residency at GW's Graduate Education Center in Alexandria,VA (three credits); Six-month, Online Distance Learning segment (six credits); and Three-day, In-classroom Capstone back in Alexandria, VA (three credits).

The Graduate Certificate in Heathcare Corporate Compliance can be awarded in conjunction with a Master of Science in the field of health policy**.** The 12 credits earned through the Graduate Certificate in Healthcare Corporate Compliance may be applied as electives in this program.

All other degree requirements for the Master of Science in the field of health policy program must be fulfilled as noted on the MS in the field of health policy program page (p. 978).

College of Professional Studies

The Graduate Certificate in Healthcare Corporate Compliance is awarded through the GW College of Professional Studies. Visit the CPS website (http://cps.gwu.edu/healthcare-compliance) for more information.

DUAL MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF PHYSICIAN ASSISTANT AND MASTER OF PUBLIC HEALTH

Program Director J. Cawley

Mission Statement

As the U.S. health care system continues to evolve, market forces and changing personnel requirements create new and expanding roles for health care professionals. The joint Physician Assistant–Master of Science in Health Sciences/Master of Public Health P.A.–M.S.H.S./M.P.H. program strives to fill the need for a new type of health care professional: one who has both the depth of medical knowledge and the range of leadership and policy skills to meet the challenges of future practice. Based in both the Milken Institute School of Public Health (SPH) Department of Prevention and Community Health, and the School of Medicine and Health Sciences (SMHS), the P.A.–M.S.H.S./M.P.H. program presents a graduate curriculum that blends two important traditional paradigms of health care—the biomedical and the preventive. Health care professionals in the future U.S. health system must be prepared as competent and caring clinicians, as well as bring a broad view of population health and prevention to their work. Graduates of the GW P.A./M.P.H. program will be leaders in clinical practice in primary care and preventive medicine and will have the preparation to assume high level positions in education, research, and policy.

Goals

The P.A.–M.S.H.S. /M.P.H. provides the opportunity for students to obtain the competencies necessary to succeed in the rapidly evolving American and global health systems.

The major goals of GW's P.A.–M.S.H.S./M.P.H. program are to:

- Recruit diverse and intellectually curious students and develop in them a strong clinical medical and prevention knowledge base necessary to deliver the highest quality patient-centered healthcare in a variety of clinical settings worldwide;
- Educate future health care professionals who are competent clinicians who can bring a population health orientation to their practice setting;
- Develop practitioners for the future who integrate concepts of prevention, community-oriented primary care, and population health;
- Graduate collaborative clinicians who will serve the healthcare needs of a worldwide community with intelligence, compassion, and integrity;
- Foster analytic thinking skills such that graduates will be able to perform a wide range of clinical tasks working with physicians, as well as assessing community health problems and addressing population health needs;

- Nurture a sensitivity and respect for the cultural and personal beliefs of all patients and an understanding of how social, economic, and other system forces can impact health and healthcare and how these impact patient morbidity and mortality;
- Encourage graduates to be responsive to the needs of patients and society and advocate for quality patient care regardless of patient population;
- Graduate practitioners who will have the information technology and research skills necessary to access and interpret the medical literature and support their ongoing professional development; and
- Expect graduates to practice collaboratively, professionally, legally, ethically, and with integrity.

The P.A.–M.S.H.S./M.P.H. program draws from a faculty in both the School of Medicine and Health Sciences and the Milken Institute SPH to provide instruction in a wide range of subjects in medicine, public health, and professional leadership.

The purpose of the P.A.–M.S.H.S./M.P.H. program is to provide future clinicians with a wide range of skills in leadership, policy development, and community and preventive medicine. Students in the program prepare as clinicians fulfilling all of the requirements for national certification as a physician assistant (PA) in the GW Physician Assistant program. In addition, public health course work provides an orientation to population and community health. For example, in the Community Oriented Primary Care (COPC) track, students acquire skills in community health assessment, community based interventions, and the application of COPC principles in community based practice settings. GW's SPH course work in health care administration, management, and health care economics prepares students to be leaders in a wide variety of clinical settings, office practices, outpatient clinics, community-based health centers, and health care institutions. Students are also exposed to the formulation of health policy.

Set in the center of the health policy in the nation, the P.A.–M.S.H.S./M.P.H. program affords students the chance to interact with individuals in both the public and private sector who are involved in policy research, practice, and legislation.

Visit the M.P.H. program website (http://publichealth.gwu.edu/academics/graduate/masters-programs) for additional information.

Visit the P.A. program website (https://www.gwu.edu/graduate-programs/physician-assistant) for additional information.

Admissions Requirements

If you are interested in the joint P.A./M.P.H. program you will be receiving correspondence from both the School of Medicine and Health Sciences (for the P.A.–M.S.H.S.) and the Milken Institute SPH and School of Medicine and Health Services (for the M.P.H.) regarding the completion of your application and admissions decisions. Should you be accepted to one degree program and not the other, you may accept the admissions offer from the program to which you were accepted, because decisions are made separately.

1. Submit the P.A. Application (CASPA and PA Secondary Application) according to the instructions on the website (http://smhs.gwu.edu/pas/program/prospective-students/admissions).
2. You should submit the P.A. Secondary Application within two weeks of submitting the CASPA.
3. October 1 is the deadline for complete applications to include GRE score receipt.

The School of Medicine and Health Services, to save you time and money, will copy your application materials and send them to the Admissions Office of the Milken Institute SPH. Do not complete the SOPHAS application or the SPH secondary application, as this will delay the processing of your application and result in your accruing increased application fees.

COMMUNITY-ORIENTED PRIMARY CARE

The following requirements must be fulfilled: 136 credits, including 100 credits in physician assistant courses, 13 credits in public health core courses, 10 credits in prevention and community health courses, and 13 credits in community oriented primary care track courses.

Physician Assistant Curriculum

Code	Title	Credits
Required		
ANAT 6215	Anatomy for Health Sciences Students	
PA 6101	Clinical Assessment I	
PA 6102	Clinical Assessment II	
PA 6103	Clinical Assessment III	
PA 6104	Integration into Clinical Concepts I	
PA 6105	Integration into Clinical Concepts II	
PA 6106	Integration into Clinical Concepts III	
PA 6109	Foundations of Medicine	
PA 6111	Evidence Based Practice for PA/MPH Students	
PA 6112	Clinical Medicine I	
PA 6113	Clinical Medicine II	
PA 6116	Clinical Skills I	

PA 6117	Clinical Skills II
PA 6119	Health, Justice, and Society II
PA 6120	Human Behavior
PA 6121	Clinical Specialties
PA 6122	Role of PA in American Health Care
PA 6259	Introduction to Clinical Education
PA 6261	Inpatient Med Clinical Practic
PA 6262	Primary Care Clinical Practicum
PA 6263	Surg Inpatient Clinical Practi
PA 6264	Women's Health Clin Pract
PA 6265	Pediatrics Clinical Practicum
PA 6266	Emergency Medicine Clinical Pr
PA 6267	Behav Med Clin Pract
PA 6268	Elective Clinical Practicum I
PA 6300	Introduction to Professional Practice
PHAR 6207	Basic Principles of Pharmacol.
PHAR 6208	Pharm in Dis. Pathophysiology
PHYL 6211	Physiology for Health Sciences Students

Public Health (Community-Oriented Primary Care) Curriculum

Code	Title	Credits
Required		
Public health core		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Prevention and community health		
PUBH 6500	Planning and Implementing Health Promotion Programs	
PUBH 6501	Program Evaluation	
PUBH 6014	Practicum	
PUBH 6015	Culminating Experience	
Community-oriented primary care track		
PUBH 6504	Social and Behavioral Science Research Methods	
PUBH 6510	COPC Principles and Practice	
PUBH 6512	Comm-OrientedPrimryCarePol&Iss	
PUBH 6513	Community Health Management	
PUBH 6516	Community Health InfoResources	
PUBH 6591	P.A./M.P.H. Clinal Leadership Seminar	

HEALTH POLICY

The following requirements must be fulfilled: 138 credits, including 100 credits in physician assistant courses, 13 credits in public health core courses, 22 credits in health policy track courses, and 3 credits in elective courses.

Physician Assistant Curriculum

Code	Title	Credits
ANAT 6215	Anatomy for Health Sciences Students	
PA 6101	Clinical Assessment I	
PA 6102	Clinical Assessment II	
PA 6103	Clinical Assessment III	
PA 6104	Integration into Clinical Concepts I	
PA 6105	Integration into Clinical Concepts II	
PA 6106	Integration into Clinical Concepts III	
PA 6109	Foundations of Medicine	
PA 6112	Clinical Medicine I	
PA 6113	Clinical Medicine II	
PA 6116	Clinical Skills I	
PA 6117	Clinical Skills II	
PA 6119	Health, Justice, and Society II	
PA 6120	Human Behavior	

PA 6121	Clinical Specialties
PA 6122	Role of PA in American Health Care
PA 6259	Introduction to Clinical Education
PA 6261	Inpatient Med Clinical Practic
PA 6262	Primary Care Clinical Practicum
PA 6263	Surg Inpatient Clinical Practi
PA 6264	Women's Health Clin Pract
PA 6265	Pediatrics Clinical Practicum
PA 6266	Emergency Medicine Clinical Pr
PA 6267	Behav Med Clin Pract
PA 6268	Elective Clinical Practicum I
PA 6300	Introduction to Professional Practice
PHAR 6207	Basic Principles of Pharmacol.
PHAR 6208	Pharm in Dis. Pathophysiology
PHYL 6211	Physiology for Health Sciences Students

Public Health (Health Policy) Curriculum

Code	Title	Credits
Required		
Public health core		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Health policy track		
PUBH 6014	Practicum	
PUBH 6015	Culminating Experience	
PUBH 6242	ClinicalEpid&Decision Analysis	
PUBH 6243	Topics:ClinicalEpi&DecAnalysis	
PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care	
PUBH 6310	Statistical Analysis in Health Policy	
PUBH 6315	Intro-Health Policy Analysis	
PUBH 6320	Advanced Health Policy Analysis	
PUBH 6325	Federal Policymaking and Policy Advocacy	
PUBH 6335	Public Health and Law	
PUBH 6591	P.A./M.P.H. Clinal Leadership Seminar	
Electives		
3 credits of GWSPH graduate courses		

EPIDEMIOLOGY

The following requirements must be fulfilled: 138 credits, including 100 credits in physician assistant courses, 13 credits in public health core courses, 18 credits in epidemiology track courses, 4 credits in selective courses, and 3 credits in elective courses.

Physician Assistant Curriculum

Code	Title	Credits
Required		
ANAT 6215	Anatomy for Health Sciences Students	
PA 6101	Clinical Assessment I	
PA 6102	Clinical Assessment II	
PA 6103	Clinical Assessment III	
PA 6104	Integration into Clinical Concepts I	
PA 6105	Integration into Clinical Concepts II	
PA 6106	Integration into Clinical Concepts III	
PA 6109	Foundations of Medicine	
PA 6112	Clinical Medicine I	
PA 6113	Clinical Medicine II	
PA 6116	Clinical Skills I	
PA 6117	Clinical Skills II	
PA 6119	Health, Justice, and Society II	
PA 6120	Human Behavior	
PA 6121	Clinical Specialties	

PA 6122	Role of PA in American Health Care
PA 6259	Introduction to Clinical Education
PA 6261	Inpatient Med Clinical Practic
PA 6262	Primary Care Clinical Practicum
PA 6263	Surg Inpatient Clinical Practi
PA 6264	Women's Health Clin Pract
PA 6265	Pediatrics Clinical Practicum
PA 6266	Emergency Medicine Clinical Pr
PA 6267	Behav Med Clin Pract
PA 6268	Elective Clinical Practicum I
PA 6300	Introduction to Professional Practice
PHAR 6207	Basic Principles of Pharmacol.
PHAR 6208	Pharm in Dis. Pathophysiology
PHYL 6211	Physiology for Health Sciences Students

Public Health (Epidemiology) Curriculum

Code	Title	Credits
Required		
MPH core		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Epidemiology track		
PUBH 6014	Practicum	
PUBH 6015	Culminating Experience	
PUBH 6247	Design of Health Studies	
PUBH 6249	StatPackages/DataMgt&DataAnlys	
PUBH 6252	Advanced Epidemiology Methods	
PUBH 6260	Adv DataAnalysis-Public Health	
PUBH 6261	Epi-Bio Skills Bldg Seminar	
PUBH 6591	P.A./M.P.H. Clinal Leadership Seminar	
Selective		
4 credits from the following:		
PUBH 6242	ClinicalEpid&Decision Analysis	
PUBH 6244	Cancer Epidemiology	
PUBH 6245	InfectiousDisease Epidemiology	
PUBH 6250	Epidemiology of HIV/AIDS	
PUBH 6259	Epid Surveillance/PublicHealth	
Electives		
3 credits of GWSPH graduate courses		

MASTER OF PUBLIC HEALTH IN THE FIELD OF HEALTH POLICY WITH A CERTIFICATE IN CORPORATE COMPLIANCE

Program Director J.Thorpe

Given the dramatic changes in healthcare policy and regulation over the past decade, the position of corporate compliance officer has become increasingly important in the healthcare industry. No other position can have so profound an impact on your healthcare organization's success—or failure. Legislation such as the Health Insurance Portability and Accountability Act (HIPAA) and the federal Anti-Kickback and Stark Laws has created the need for university-based credentials for this increasingly specialized—and increasingly complicated—field.

GW's College of Professional Studies (CPS) offers a one-of-a-kind program providing a comprehensive corporate compliance education. Drawing from both GW's Department of Health Policy in the Milken Institute School of Public Health and a leading healthcare law firm in Washington, DC, the program offers education in healthcare laws and regulations as well as tools and strategies for creating effective corporate compliance programs.

REQUIREMENTS

Program Requirements

Designed for working professionals, the 12-credit Graduate Certificate in Healthcare Corporate Compliance (GW HCC Program or Program) provides students with a uniquely comprehensive education in healthcare corporate compliance. The Program is designed for current or aspiring corporate

compliance officers and other working in compliance-related fields. The course of study, offered in just over seven months, is divided into three segments: Five-day, In-classroom Residency at GW's Graduate Education Center in Alexandria,VA (three credits); Six-month, Online Distance Learning segment (six credits); and Three-day, In-classroom Capstone back in Alexandria, VA (three credits).

The Graduate Certificate in Heathcare Corporate Compliance can be awarded in conjunction with a Master of Public Health in the field of health policy. The 12 credits earned through the Graduate Certificate in Healthcare Corporate Compliance may be applied toward this MPH. 3 credits earned in the Graduate Certificate can be applied to the Program-Specific courses and 9 credits to the electives.

All other degree requirements for the MPH program must be fulfilled as noted on the MPH in the field of health policy program page (p. 972).

College of Professional Studies

The Graduate Certificate in Healthcare Corporate Compliance is awarded through the GW College of Professional Studies. Visit the CPS website (http://cps.gwu.edu/healthcare-compliance) for more information.

PEACE CORP MASTERS INTERNATIONAL PROGRAM AND MASTER OF PUBLIC HEALTH

Program Contacts Milken Institute School of Public Health, Office of Recruitment and Admissions (asksphhs@gwu.edu)

The Milken Institute School of Public Health (Milken Institute SPH) collaborates with the Peace Corps as one of 90 institutions in the United States participating in this prestigious academic partnership. The program is designed to help address the shortage of prepared public health professionals that the organization has identified. Students in the program earn a degree in any one of the Milken Institute SPH's M.P.H. programs, which provides the academic base and professional skills. They then have priority placement for the two-year public health service assignment with the Peace Corps in a developing country, which provides on-the-ground training.

Students in the program complete M.P.H. course work on the GW campus and then enter the Peace Corps and begin their service in the assigned country. As Peace Corps volunteers, M.P.H. students complete three months of intensive language, technical, and cross-cultural training followed by two years of service as public health workers. The Peace Corps experience serves as the practicum required for the M.P.H. degree, and generally provides the basis for the program's required culminating experience. Upon satisfactory completion of the two-year Peace Corps service and completion of the practicum, students return to GW and enroll in the culminating experience. The degree is awarded once all requirements for the M.P.H. have been fulfilled.

REQUIREMENTS

Admissions Requirements

To be eligible for this program, applicants must be accepted by both the Milken Institute School of Public Health and the Peace Corps through separate application processes. Prospective applicants should apply to both programs simultaneously to allow sufficient time for the Peace Corps' medical and suitability clearances to be processed. While it is best to apply simultaneously to both programs, it may be possible to apply and be accepted to the Peace Corps after having begun the M.P.H. degree program. The review of applications is independent and admission to one program does not guarantee admission to the other.

Peace Corps

To join the Peace Corps, applicants must be U.S. citizens, at least 18 years old, and in good physical health. Call or write for additional information regarding eligibility criteria and benefits package (including field practicum tuition waiver, language and cultural training, living/ housing expenses in the field, medical/dental coverage, deferment of student-loan repayment, transportation expenses to and from one's assigned country, vacation time and allowances, financial readjustment allowance, and employment assistance post-service). Master's International students should be willing to serve at any location assigned by the Peace Corps. Visit the Peace Corps website (http://bulletin.gwu.edu/public-health/peace-corps/www.peacecorps.gov) for more information.

Milken Institute School of Public Health

To join the SPH M.P.H. program follow the application process described on the SPH Admissions website (http://publichealth.gwu.edu/admissions/graduate-admissions). Applicants must have a baccalaureate degree and submit all relevant documents by the stated application deadlines. Special M.P.H. program requirements are detailed in the application.

Program Format

1. Apply to the Milken Institute SPH M.P.H. program and the Peace Corps simultaneously, and gain acceptance to both programs.
2. Successfully complete all on-campus course work for the M.P.H. (expect one and one-half to two years of study), with the exception of the practicum and culminating experience.
3. Begin Peace Corps in-service training program.
4. Deploy to service site.
5. Early in the deployment, submit a practicum proposal to the SPH practicum director for approval. (This step may be undertaken earlier in the process);
6. Complete the practicum and maintain communication with the SPH practicum director on at minimum a quarterly basis,

or as directed by the director) while completing the Peace Corps assignment.

7. Complete the Peace Corps assignment and return to GW to complete the culminating experience and graduate.

Visit the Milken Institute School of Public Health website (http://publichealth.gwu.edu/programs/master%E2%80%99s-international-program-peace-corps-mph) for more information.

DOCTOR OF MEDICINE AND MASTER OF PUBLIC HEALTH

Program Director S. Schroth

George Washington University School of Medicine and Health Sciences (SMHS) applicants and students can apply to the Milken Institute School of Public Health to obtain a Master of Public Health (M.P.H.) degree in one of the following programs:

- Biostatistics
- Community Oriented Primary Care
- Environmental Health Science and Policy
- Epidemiology
- Global Environmental Health
- Global Health Communication
- Global Health Policy
- Global Health Program Design, Monitoring and Evaluation
- Global Epidemiology and Disease Control
- Health Policy
- Health Promotion
- Maternal and Child Health
- Physical Activity in Public Health
- Public Health Communication and Marketing
- Public Health Nutrition

REQUIREMENTS

While the MPH degree is 45 credits in length, joint students will enroll in 43 total MPH credits.

- Joint students do not take PUBH 6001 BiologicalConcepts/PublicHlth (2 credits).
- SMHS accepts PUBH 6014 Practicum (2 credits) and PUBH 6015 Culminating Experience (2 credits), upon approval, which may fulfill the special project requirement for certain courses.

Students in the five year joint MD/MPH degree program may begin the MPH portion of the program at any time prior to the beginning of their fourth year in the MD program. All joint students are granted a one year leave of absence from medical school during which between 18 and 27 credits of MPH work are completed. The remaining course work is completed during the summer semesters, coincident with parts of the medical school curriculum, and during the spring semester of the senior year of the MD curriculum when elective credit requirements for the MD degree are waived.

Visit the Milken Institute School of Public Health joint MD/MPH website (http://publichealth.gwu.edu/programs/joint-mdmph) for more information.

JOINT JURIS DOCTOR AND MASTER OF PUBLIC HEALTH

Program Contact J. Teitelbaum

Hirsh Health Law and Policy Program

The Hirsh Health Law and Policy Program of The Milken Institute School of Public Health (SPH) offers unique educational opportunities to law students, practicing lawyers, and health professions students. Endowed by Harold and Jane Hirsh and home to GW's joint degree programs in law and public health, the program is designed to foster an interdisciplinary approach to the study of health policy, health law, public health, and health care. The Hirsh Program's overall goal is to advance a greater understanding regarding how the law influences and shapes all facets of health care and public health, as well as how the changing system affects traditional areas of the law. At the same time, the program seeks to achieve the pragmatic objectives of preparing law degree candidates and practicing lawyers for the broad range of health law-related careers that are available today.

Established in 1997, the Hirsh Program is structured to allow students to take maximum advantage of its location in Washington, DC, the center of the national health policy and law debate. The program is designed to provide a solid grounding in individual and population health, from the health care and public health systems themselves to extensive course work in advanced health policy and law. The program serves juris doctor (J.D.) and master of laws (LL.M.) candidates as well as lawyers pursuing health law careers and all manner of health profession students.

Joint Degree Admissions Information

J.D. students are required to focus their studies exclusively to the first-year curriculum. Applicants to the joint law–public health degree/certificate program may apply for admission to SPH at the same time they apply to GW Law School or after admission to the Law School. J.D. candidates who do not apply concurrently to the Law School and SPH are encouraged to file the M.P.H. or certificate application by the spring semester of their first year of law studies. LL.M. candidates are encouraged to apply to SPH at the time they apply to the Law School or during their first semester on campus.

Applicants to the joint law-public health program must complete the application processes for both the Law School (J.D. or LL.M.) and for the Milken Institute School of Public Health (M.P.H. or certificate). Admission to the joint degree program requires admissions acceptances from both Schools.

However, because admission to each School is separate and distinct, applicants who are accepted by one School but not the other are free to enroll in the School to which they have been accepted.

Applications for both programs are available on the Law School website (http://www.law.gwu.edu/Admissions/Pages/Default.aspx) and SPH website (http://publichealth.gwu.edu/admissions). Whether applying simultaneously to both Schools or as a current GW Law student, applicants must complete the SOPHAS application as indicated at the SPH website (http://publichealth.gwu.edu/admissions/graduate-admissions).

Internship/Research Opportunities

The Hirsh Program offers extensive assistance in arranging internships in congressional offices, federal agencies, and the hundreds of national health organizations located in and throughout the Washington, D.C. metropolitan area. Through its affiliation with the Department of Health Policy, the program also engages in extensive law-related health policy research, offering Hirsh Program students paid and unpaid training opportunities during their period of study. Visit the Department's website (http://www.gwhealthpolicy.org) for a description of the types of research in which it engages.

REQUIREMENTS

M.P.H. Requirements

The course of study for the M.P.H. degree consists of 45 credits in one of several focus areas (http://publichealth.gwu.edu/node/766), including a supervised practicum. Because the Milken Institute SPH accepts 8 Law School credits toward completion of the M.P.H. degree, juris doctor (J.D.) and master of laws (LL.M.) students need only complete 37 credits of coursework through SPH to obtain an M.P.H. degree.

Depending upon the focus area in which a J.D. student chooses to study, the joint degree can be earned, as a general rule, in three-and-a-half or four years of full-time study, including summer enrollment. J.D. candidates selecting joint degree studies in one of the more science-oriented areas, such as epidemiology or biostatistics, should anticipate a four-year course of study. Candidates selecting a less scientific area, such as health policy or health management, can expect to complete their joint degrees in three-and-a-half years. Full-time LL.M./M.P.H. candidates should anticipate completing the joint degree in approximately two years. Part-time J.D. and LL.M. candidates pursuing joint degrees will, of course, have longer courses of study.

Certificate Requirements

The course of study for the graduate certificate consists of 18 credits in one of several focus areas (http://publichealth.gwu.edu/node/768). However, because the Milken Institute SPH accepts 6 Law School credits toward completion of the certificate program, J.D. and LL.M. students need only complete 12 credits of coursework through the SPH to obtain a graduate certificate in public health. Upon an individual's subsequent acceptance to the M.P.H. degree program, credits from the graduate certificate may be transferred to the M.P.H. degree program. Full-time J.D. candidates can complete a graduate certificate during their regular course of study in the Law School. Full-time LL.M./certificate candidates typically complete the program in one-and-a-half years.

GRADUATE CERTIFICATE IN PUBLIC HEALTH

REQUIREMENTS

Advisor J. DeLoia

The following requirements must be fulfilled: 15 credits in required courses.

Code	Title	Credits
Required		
PUBH 6001	Biological Concepts in Public Health	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	

Course work may be completed through residential or distance modalities. Additional certificate information is available on the SPH website (http://sphhs.gwu.edu/programs/public-health-generalist-certificate).

Requirements for the graduate certificate

1. Graduate credit requirement: 15 graduate credits
2. The Program Director/Advisor must pre-approve all course selections and course sequencing by developing a program of study prior to the student's initial registration. Graduate certificate students meet with their advisor each semester before registration. All changes in this program of study must be pre-approved by the Program Director/Advisor.
3. Grade point requirement: A 3.0 (*B*) overall grade point average or better.

4. Time limit requirement: The certificate must be completed within 2 years.

ENVIRONMENTAL AND OCCUPATIONAL HEALTH

The Department of Environmental and Occupational Health (EOH) works to further the student's understanding of how natural and human-made environments impact human health. The department offers public health programs that challenge students to explore both the underlying science and policy remedies for topics including sustainable cities and food systems, climate change mitigation, workplace safety, and risk management.

GRADUATE

Master's programs

- Master of Public Health in environmental health science and policy (p. 912)
- Master of Public Health in global environmental health (p. 916)

Doctoral program

- Doctor of Public Health in environmental and occupational health (p. 920)

FACULTY

Professors G. Gray, L. Goldman, D. Michaels (*Research*), M. J. Perry (*Chair*), L. B. Price

Associate Professors P.T. LaPuma, S. McCormick

Assistant Professors K.M. Applebaum, J. Graham, A.L. Northcross, A.R. Zota

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PUBH 2114. Environment, Health, and Development. 3 Credits.
Survey of the relationship between health and development and environmental trends. Topics include deforestation, urban contamination, and desertification.

PUBH 3150. Sustainable Energy & Env Hlth. 3 Credits.
Sustainability issues from the perspective of environmental health. Technical, social, and health implications of specific energy sources. Energy conservation and efficiency in the context of population growth, food and water resources, and maintenance of a healthy environment for future generations.

PUBH 6004. Environmental and Occupational Health in a Sustainable World. 2 Credits.
Examination of the connection between population health and exposures to chemical, physical, and biological agents in the environment. Problem-solving frameworks familiarize students with data sources, methodologies, and policy approaches being used to address the public health impacts of environmental and occupational health hazards, including the consequences of climate change, natural resource degradation, and industrial chemicals. Integration of key concepts of environmental health with principles of sustainability illustrate how public policies and practices on the local, national, and global level affect population health.

PUBH 6121. Environmental and Occupational Epidemiology. 3 Credits.
Demonstration and application of epidemiologic methods for the study of environmental and occupational health problems. Epidemiologic exposure assessment methods and methods relevant to cohort, case-control, cross-sectional, and case cross-over studies. Survey design and sources and evaluation of biases and confounding. Emphasis on written and oral communication skills. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6004.

PUBH 6122. Protecting Public Health and the Environment: Policies, Politics, and Programs. 3 Credits.
The legislative, regulatory, judicial, and political system in the United States developed to protect human health and the environment. National and global public and environmental health agencies, policy development, and current topics. Prerequisites: PUBH 6004 or permission of the intructor.

PUBH 6123. Toxicology: Applications for Public Health Policy. 3 Credits.
Toxicology as both a scientific discipline and a source of information for public health policy with respect to the regulation of foods, pesticides, drugs (pharmaceuticals), environmental chemical pollutants, and other chemicals that may affect human and environmental health. How chemicals interact with biological systems to produce adverse effects. The ways in which toxicologic information is developed and applied to regulatory decision making and the use of toxicology in regulatory risk assessment. Prerequisite: PUBH 6004.

PUBH 6124. Problem Solving in EOH. 3 Credits.
This culminating course uses problem-based learning methods to examine a variety of real-world EOH issues in depth. Cases stimulate students to integrate their cumulative knowledge across all required courses and demonstrate their professional competencies. Students to conduct activities characteristic of EOH practice: evaluating a variety of technical, public, and media, reports; integrating and interpreting environmental, exposure, and health information effectively; designing analytic and communication strategies; presenting in writing and orally relevant materials to address EOH issues; and, making appropriate policy and/or program decisions and recommendations. Prerequisites: PubH 6121, 6123, 6126.

PUBH 6125. Intro-Children's Health & Env. 2 Credits.
Describes the impact of environmental toxicants on children's health and reviews some of the major policy issues in the field of children's environmental health. Prerequisites: PubH 6004.

PUBH 6126. Assessment&Control/Env Hazards. 3 Credits.
Introduces the anticipation, recognition, assessment, and control of hazards in the workplace and the ambient environment. It emphasizes an understanding of the characteristic features of specific hazards, which may be chemical, biological, or physical/ergonomic.

PUBH 6127. Germs: An Introduction to Environmental Health Microbiology. 2 Credits.
Basics of public health microbiology as it relates to the environment, food, water, and bioterrorism. Examines from an environmental health perspective how the principles of microbiology are applied to current and emerging public health issues, whether from intentional or unintentional contamination of the environment. Specific topics will include: industrial animal production and increasing prevalence of antibiotic resistance; effectiveness of various point of use technologies for water purification; recent advances in quantitative microbial risk assessment; one medicine (where public and veterinary health meet); detection strategies for microorganisms (including bioterrorism agents); and current approaches in food defense and agroterrorism. Prerequisites: PUBH 6004.

PUBH 6128. Global Environmental and Occupational Health. 2 Credits.
Examination of the global environmental and occupational health factors that contribute significantly to the global burden of disease, focusing primarily on low- and middle-income countries. Principles from behavioral sciences, development economics, risk assessment, and epidemiology are included. Potential solutions to environmental health problems, metrics used to measure impacts, and areas for future research. Prerequisite: PUBH 6004.

PUBH 6130. Sustainable Energy and the Environment. 2 Credits.
The sustainability of various energy strategies, including energy conservation, green building principles, renewable energy, and mitigation and adaption policies for climate change. Emphasis on the life cycle framework. Topics include natural resource depletion, water and energy consumption, and air, water, and solid waste pollutant emissions. Prerequisite: PUBH 6004.

PUBH 6131. Applied Data Analysis in Environmental and Occupational Health. 3 Credits.
Application of biostatistical and epidemiologic concepts and methods to analysis of environmental and occupational health (EOH) data. Students manage datasets, conduct data analyses, present data graphically, and interpret data for relevance to EOH research, policy, and practice. Development and practice of skills needed for analyzing complex exposures and communicating environmental and occupational research findings. Prerequisites: PUBH 6002, PUBH 6003, and PUBH 6004.

PUBH 6132. Water, Sanitation, and Hygiene (WASH) in Low-Income Countries. 2 Credits.
Introduction to working in both disaster and development settings in countries where contaminated water, inadequate sanitation, and poor hygiene (WASH) cause serious health problems. Students gain practical experience applying WASH methods in the field. Prerequisite: PUBH 6004.

PUBH 6133. Social Dimensions in Climate Change and Health. 3 Credits.
The drivers of climate change and outcomes with particular focus on health dimensions; obstacles, vulnerabilities, inequality, and adaptation as well as technical and social solutions.

PUBH 6134. Communicating Science for Public Health. 2 Credits.
Evaluating the primary scientific literature and communicating research findings in outlets ranging from peer-reviewed journals to 140 character Tweets. Identifying target audiences and shaping messages to maximize impact, while maintaining the integrity of the supporting evidence. Written and oral communication and critical evaluation are emphasized. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6199. Topics in EOH. 0-3 Credits.
In-depth examination of a particular facet of public health. Topics and prerequisites vary.

MASTER OF PUBLIC HEALTH IN THE FIELD OF ENVIRONMENTAL HEALTH SCIENCE AND POLICY

Program Director K. Applebaum
Practicum Director P. LaPuma

Mission

The mission of the master of public health (M.P.H.) in the field of environmental health science and policy degree program is to educate individuals who are committed to public health protection to apply critical analytic skills to the development, implementation, and evaluation of practices and policies aimed at preventing or minimizing the adverse impact of environmental and occupational hazards on human health.

Goals

Our graduates will possess a multidisciplinary knowledge base and skill set that will provide them a framework for addressing environmental and occupational health (EOH) issues. They will understand three distinct scientific foundations of environmental health in order to:

- Assess and control environmental and occupational exposures;
- Understand the effects of these exposures on human health; and
- Interpret epidemiologic and other research findings related to environmental risks.

Furthermore, graduates will be prepared to build on this science base in order to:

- Analyze policy implications and participate in policy development, implementation, and evaluation; and
- Assess and manage environmental and occupational risks.

COMPETENCIES

Upon Completion of the Master of Public Health program in the field of environmental health science and policy, students should possess the following functional competencies.

Epidemiology & Biostatistics

Critically assess existing epidemiologic research.

- Summarize goals, design, methods, and results of published research.

PUBH 6121	Environmental and Occupational Epidemiology

- Identify biases and evaluate the extent to which they threaten study validity.

PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health

- Apply statistical principles to interpret epidemiologic data.

PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health

Design appropriate studies for investigating EOH problems.

- Identify appropriate resources and databases to plan and conduct studies.

PUBH 6015	Culminating Experience
PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6124	Problem Solving in EOH

- Given a research question, identify appropriate study design, choose appropriate study populations, describe relevant exposure assessment methods, identify appropriate data collection instruments and processes, and describe procedures for protecting human subjects.

PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6126	Assessment&Control/Env Hazards

Conceptualize and carry out data analysis to address study goals.

- Conceptualize research questions.

PUBH 6015	Culminating Experience
PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health

- Utilize appropriate approaches to manage and analyze data.

PUBH 6015	Culminating Experience
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health

Exposure Assessment and Control

Assess environmental and occupational exposures.

- Describe the principle of operation, capability, and limitations of assessment instrumentation.

PUBH 6126	Assessment&Control/Env Hazards

- Assess severity of potential hazards and select the appropriate instrument and measurement method.

PUBH 6126	Assessment&Control/Env Hazards

- Interpret exposure measurements to assess the severity of a chemical, physical, or biological hazard.

PUBH 6124	Problem Solving in EOH

PUBH 6126	Assessment&Control/Env Hazards

- Compare exposure data against established occupational & environmental health standards and guidelines.

PUBH 6124	Problem Solving in EOH
PUBH 6126	Assessment&Control/Env Hazards

- Evaluate the strengths and weaknesses of epidemiologic exposure assessments.

PUBH 6121	Environmental and Occupational Epidemiology

Recommend strategies to prevent and control environmental and occupational exposures.

- Recommend appropriate control strategies, such as; environmental health interventions, protective equipment, behavior change campaigns, to mitigate health hazards.

PUBH 6124	Problem Solving in EOH
PUBH 6126	Assessment&Control/Env Hazards

Toxicology

Identify the adverse effects of chemical, biological, and physical exposures on human health.

- Apply key concepts in toxicology including: dose-response relationships; absorption, distribution, metabolism and excretion of xenobiotics; acute and chronic effects.

PUBH 6123	Toxicology: Applications for Public Health Policy

- Describe the biological basis for the adverse effects of toxicants on specific organs and tissues and identify specific compounds that interact with specific organs.

PUBH 6123	Toxicology: Applications for Public Health Policy

- Describe biological basis for the systemic effects of toxicants (e.g., carcinogenicity, genotoxicity, developmental toxicity) and identify specific compounds that elicit these effects.

PUBH 6123	Toxicology: Applications for Public Health Policy

Interpret toxicological research findings in the context of human health risk assessment.

- Explain key aspects of toxicological tests as well as their strengths and weaknesses.

PUBH 6123	Toxicology: Applications for Public Health Policy

- Explain how risk assessment is used to translate toxicologic information for regulatory decisions including: evaluating a body of data and applying weight of evidence approaches; calculating and using the reference dose (RfD); calculating and using of cancer slope factors.

PUBH 6122	Protecting Public Health and the Environment: Policies, Politics, and Programs
PUBH 6123	Toxicology: Applications for Public Health Policy

Policy

Synthesize scientific evidence in order to inform EOH policy and reduce and prevent environmental and occupational disease and injury.

- Describe the authority and approaches of U.S. public and environmental health agencies.

PUBH 6122	Protecting Public Health and the Environment: Policies, Politics, and Programs

- Apply the risk assessment, risk management, and Source-to-Effect frameworks.

PUBH 6124	Problem Solving in EOH

- Explain the role of scientific, economic, ethical, and political interests in development and implementation of human health and environmental health policy.

PUBH 6122	Protecting Public Health and the Environment: Policies, Politics, and Programs
PUBH 6123	Toxicology: Applications for Public Health Policy

Conduct policy analysis relevant to EOH problems.

- Discuss the control of public health hazards on a global basis.

PUBH 6126	Assessment&Control/Env Hazards

- Analyze approaches to environmental or occupational health policy development.

PUBH 6122	Protecting Public Health and the Environment: Policies, Politics, and Programs

- Analyze the role of environmental and occupational health policies and politics in promoting sustainability.

PUBH 6122	Protecting Public Health and the Environment: Policies, Politics, and Programs

Risk Management

Synthesize relevant information in order to assess and manage environmental and occupational risks.

- Given a specific context, design a plan to collect relevant information to fully characterize EOH hazards and related human health effects.

PUBH 6124	Problem Solving in EOH

- Evaluate data and other information to characterize potential EOH hazards, sources of those hazards, potential for human exposure, and potential or actual health effects.

PUBH 6123	Toxicology: Applications for Public Health Policy
PUBH 6124	Problem Solving in EOH

- Recommend possible approaches to reduce the risk and/or impact of exposure to EOH hazards, and evaluate these approaches with regard to ethical issues, technical feasibility, resource requirements, and policy context.

PUBH 6124	Problem Solving in EOH
PUBH 6126	Assessment&Control/Env Hazards

- Communicate with relevant stakeholder groups about environmental and occupational health issues and recommendations, using appropriate terminology and data.

PUBH 6122	Protecting Public Health and the Environment: Policies, Politics, and Programs
PUBH 6123	Toxicology: Applications for Public Health Policy
PUBH 6124	Problem Solving in EOH

Identify ethical issues in environmental health policy and practice.

- Discuss how scientific principles and societal values such as equity and environmental justice influence decision-making about environmental and occupational health problems in research, public health practice, policy, and management contexts.

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 15 credits in core courses, 18 credits in program specific courses, 8 credits in elective courses, and 4 credits in practicum/culminating experience.

Code	Title	Credits
Required core courses (15 credits):		
PUBH 6001	Biological Concepts in Public Health	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Required program-specific courses (18 credits):		
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6122	Protecting Public Health and the Environment: Policies, Politics, and Programs	
PUBH 6123	Toxicology: Applications for Public Health Policy	
PUBH 6124	Problem Solving in EOH	
PUBH 6126	Assessment&Control/Env Hazards	
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health	
Program-specific electives (4 credits):		
Two of the following		
PUBH 6127	Germs: An Introduction to Environmental Health Microbiology	
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6130	Sustainable Energy and the Environment	
PUBH 6133	Social Dimenensions in Climate Change and Health	
Electives (4 credits):		
Any SPH graduate course		
Practicum and culminating experience:		
PUBH 6014	Practicum	
PUBH 6015	Culminating Experience (taken twice for one credit)	

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits
2. Course requirements: Successful completion of core and program-specific courses
3. Grade point requirement: 3.0 (B average) overall grade point average
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF PUBLIC HEALTH IN THE FIELD OF GLOBAL ENVIRONMENTAL HEALTH

Program Director G. Gray
Practicum Director S. McCormick

Mission

The mission of the master of public health (M.P.H.) in the field of global environmental health degree program—a joint program between the Departments of Global Health and Environmental and Occupational Health—is to educate individuals who are committed to working in resource-poor settings and applying analytic skills to prevent or mitigate the adverse impact of environmental hazards on human health. The program has a particular focus on traditional environmental health hazards—that is, health risks that are a consequence of a lack of access to clean water, inadequate sanitation, poor hygiene, household air pollution, solid waste disposal, and vector-borne diseases such as malaria.

Goals

The program seeks to help train graduates who will hold a multidisciplinary knowledge base and skill set that will provide them with a framework for addressing environmental health issues from environmentally mediated disease in the poorest performing regions of the world. They will understand the scientific and cultural foundations of environmental health in order to assess environmental exposures and understand the effects of these exposures on human health; interpret epidemiologic and other research findings related to global environmental health risks; and assume leadership roles in designing, implementing, and evaluating programs that focus on modification of environmental health-related behaviors at local, regional, national, and/or global levels.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs). (http://www.gwu.edu/all-graduate-programs)

Visit the program website (https://publichealth.gwu.edu/programs/global-environmental-health-mph) for additional information.

COMPETENCIES

Upon completion of the master of public health (M.P.H.) in the field of global environmental health degree program, students should possess the following functional competencies:

Epidemiology and Biostatistics

Critically assess existing epidemiologic research.

- Summarize goals, design, methods, and results of published research.

Code	Title	Credits
PUBH 6015	Culminating Experience	
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health	
PUBH 6400	Global Health Frameworks	
PUBH 6411	Global Health Qualitative Research Methods	

- Identify biases and evaluate the extent to which they threaten study validity.

Code	Title	Credits
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health	
PUBH 6411	Global Health Qualitative Research Methods	

- Apply statistical principles to interpret epidemiologic data.

Code	Title	Credits
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health	

Design appropriate studies for investigating EOH problems.

- Identify appropriate resources and databases to plan and conduct studies.

Code	Title	Credits
PUBH 6015	Culminating Experience	

PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6128	Global Environmental and Occupational Health
PUBH 6400	Global Health Frameworks
PUBH 6411	Global Health Qualitative Research Methods

- Given a research question, identify appropriate study design, choose appropriate study populations, describe relevant exposure assessment methods, identify appropriate data collection instruments and processes, and describe procedures for protecting human subjects.

Code	Title	Credits
PUBH 6015	Culminating Experience	
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6126	Assessment&Control/Env Hazards	
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health	
PUBH 6411	Global Health Qualitative Research Methods	

Conceptualize and carry out data analysis to address study goals.

- Conceptualize research questions

Code	Title	Credits
PUBH 6015	Culminating Experience	
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6411	Global Health Qualitative Research Methods	

- Utilize appropriate approaches to manage and analyze data

Code	Title	Credits
PUBH 6015	Culminating Experience	
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health	
PUBH 6411	Global Health Qualitative Research Methods	

Assess Global Environmental and Occupational Risks

Assess environmental and occupational exposures.

- Describe the principle of operation, capability, and limitations of assessment instrumentation.

Code	Title	Credits
PUBH 6126	Assessment&Control/Env Hazards	

- Assess severity of potential hazards and select the appropriate instrument and measurement method.

Code	Title	Credits
PUBH 6126	Assessment&Control/Env Hazards	

- Interpret exposure measurements to assess the severity of a chemical, physical, or biological hazard.

Code	Title	Credits
PUBH 6126	Assessment&Control/Env Hazards	
PUBH 6435	Global Health Program Development and Implementation	

- Compare exposure data against established occupational and environmental health standards and guidelines.

Code	Title	Credits
PUBH 6126	Assessment&Control/Env Hazards	
PUBH 6128	Global Environmental and Occupational Health	

- Evaluate the strengths and weaknesses of epidemiologic exposure assessments.

Code	Title	Credits
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6128	Global Environmental and Occupational Health	

Recommend strategies to prevent and control environmental and occupational exposures.

- Recommend appropriate control strategies, such as; environmental health interventions, protective equipment, behavior change campaigns, to mitigate health hazards.

Code	Title	Credits
PUBH 6126	Assessment&Control/Env Hazards	
PUBH 6128	Global Environmental and Occupational Health	

PUBH 6400	Global Health Frameworks

Global Environmental Health Policy Analysis

Synthesize scientific evidence in order to inform global environmental health policy and reduce and prevent environmental health related disease and injury.

- Describe the authority and approaches of global environmental health agencies.

Code	Title	Credits
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6435	Global Health Program Development and Implementation	

- Apply the risk assessment, risk management, and Source-to-Effect frameworks.

Code	Title	Credits
PUBH 6126	Assessment&Control/Env Hazards	
PUBH 6128	Global Environmental and Occupational Health	

- Explain the role of scientific, economic, ethical, and political interests in development and implementation of global environmental health policy.

Code	Title	Credits
PUBH 6126	Assessment&Control/Env Hazards	
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6400	Global Health Frameworks	
PUBH 6435	Global Health Program Development and Implementation	

Conduct policy analysis relevant to global environmental health problems.

- Discuss interventions used in global environmental health.

Code	Title	Credits
PUBH 6126	Assessment&Control/Env Hazards	
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6400	Global Health Frameworks	
PUBH 6435	Global Health Program Development and Implementation	

- Analyze approaches used in global environmental health policy development.

Code	Title	Credits
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6400	Global Health Frameworks	
PUBH 6435	Global Health Program Development and Implementation	

- Analyze the role of global environmental health policies and politics in promoting sustainability.

Code	Title	Credits
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6435	Global Health Program Development and Implementation	

Design, Implement, Monitor and Evaluate Global Environmental Health Programs

Synthesize relevant information in order to assess and manage environmental and occupational risks.

- Characterize political, social, cultural, religious and economic context to determine feasible interventions.

Code	Title	Credits
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6400	Global Health Frameworks	
PUBH 6435	Global Health Program Development and Implementation	

- Given a specific context, design a plan to collect relevant information to fully characterize global environmental health hazards and related human health effects.

Code	Title	Credits
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6435	Global Health Program Development and Implementation	

- Evaluate data to characterize potential global environmental health hazards, potential for human exposure and health effects.

Code	Title	Credits
PUBH 6121	Environmental and Occupational Epidemiology	

PUBH 6128	Global Environmental and Occupational Health
PUBH 6400	Global Health Frameworks
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6435	Global Health Program Development and Implementation

- Recommend possible approaches to reduce the risk and/or impact of exposure to global environmental health hazards, and evaluate these approaches with regard to ethical issues, technical feasibility, resource requirements, and policy context.

Code	Title	Credits
PUBH 6126	Assessment&Control/Env Hazards	
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6400	Global Health Frameworks	
PUBH 6435	Global Health Program Development and Implementation	

- Communicate with relevant stakeholder groups about environmental and occupational health issues and recommendations, using appropriate terminology and data.

Code	Title	Credits
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6435	Global Health Program Development and Implementation	

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 15 credits in core courses, 17 credits in program-specific courses, 2 credits in a practicum course, 2 credits in a culminating experience, and 9 credits in elective courses.

Program Requirements

Code	Title	Credits
Core		
PUBH 6001	Biological Concepts in Public Health	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Program-specific: environmental and occupational health		
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6126	Assessment&Control/Env Hazards	
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health	
Program-specific: global health		
PUBH 6400	Global Health Frameworks	
PUBH 6411	Global Health Qualitative Research Methods	
PUBH 6435	Global Health Program Development and Implementation	
Electives		
9 credits from the following:		
PUBH 6123	Toxicology: Applications for Public Health Policy	
PUBH 6132	Design, Implementation and Evaluation of Global Water, Sanitation and Hygiene (WASH) Programs	
PUBH 6125	Intro-Children's Health & Env	
PUBH 6127	Germs: An Introduction to Environmental Health Microbiology	
PUBH 6130	Sustainable Energy and the Environment	
PUBH 6133	Social Dimenensions in Climate Change and Health	
PUBH 6262	Intro-Geog Information Systems	
PUBH 6271	Disaster Epidemiology	
PUBH 6435	Global Health Program Development and Implementation	

PUBH 6437	Case Study Methods for Global Health Evaluation
PUBH 6480	Public Health in Complex Emergencies
Practicum and Culminating Experience	
PUBH 6014	Practicum
PUBH 6015	Culminating Experience (offered in two parts, 1 credit each)

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits
2. Course requirements: Successful completion of core and program-specific courses
3. Grade point requirement: 3.0 (B average) overall grade point average
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

DOCTOR OF PUBLIC HEALTH IN THE FIELD OF ENVIRONMENTAL AND OCCUPATIONAL HEALTH

Program Director G. Gray

Mission

The mission of the Department of Environmental and Occupational Health (EOH) is to increase the body of knowledge that addresses the adverse health effects of environmental and occupational exposures; to disseminate knowledge through the education of students and health practitioners; and to apply that knowledge in the clinical, environmental, and workplace settings.

Goal

The goal of the doctor of public health in the field of environmental and occupational health (Dr.P.H.) degree program is to prepare students for advanced level professional work in research, policy, and program design and administration.

Admissions Requirements

The doctor of public health program is designed for mid-career professionals seeking to become public health leaders. Preference for admission to the Dr.P.H. program is given to applicants who have completed an M.P.H. degree from a Council of Education for Public Health (CEPH) accredited program. Alternatively, applicants with a master's degree in another field may indicate their relevant training, research experience, or educational background comparable to the M.P.H. Doctoral applicants admitted without an M.P.H. will be required to take additional course work at the graduate level that does not apply toward the minimum 48 credits required for the Dr.P.H. Qualified applicants with degrees from institutions outside the United States are also eligible for admission. All applicants must submit scores from the Graduate Record Exam (GRE) taken within five years of the date of application. Because admission to this program is highly selective, successful applicants have competitive academic credentials and substantial prior public health professional work experience related to the specialty field to which they are applying.

Program Policies and Procedures

For program policies and procedures, please refer to the Doctor of Public Health Handbook and other resources on the DrPh in the field of Environmental and Occupational Health website. (http://publichealth.gwu.edu/programs/environmental-occupational-health-drph)

REQUIREMENTS

The following requirements must be fulfilled: 48 credits, including 20 credits in required courses, 6 credits in field-specific courses, 7-10 credits in elective courses, 4 credits in professional leadership courses, 8-10 credits in dissertation preparation and dissertation, and successful completion of a comprehensive examination.

Program requirements

20 credits of required foundational and research methods courses	
PUBH 8401	Found PH Leadership & Practice (Doctoral Seminar)
PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8416	Study Design & Evaluation Methods
PUBH 8417	Qual Research Methods&Analysis
PUBH 8418	Applied Statistical Analysis
PUBH 8419	Measrmnt/PublHlth&HlthSrvcsRes
PUBH 8420	Advanced Analysis & Dissemination
6 credits of required EOH specialty field courses	
PUBH 8411	AdvTpc-PrinEnvHlthRiskScience (Doctoral Seminar)
PUBH 8412	AdvTpc-Env&OccHlthRsrch&Practc

7-10 credits of elective specialty field courses (sample list)	
PUBH 6121	EnvrnmntlEpidemiology
PUBH 6122	Envir Policy, Politics, Progs
PUBH 6123	Toxicology: Applic for PH Pol
PUBH 6124	Problem Solving in EOH
PUBH 6125	Intro-Children's Health & Env
PUBH 6126	Assessment&Control/Env Hazards
PUBH 6127	Germs: An Introduction to Environmental Health Microbiology
PUBH 6128	Global Envrnmtl & Occptnl Hlth
PUBH 6130	Sustainable Energy & Environmt
PUBH 6199	Topics in EOH (Microbial Risk Assessment)
PUBH 6199	Topics in EOH (Pesticide Exposures and Cancer)
PUBH 6199	Topics in EOH (Food and the Global Environment)
4 credits of professional leadership courses	
PUBH 8415	Instructional Leadership
PUBH 8413	Research Leadership
Comprehensive examination	
8-11 credits of dissertation preparation and dissertation	
PUBH 8422	AdvHlthCare&PublcHlthRsrchDes
Advanced Health Care and Public Health Research Design Prerequisites: Pass Comprehensive Exam, Approval of Program Director, & one page abstract	
PUBH 8423	Dissertation Research
Dissertation Research – DrPH Degree Dissertation Research	

Graduation Requirements

1. Graduate credit requirement: 48 graduate credits are required.
2. Course requirements: successful completion of the foundational and research methods courses. The program-specific specialty field courses and the professional leadership credits are required.
3. Comprehensive exam: Once the course of study is completed, students are required to pass the comprehensive exam to be officially admitted to the candidacy phase.
4. Dissertation: PUBH 8422 Advanced Health Care and Public Health Research Design plus 6-9 dissertation research credits are required. Once the proposal has been successfully defended and dissertation research credits have been met, the oral defense may be scheduled.
5. Grade point requirement: A 3.0 (B average) overall grade-point average is required.
6. Time limit requirement: The degree must be completed within seven (7) years.
7. No transfer credits are accepted.

EPIDEMIOLOGY AND BIOSTATISTICS

The Department of Epidemiology and Biostatistics integrates diverse educational programs with a rapidly growing research portfolio. Graduate students have the opportunity to study and participate in faculty research projects in a variety of academic disciplines, including infectious disease, cancer, nutritional and disaster epidemiology, applied biostatistical methods, and public health laboratory science. In their practicum, students work closely with scientists at local health departments, the NIH and other federal agencies, academic institutions, and international health organizations. By exploring the core quantitative sciences of public health and taking advantage of opportunities to learn by doing, students are prepared to become the next generation of public health leaders and practitioners.

GRADUATE

Master's programs

- Master of Public Health in the field of biostatistics (p. 925)
- Master of Public Health in the field of epidemiology (p. 927)
- Master of Public Health in the field of global health epidemiology and disease control (p. 958)
- Master of Science in biostatistics (p. 930) (Jointly administered by the Department of Statistics in CCAS and the Department of Epidemiology and Biostatistics in SPH)
- Master of Science in epidemiology (p. 931)
- Master of Science in public health microbiology and emerging infectious diseases (p. 933)

Doctoral programs

- Doctor of Philosophy in biostatistics (p. 935) (Jointly administered by the Department of Statistics in CCAS and the Department of Epidemiology and Biostatistics in SPH)
- Doctor of Philosophy in epidemiology (p. 937)

FACULTY

Professors A. E. Greenberg (*Chair*), L. Guay (*Research*), M. Foulkes (*Research*), K. Hirst (*Research*), D. A. Hoffman (*Emeritus)*, J. Jordan, J. M. Lachin, Z. Li, R. K. Riegelman, S. J. Simmens *(Research)*, E. A. Thom *(Research),* D.A. Verme,

Associate Professors J.M. Bethony, A. D. Castel, S. D. Cleary, K. L. Drews (*Research*), H. J. Hoffman, K. Jablonski *(Research),* I. Kuo (*Research*), Y. Ma, M. Magnus, M.M. Rice *(Research),* K.Z. Robien, N. Younes, H. A. Young

Assistant Professors I. Bebu (*Research*), B. Braffett (*Research*), R. G. Clifton (*Research*), A. Elmi, M. Ghosh, J. Peterson (*Research*), M. Power, M. Temprosa *(Research)*

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PUBH 3131. Epidemiology: Measuring Health and Disease. 3 Credits.
Principles of epidemiology applied to disease surveillance, control of infectious and chronic diseases, and health services/ health policy. Understanding the basic research designs and their relationship to establishing cause and effect and effectiveness of interventions to prevent and cure disease. Prerequisite: PUBH 1101, STAT 1127 .

PUBH 6002. Biostatistical Applications for Public Health. 3 Credits.
Application of biostatistical principles to critical analysis of retrospective studies, prospective studies, and controlled clinical trials, as well as studies in the health services literature. Selection, basic calculations, and interpretation of statistical methods for detection of significant associations and differences.

PUBH 6003. Principles and Practices of Epidemiology. 3 Credits.
General principles, methods, and applications of epidemiology. Outbreak investigations, measures of disease frequency, standardization of disease rates, study design, measures of association, hypothesis testing, bias, effect modification, causal inference, disease screening, and surveillance. Case studies apply these concepts to a variety of infectious, acute, and chronic health conditions affecting the population.

PUBH 6242. ClinicalEpid&Decision Analysis. 2,3 Credits.
Quantitative and qualitative approaches to decision making, including risk- benefit analysis, decision analysis, and cost-effective analysis. Applications to technology assessment; development of clinical guidelines. Note: MPH Health Policy, MS Health Policy and Doctoral Students concurrently take PubH 6299 topics course by the same name for 1 credit, thereby enrolling for three total credits (PubH 6242=2 credits plus PubH 6299.xx, same name =1 credit). Prerequisites: PUBH 6002, PUBH 6003.

PUBH 6243. Topics:ClinicalEpi&DecAnalysis. 1 Credit.
This class takes an evidence-based problem solving approach for Masters level students interested in the health policy focus of clinical epidemiology utilizing methods taught in PubH 6242. Prerequ: PubH 6003. Corequis: PubH 6242.

PUBH 6244. Cancer Epidemiology. 2 Credits.
Epidemiology of specific cancers, with an emphasis on molecular and genetic epidemiology. Current research in the field. Prerequisites: PubH 203.

PUBH 6245. InfectiousDisease Epidemiology. 2 Credits.
The role and conduct of laboratory and field investigations in the epidemiology of infectious diseases. Prerequisite: PubH 6003.

PUBH 6247. Design of Health Studies. 3 Credits.
Epidemiologic concepts and methods applied to specific research questions especially new types of public health problems. Recognition and development of the most appropriate study design for a specific health issue. Ecologic, cross-sectional, case-control, cohort studies and clinical trials. Sampling, measurement, questionnaire design, causality and causal criteria. Development of a research proposal. Co-requisite: PubH 6002. Prerequisite: PubH 6003.

PUBH 6249. StatPackages/DataMgt&DataAnlys. 3 Credits.
This course familiarizes the student with one of the most widely used database management systems and statistical analysis software packages, the SAS System, operating in a Windows environment. Throughout the course, several database management system techniques and data analytical strategies for the appropriate analysis of datasets obtained from a variety of studies will be presented. Statistical techniques covered include linear regression, analysis of variance, logistic regression, and survival analysis. Prerequisite: PubH 6002.

PUBH 6250. Epidemiology of HIV/AIDS. 2 Credits.
Methodological issues central to HIV/AIDS research. Biases peculiar to HIV/AIDS epidemiologic studies (both observational and experimental designs). The natural history of HIV, diagnosis, surveillance, vulnerable subpopulations, behavioral facets, and evaluation of epidemiologic studies with an emphasis on methodological considerations. Prerequisite: PubH 6003, Recommended PubH 6002.

PUBH 6252. Advanced Epidemiology Methods. 3 Credits.
Advanced quantitative epidemiologic methods, with a focus on basic data analytic techniques, identifying and evaluating bias and adjusting for confounding. Dose-response, trend analysis, and multiple linear and logistic regression models. Prerequisites: PubH 6002, 6003, 6247. Co- or prerequisite PubH 6249.

PUBH 6253. Issues in HIV Care & Treatment. 1 Credit.
This course will provide an overview and in depth consideration of some of the major issues in treatment of HIV disease, including the assessment of efficacy and effectiveness, drug resistance, monitoring of drug toxicity, special populations, the interrelationship between treatment and prevention, and quality of care. The course has been designed with an interdisciplinary audience in mind. In discussions and assignments, students will be able to emphasize their own area of interest and/or expertise (e.g. epidemiology, policy, etc).

PUBH 6255. Org Responses to HIV/Epidemic. 2 Credits.
This seminar focuses on the rapidly evolving responses of local, national and global governmental and non-governmental organizations to the HIV/AIDS epidemic. Inspirational leaders of selected HIV/AIDS organizations are invited to describe how their organizations contribute to fighting the epidemic; the leadership and management skills that they use in their daily work; and their strategic decision-making processes. Basic principles of epidemiology, leadership and organizational strategy and structure are addressed through didactic presentations and interactive faculty-student dialogue. Lessons learned through the lens of HIV/AIDS organizations are broadly applicable to other public health problems. Students will learn about the strengths and challenges of different types of public health organizations as they make career decisions about their own transition to the public health work force. Prerequisite: PubH 6003, HIV/AIDS experience, or permission of Instructor.

PUBH 6258. Adv Topics/Biostat Consulting. 1 Credit.
Principles and practice of biostatistical consulting in public health and medical research environments.

PUBH 6259. Epid Surveillance/PublicHealth. 2 Credits.
Focus on foundations of public health surveillance systems for communicable as well as chronic diseases. Outbreak investigation methods will be included, as well as surveillance data sources, data management, data analysis, ethical issues, surveillance system evaluation, and use of information for prevention. Surveillance systems for reportable diseases, nosocomial infections, bioterrorism events, cancer, environmental disease, vaccine-related adverse events, bovine spongiform encephalopathy, and military personnel will be discussed. Prerequisites: PubH 6003.

PUBH 6260. Adv DataAnalysis-Public Health. 3 Credits.
Advanced data analysis using the SAS System to expand on the analytic techniques gained in PubH 6002 and PubH 6249 and to provide students with the applied statistical skills required to analyze various types of public health datasets. Prerequisites: PubH 6002, 6249.

PUBH 6261. Epi-Bio Skills Bldg Seminar. 1 Credit.
Assists students in developing the skills needed to complete degree requirements and to provide them with practical applied public health training. By the end of the course, students will be able to describe essential skills needed for preparation, implementation, presentation and communication of public health data.

PUBH 6262. Intro-Geog Information Systems. 1 Credit.
Geographic information systems (GIS) for mapping and display of health data. The course makes use of ArcGIS 8.3. The use of spatial statistics for the detection of clusters and patterns in the spread of diseases. Working with geodatabases, shape files, layers, query information from attribute tables, geocode addresses and customizing GIS applications.

PUBH 6263. Advanced GIS. 1 Credit.
Provides mid to advanced level training in GIS for display and analysis of health data. Use software ArcGIS 9.3 and additional extensions such as Spatial Analyst and Geostatistical Analyst. Also uses GeoDa software. Emphasizes benefits of using GIS to do more than simply manage and map data. GIS supports a range of spatial analysis functions that enable researchers to extract additional meaning from manipulating geographic data. Learn to work with raster datasets and geodatabases to build spatial models for analyzing health data and evaluating spatial patterns of health events based on notion of distance. Prerequisite: PubH 6262.

PUBH 6264. Quantitative Methods. 3 Credits.
Introduces basic concepts in mathematical statistics. Topics will include probabilities (unconditional and conditional), density and distribution functions of continuous and discrete random variables, including expected values. Specific distribution functions discussed will be Binomial, Poisson, Hypergeometric, and Gaussian distributions. Additional topics include bivariable distributions, variance-covariance matrix, limiting theory, asymptotic results, and maximum likelihood estimation. Prerequisites: Math 1231, 1232 and PubH 6002, 6249.

PUBH 6265. Design of Medical Studies. 3 Credits.
Design of medical investigations, including the randomized clinical trial, observational cohort study, and the retrospective case-control study. Specific methods regarding sample size, power and precision and statistical procedures for randomization and sa.

PUBH 6266. Biostatistical Methods. 3 Credits.
Biostatistical methods for asymptotically efficient tests and estimates of relative risks and odds ratios from prospective and retrospective matched and unmatched studies. Fixed and random effects models. Logistic regression, conditional logistic regression. Poisson regression. Maximum likelihood and efficient scores. Prerequisites: STAT 6201-6202, PubH 6264.

PUBH 6267. Time Series:Applications in PH. 2 Credits.
Introduce basic concepts for the identification and modeling of time series in the time domain approach. Learn a new set of terminology standards and a different way to analyze these type of data and to forecast future values of a time series and its accuracy. Software used is SAS/ETS and 3 procedures: ARIMA, AUTOREG, FORECAST. New mathematical notation will be used. Prerequisite: PubH 6249.

PUBH 6268. Advanced SAS. 1 Credit.
Intensive in advanced programming using SAS. Expand technical skills to provide advanced SAS tools for data management and graphics. Topics to include Interactive Matrix Language (IML), SAS Macro facility language, and drill-down graphs using SAS/GRAPH. Prerequisites: PubH 6002, 6249 or Instructor's permission.

PUBH 6269. Reproductive Epidemiology. 1 Credit.
Current research, controversial issues and methodological problems in epidemiology of reproductive and perinatal health. Present reproductive health issues such as conception and infertility; perinatal issues such as complications of pregnancy, infections in pregnancy, adverse pregnancy outcomes, and birth defects. Prerequisite: PubH 6003.

PUBH 6270. HIV/AIDS Surveillance. 1 Credit.
Overview of surveillance methods used domestically and internationally to monitor HIV/AIDS epidemic. Surveillance systems including sentinel, population based, behavioral, and incidence surveillance will be presented and discussed. Strengths and weaknesses of these various systems will be discussed in addition to how data from these systems impact and inform HIV/AIDS related policies and programs. Prerequisite: PubH 6003.

PUBH 6271. Disaster Epidemiology. 1 Credit.
Introduction to disaster epidemiology that elucidates the important role epidemiologists play in assessing the health and psychological effects of natural and man-made disasters and in identifying factors that contribute to these effects. Focus will be on applications of epidemiologic methods to the study of public health consequences of disasters, case studies from actual disasters used to illustrate various roles of epidemiologist in responding to these events and lessons learned. Highlight key skills that epidemiologists need to be part of a response and recovery . Identify methodological issues for future work. Prerequisites: PubH 6002, 6003.

PUBH 6272. Infectious Agents- Cancer. 1 Credit.
Describes the role of infectious agents in the etiology of human cancer. Emphasis on differences between specific oncogenic viruses. Other oncogenic agents, bacterial and parasitic, will also be discussed. Discuss laboratory approaches to the documentation of their pathogenicity, how behavior affects mode of transmission, and which types of data provide strongest support for documenting oncogenic potential for humans. Prerequisite: PubH 6003.

PUBH 6273. Ethnographic Methods. 1 Credit.
Use ethnographic field methods in conjunction with epidemiological research. Introduction to specific methods used to examine health phenomena and determinants of disease. Learn specific applied skills that can be modified with socio-cultural modifications to evaluate urban sites and other settings. Basic skills in application of ethnographic methods, including recursive observations, participant observations, and variety of approaches to interviewing such as in-depth, structured and non-structured as well as conversational interviewing. Discuss use of multiple approaches in conjunction with ethnography, including focus groups, archival, document, statistical and secondary data analysis, and survey research methods. Course emphasizes use of ethnographic research methods in community-based health settings and evaluates issues in cultural competency and how to garner stakeholder support to conduct epidemiologic studies. Prerequisite: PubH 6003.

PUBH 6274. Emerging ID for PH Pro's. 2 Credits.
Focus on epidemiology of emerging infectious diseases of public health importance, including factors leading to their development, management of emerging infectious diseases from a public health and laboratory standpoint, including biosafety, and strategies for emergency preparedness from a national and international perspective. Course emphasizes the context of emerging infectious diseases and strategic approaches to their containment. Prerequisites: PubH 6003 or Micr 6292 or Instructor permission.

PUBH 6275. Essential PH Lab Skills. 2 Credits.
This course will provide public health students with practical laboratory experience Prerequ: Micr 6239 or Micr 6212 or permission of instructor.

PUBH 6276. Health Microbiology. 3 Credits.
Gain in-depth understanding of important non-viral pathogens pertinent to PH Microbiology. Learn how to isolate & identify pathogens using critical thinking & problem solving skills.

PUBH 6277. Public Health Genomics. 2 Credits.
Learn about molecular technology and how it is impacting public health practice & discourse in the post genomic era. Explore ways in which genomics is being used to solve or help alleviate PH problems through case-focused discussions. Prerequisite: genetics or molecular biology within 6 years or permission of course instructor.

PUBH 6278. Public Health Virology. 3 Credits.
In-depth understanding of viral pathogenesis by focusing on current research, controversial issues and PH relevance. Survey of family of viruses most relevant to today's public health efforts, concentrating on virus-host interactions & therapeutic strategies.

PUBH 6280. MEID Final Project. 2 Credits.
Focus on the synthesis and summary of data acquired through epidemiologic and/or public health laboratory research. Prerequisites: PubH 6002, 6003, 6292, 6245; Biosafety training, CITI training, HIPAA training, permission of instructor.

PUBH 6299. Topics in Epi/Bio. 1-3 Credits.
In-depth examination of a particular facet of public health. Topics and prerequisites vary.

MASTER OF PUBLIC HEALTH IN THE FIELD OF BIOSTATISTICS

Program Director H. Hoffman

Mission

The mission of the master of public health in the field of biostatistics degree program is to educate students in the methodological and quantitative skills needed to apply statistical methods to the biological, biomedical, and health services sciences. In addition to enhancing students' capacity to think critically and creatively, the program deepens their commitment to improving the public's health and to engaging in and promoting public service—qualities essential to biostatisticians and public health practitioners.

Goals

The goals of the biostatistics program are to ensure that graduates:

- Understand and adhere to high scientific standards for research.
- Understand how to apply statistical methods to biological/biomedical sciences and health services.
- Understand and follow guidelines for ethical treatment of research participants.
- Communicate research findings to a lay audience.
- Respect cultural diversity throughout all of the above.

COMPETENCIES

The specialization in biostatistics focuses on developing students' skills in the statistical analysis and interpretation of health research data. The following competencies were developed in concert with professors of biostatistics courses (at GW as well as from other CEPH-accredited MPH programs), biostatistics textbooks, conversations with prospective employers likely to hire MPH-biostatistics graduates, and with experience teaching biostatistics courses to MPH students. ASPH Education Committee competencies were also consulted.

Upon completion of the Master of Public Health in the field of biostatistics, students will demonstrate functional competence to:

- Manipulate various databases from large scale epidemiological studies and clinical trials studies using statistical software, e.g. SAS®.

  Relevant courses

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6258	Adv Topics/Biostat Consulting
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 6266	Biostatistical Methods

- Use theoretical biostatistical concepts in an applied setting to identify the appropriate data analysis methods for public health and biomedical studies including cohort, case control, cross-sectional, and clinical trials.

  Relevant courses

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6258	Adv Topics/Biostat Consulting
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 6264	Quantitative Methods
PUBH 6266	Biostatistical Methods

- Synthesize data and relevant literature and interpret findings from statistical analyses in a causal framework, in order to prepare manuscripts and make oral presentations for both professional and lay audiences.

Relevant courses

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6258	Adv Topics/Biostat Consulting
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 6261	Epi-Bio Skills Bldg Seminar
PUBH 6264	Quantitative Methods
PUBH 6266	Biostatistical Methods

- Work as a member of a multidisciplinary research team and recognize and appropriately respond to ethical issues that arise in research.

Relevant courses

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6258	Adv Topics/Biostat Consulting
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 6261	Epi-Bio Skills Bldg Seminar
PUBH 6266	Biostatistical Methods

- Provide biostatistical advice as a member of a team of researchers engaged in a biomedical or epidemiological research project.

Relevant courses

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6258	Adv Topics/Biostat Consulting
PUBH 6252	Advanced Epidemiology Methods
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 6266	Biostatistical Methods

- Apply biomedical and epidemiological concepts in identifying and describing the determinants and the distribution of disease in human populations which is the necessary background for successful participation in studies of health and disease.

Relevant courses

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6247	Design of Health Studies
PUBH 6252	Advanced Epidemiology Methods

- Identify and assess patterns of emerging diseases to postulate hypotheses and to propose appropriate strategies in order to quantitatively evaluate the impact of health problems.

Relevant courses

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6258	Adv Topics/Biostat Consulting
PUBH 6252	Advanced Epidemiology Methods
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 6266	Biostatistical Methods

- Comprehend basic ethical and legal principles pertaining to the collection, maintenance, use and dissemination of biomedical and epidemiologic data.

Relevant courses

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6247	Design of Health Studies
PUBH 6252	Advanced Epidemiology Methods
PUBH 6258	Adv Topics/Biostat Consulting
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 6261	Epi-Bio Skills Bldg Seminar
PUBH 6266	Biostatistical Methods

REQUIREMENTS

Program Prerequisites

All applicants must have completed two semesters of college-level calculus through calculus II with a minimum grade of *B* in order to be considered for admission.

M.P.H. Requirements

The following requirements must be fulfilled: 45 credits, including 15 credits in core courses, 20 credits in program-specific courses, 6 credits in electives, 2 credits in a practicum,* and 2 credits in a culminating experience.

Program Requirements

Code	Title	Credits
Required core courses		
PUBH 6001	Biological Concepts in Public Health	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Required program-specific courses		
PUBH 6247	Design of Health Studies	
PUBH 6249	StatPackages/DataMgt&DataAnlys	
PUBH 6252	Advanced Epidemiology Methods	
PUBH 6258	Adv Topics/Biostat Consulting	
PUBH 6260	Adv DataAnalysis-Public Health	
PUBH 6261	Epi-Bio Skills Bldg Seminar	
PUBH 6264	Quantitative Methods	
PUBH 6266	Biostatistical Methods	
Electives		
Select epi-biostatics courses with advisor's approval		
Practicum and culminating experience		
PUBH 6014	Practicum	
PUBH 6015	Culminating Experience	

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits
2. Course requirements: Successful completion of core and program-specific courses
3. Grade point requirement: 3.0 (B average) overall grade point average
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

*Students should begin planning their practicum during year 1.

MASTER OF PUBLIC HEALTH IN THE FIELD OF EPIDEMIOLOGY

Program Co-Directors M. Magnus, H. Young

Mission

The mission of the master of public health in the field of epidemiology degree program is to help students develop the necessary methodological and quantitative skills to work successfully in the field. While nurturing students' capacity to think critically and creatively, students are encouraged to deepen their commitment to improving the public's health and to engaging in and promoting public service qualities essential for future epidemiologists and public health practitioners.

Goals

The goals of the program are to ensure that graduates:

- Understand and adhere to high scientific standards for research;
- Understand and follow guidelines for ethical treatment of research participants;
- Can communicate research findings to a lay audience; and
- Respect cultural diversity throughout all of the above.

COMPETENCIES

The epidemiology specialization prepares students for epidemiological research and evaluation in academic, governmental, private-sector, and community health care sites. The curriculum prepares students to design and conduct studies, manage health data, and make leadership decisions in public health and clinical epidemiology. The following competencies were developed in concert with professors of epidemiology courses (at GW as well as other CEPH-accredited MPH programs), epidemiology textbooks, conversations

with prospective employers likely to hire MPH-epidemiology graduates, and experience teaching epidemiology courses to MPH students. ASPH Education Committee competencies were also consulted.

Upon completion of the MPH in Epidemiology, students will demonstrate functional competence to:

- Apply epidemiological and biomedical concepts in identifying and describing the determinants and the distribution of disease in human populations.

  Relevant Courses

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6247	Design of Health Studies
PUBH 6252	Advanced Epidemiology Methods

- Identify and assess patterns of emerging diseases to postulate hypotheses and to identify appropriate strategies in order to evaluate the impact of health problems.

  Relevant Courses

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6247	Design of Health Studies
PUBH 6252	Advanced Epidemiology Methods

- Enumerate and apply underlying principles and methods to design, plan, and conduct epidemiologic studies including observational and experimental designs, screening programs, public health surveillance, and other epidemiologic designs.

  Relevant Courses

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6247	Design of Health Studies
PUBH 6252	Advanced Epidemiology Methods

- Identify the appropriate data analysis methods, conduct data analysis using a computerized software program, and interpret the results from epidemiological studies.

  Relevant Courses

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 6261	Epi-Bio Skills Bldg Seminar

- Demonstrate proficiency in constructing and managing databases from epidemiological studies using statistical software, e.g. The SAS® System.

  Relevant Courses

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6260	Adv DataAnalysis-Public Health

- Synthesize data and relevant literature to interpret findings in a causal framework, write manuscripts, and make oral presentations.

  Relevant Courses

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 6261	Epi-Bio Skills Bldg Seminar

- Work in a multidisciplinary research team and recognize and appropriately respond to ethical and legal issues that arise in research.

  Relevant Courses

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 6261	Epi-Bio Skills Bldg Seminar

- Define and critically assess issues in at least two of the following specialty areas in epidemiology:
  - Clinical epidemiology such as decision analysis, cost-effectiveness to clinical and public health problems.
  - Major topics in infectious disease epidemiology, including emerging infectious diseases, drug resistant pathogens, and perinatal and neonatal infections.
  - Methods and issues of cancer epidemiology including descriptive and analytical studies with emphasis on genetic and molecular epidemiology.
  - Methods and issues of chronic disease
  - Methods and issues of surveillance systems in public health

Relevant Courses

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6247	Design of Health Studies
PUBH 6252	Advanced Epidemiology Methods

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 15 credits in core courses, 21 credits in program-specific courses, 5 credits in elective courses, 2 credits in a practicum, and 2 credits in a culminating experience.

Code	Title	Credits
Required core		
PUBH 6001	Biological Concepts in Public Health	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Required program		
PUBH 6247	Design of Health Studies	
PUBH 6249	StatPackages/DataMgt&DataAnlys	
PUBH 6252	Advanced Epidemiology Methods	
PUBH 6260	Adv DataAnalysis-Public Health	
PUBH 6261	Epi-Bio Skills Bldg Seminar	
Epidemiology content foundation		
At least two of the following:		
PUBH 6242	ClinicalEpid&Decision Analysis	
PUBH 6244	Cancer Epidemiology	
PUBH 6245	InfectiousDisease Epidemiology	
PUBH 6250	Epidemiology of HIV/AIDS	
PUBH 6259	Epid Surveillance/PublicHealth	
Epidemiology-biostatistics electives		
4 elective credits from Department of Epidemiology-Biostatistics course offerings. A sample list of courses that would fulfill this requirement is below; other courses may be announced.		
PUBH 6236	Systematic Review of Public Health Literature	
PUBH 6237	Chronic Disease Epidemiology	
PUBH 6238	Molecular Epidemiology	
PUBH 6240	Pediatric HIV/AIDS	
PUBH 6241	Nutritional Epidemiology	
PUBH 6243	Topics:ClinicalEpi&DecAnalysis	
PUBH 6253	Issues in HIV Care & Treatment	
PUBH 6255	Org Responses to HIV/Epidemic	
PUBH 6258	Adv Topics/Biostat Consulting (Instructor's Approval Required)	
PUBH 6262	Intro-Geog Information Systems	
PUBH 6263	Advanced GIS	
PUBH 6267	Time Series:Applications in PH	
PUBH 6268	Advanced SAS	
PUBH 6269	Reproductive Epidemiology	
PUBH 6270	HIV/AIDS Surveillance	
PUBH 6271	Disaster Epidemiology	
PUBH 6272	Infectious Agents- Cancer	
PUBH 6273	Ethnographic Methods	

PUBH 6274	Emerging ID for PH Pro's
PUBH 6281	Analysis of Complex Surveys Using SAS and Stata
PUBH 6484	Prevention and Control of Vector Borne Diseases
PUBH 6485	Prevention and Control of Water and Sanitation Diseases
PUBH 6299	Topics in Epi/Bio (Behavioral Epidemiology)
PUBH 6299	Topics in Epi/Bio (Pesticide Exposures and Cancer)
Electives	
Any SPH graduate course(s).	
Practicum and culminating experience	
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits
2. Course requirements: Successful completion of core and program-specific courses
3. Grade point requirement: 3.0 (B average) overall grade point average
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF SCIENCE IN THE FIELD OF BIOSTATISTICS

Program Director and Academic Advisor A. F. Elmi

The master of science (MS) degree program in biostatistics is jointly administered by the Department of Statistics in the Columbian College of Arts and Sciences (CCAS) and the Department of Epidemiology and Biostatistics in the Milken Institute School of Public Health (SPH) and its associated research facility, The Biostatistics Center. This degree program is accredited by the Middle States Commission on Higher Education through the CCAS and by the Council on Education for Public Health through the SPH Regulations, and requirements for this graduate degree have been designed to be compatible with policies and scholarship requirements of both CCAS and SPH. The degree is conferred by Columbian College.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://publichealth.gwu.edu/programs/biostatistics-ms) for additional information.

COMPETENCIES

At the completion of the MS program in Biostatistics students will be able to:

- Understand and the theory and principles behind statistical methods most commonly used in biomedical research (contingency tables, survival analysis, mixed models, and missing data).
- Understand and apply the underlying principles and methods to design, plan, and conduct biomedical studies.
- Provide biostatistical advice as a member of a team engaged in a biomedical research project. Includes manipulation and analysis of data.

REQUIREMENTS

Admission Considerations

The courses listed below (or course equivalents) are prerequisites for admission consideration and must appear on the student's transcript. Students may apply to the program only after they have fulfilled this requirement:

Code	Title	Credits
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
STAT 2118	Regression Analysis	

Applicants lacking the courses listed below (or course equivalents) will be considered for admission; however, if admitted, the student is required to complete these courses within two semesters of matriculation in the program. Credit earned in these courses does not count toward the 33 credits required for the degree and grades earned are not reflected in the overall grade point average.

Code	Title	Credits
MATH 2184	Linear Algebra I	
MATH 2233	Multivariable Calculus	
One of the following:		
STAT 1129	Introduction to Computing	

STAT 2183	Intermediate Stat Lab/Packages
PUBH 6249	StatPackages/DataMgt&DataAnlys

Degree Requirements

Code	Title	Credits
Required		
PUBH 6001	Biological Concepts in Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6265	Design of Medical Studies	
PUBH 6266	Biostatistical Methods (Basis for Master's Comprehensive Examination)	
PUBH 6299	Topics in Epi/Bio	
STAT 6201	Mathematical Statistics I	
STAT 6202	Mathematical Statistics II	
STAT 6210	Data Analysis	
STAT 6227	Survival Analysis	
Electives		
6 credits from the following:		
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6242	ClinicalEpid&Decision Analysis	
PUBH 6244	Cancer Epidemiology	
PUBH 6245	InfectiousDisease Epidemiology	
PUBH 6246	InjuryEpidemiology&Prevention	
PUBH 6248	EpidMethods/OlderPopulations	
PUBH 6250	Epidemiology of HIV/AIDS	
STAT 3187	Introduction to Sampling	
STAT 4181	Applied Time Series Analysis	
STAT 4188	Nonparametric Stat Inference	
STAT 6215	Applied Multivariate Analysis I	
STAT 6216	Applied Multivariate Analysis II	
STAT 6217	Design of Experiments	
STAT 6223	Bayesian Statistics: Theory and Applications	
STAT 6231	Contingency Table Analysis	
STAT 6242	Regression Graphics/Nonparametric Regression	
STAT 6287	Modern Theory of Sample Surveys	
STAT 8226	Advanced Biostatistical Methods	
STAT 8265	Multivariate Analysis	
STAT 8273	Stochastic Processes I	
STAT 8281	Advanced Time Series Analysis	
STAT 8288	Modern Theory/Sample Surveys	
Consulting		
PUBH 6258	Adv Topics/Biostat Consulting	
PUBH 6283	Biostatistics Consulting Practicum	

The Master's Comprehensive Examination

The master's comprehensive examination is a written exam in the field of biostatistics and is based on the content covered in PUBH 6266 Biostatistical Methods. It is administered by the faculty of the Department of Epidemiology and Biostatistics in the Milken Institute School of Public Health.

MASTER OF SCIENCE IN THE FIELD OF EPIDEMIOLOGY

Program Director S.D. Cleary

The Department of Epidemiology and Biostatistics offers the master of science (M.S.) in the field of epidemiology degree program. The goals of the program are to prepare students for careers in industry or academia and for continued study in a doctoral program. The program includes course work that focuses on theoretical and applied epidemiological and statistical methods. Comprehensive examinations are required.

If desired, a student may apply for admission to the doctorate of philosophy (Ph.D). in the field of epidemiology degree program (http://bulletin.gwu.edu/public-health/epidemiology-biostatistics/phd-epidemiology) prior to completing the M.S. degree, in which case a maximum of 24 credits from the M.S. degree may be applied to the Ph.D. course work requirements. In this instance, the student will be required to take a minimum of 27 additional credits of course work. The distribution of these courses between epidemiology and statistics depends on the nature of the master's degree and whether the transferred

credits will be used to defray epidemiology and statistics course work.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://publichealth.gwu.edu/programs/epidemiology-ms) for additional program information.

COMPETENCIES

At the completion of the MS program in Epidemiology students will be able to:

- Demonstrate proficiency in basic epidemiology concepts, e.g., formulate hypotheses and research aims, select appropriate study design, identify risk and/or protective factors that contribute to disease outcomes, develop analytic plans, and identify bias.
- Demonstrate competence using standard statistical software packages to manage and analyze primary data or conduct secondary data analyses to address research questions
- Demonstrate proficiency in data analysis and interpretation of results, including discussion of threats to internal validity, and compose a formal presentation or report
- Describe and apply methods to conduct sound ethical research

REQUIREMENTS

Preparatory Requirements

The courses listed below (or equivalents) are prerequisites for admission consideration, and must appear on the student's transcript.

Code	Title	Credits
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	

Additional Course Requirements

Applicants lacking the courses listed below (or equivalents to these GW courses) will be considered for admission, but will be eligible for conditional admission only with the expectation that these courses will be completed satisfactorily within two semesters following matriculation in the program.

Code	Title	Credits
STAT 2183	Intermediate Stat Lab/Packages	
or PUBH 6249	StatPackages/DataMgt&DataAnlys	

Program Requirements

The following requirements must be fulfilled: 33 credits, including 17 credits in core courses and 13 credits in elective courses, and 3 credits in consulting and thesis.

Code	Title	Credits
Required core		
Public health core		
PUBH 6003	Principles and Practices of Epidemiology (basis for MS general comprehensive)	
PUBH 6247	Design of Health Studies (basis for MS general comprehensive)	
PUBH 6252	Advanced Epidemiology Methods (basis for MS general comprehensive)	
PUBH 6299	Topics in Epi/Bio (credits vary per course- may take 1 or 2 courses)	
Statistics core		
One of the following:		
STAT 4157 & STAT 4158	Introduction to Mathematical Statistics I and Introduction to Mathematical Statistics II	
STAT 6201 & STAT 6202	Mathematical Statistics I and Mathematical Statistics II (students interested in applying to the PhD program in epidemiology may register in STAT 6201 & STAT 6202 with advisor's approval)	
Electives		
13 credits from the following:		
Approved public health elective courses:		
PUBH 6001	Biological Concepts in Public Health	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6007	Social and Behavioral Approaches to Public Health	

PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6123	Toxicology: Applications for Public Health Policy
PUBH 6124	Problem Solving in EOH
PUBH 6242	ClinicalEpid&Decision Analysis
PUBH 6243	Topics:ClinicalEpi&DecAnalysis
PUBH 6244	Cancer Epidemiology
PUBH 6245	InfectiousDisease Epidemiology
PUBH 6250	Epidemiology of HIV/AIDS
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 6262	Intro-Geog Information Systems
PUBH 6283	Biostatistics Consulting Practicum
PUBH 6299	Topics in Epi/Bio
Approved statistics elective courses:	
STAT 2118	Regression Analysis
STAT 4181	Applied Time Series Analysis
STAT 3187	Introduction to Sampling
Consulting and thesis	
PUBH 6258	Adv Topics/Biostat Consulting
PUBH 6999	Master of Science in Epidemiology Thesis

Graduation Requirements

1. Graduate Credit Requirement: 33 graduate credits are required
2. Comprehensive Exam**:** A written comprehensive exam will be administered based on the course content of PUBH 6003 Prin & Practice/ Epidemiology, PUBH 6247 Design of Health Studies, and PUBH 6252 Advanced Epidemiology Methods. The exam is administered upon completion of all courses.
3. Grade Point Requirements**:** A 3.0 (B average) overall grade point average is required.
4. Time Limit Requirement**:** The MS must be completed within 4 years

MASTER OF SCIENCE IN THE FIELD OF PUBLIC HEALTH MICROBIOLOGY AND EMERGING INFECTIOUS DISEASES

Program Co-Directors A. Castel, J. Jordan

Mission

The mission of the master of science (M.S.) in the field of public health microbiology and emerging infectious diseases degree program is to provide training to a new generation of public health professionals to expand knowledge and expertise in the areas of disease mechanisms, with an emphasis on microbial pathogens, the use and application of modern biotechnologies, and in epidemiologic skills relevant to the prevention and control of problems in the community arising from infectious diseases.

Graduates of the M.S. program will have an in-depth understanding of the major laboratory, clinical, and public health aspects of humankind's microbial pathogens, and acquire epidemiologic skills relevant to the prevention and control of problems arising from infectious diseases and modern biotechnologies. Areas of emphasis will include: the design and analysis of epidemiologic data; emerging infections; tropical diseases; and applications of genomics, proteomics, and bioinformatics. M.S. graduates will be employed in academic and industrial research laboratories, international health agencies, NGOs, and private consulting groups. In addition, they may work in federal, state, and local public health agencies or state and local public health laboratories where their technical expertise and population-based perspective will be extremely useful. Students earning this degree will help meet a national demand that has reached critical proportions for a trained workforce in biodefense and emerging infections, and an international demand for training in diseases that affect the developing countries.

Goals

The goals of the M.S. program in the field of public health microbiology and emerging infectious diseases are to ensure that graduates:

- Understand the biological complexities of microbial pathogens and the diseases they cause;
- Recognize the major epidemiologic and clinical features of microbial disease;
- Understand how new biotechnologies (including genomics, proteomics, and bioinformatics) can be applied to the study and control of microbial pathogens;
- Develop an in-depth understanding of epidemiologic principles and practices;

- Apply the principles of epidemiology, microbiology, and public health practice toward the detection, surveillance, investigation, and control of microbial diseases.

REQUIREMENTS

Prerequisite requirements

- Bachelor's degree in the life sciences or at least 12 credits in the biological sciences other than botany
- Chemistry ≥ 3 credits
- 1 semester of calculus

Course requirements

Most students will be able to complete the 45 credit degree in approximately two to three years, depending on the course load taken each semester.

Foundation courses (10 credits)	
PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6004	Environmental and Occupational Health in a Sustainable World
PUBH 6275	Essential PH Lab Skills
Required program specific courses (22 credits)	
PUBH 6245	InfectiousDisease Epidemiology
PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6259	Epid Surveillance/PublicHealth
PUBH 6262	Intro-Geog Information Systems
PUBH 6276	Health Microbiology
PUBH 6277	Public Health Genomics
PUBH 6278	Public Health Virology
MICR 8210	Infection and Immunity
Program-specific elective courses	
9 credits from the following:	
PUBH 6127	Germs: An Introduction to Environmental Health Microbiology
PUBH 6132	Design, Implementation and Evaluation of Global Water, Sanitation and Hygiene (WASH) Programs
PUBH 6239	Epidemiology of Foodborne and Waterborne Diseases
PUBH 6242	ClinicalEpid&Decision Analysis
PUBH 6243	Topics:ClinicalEpi&DecAnalysis
PUBH 6250	Epidemiology of HIV/AIDS
PUBH 6252	Advanced Epidemiology Methods
PUBH 6253	Issues in HIV Care & Treatment
PUBH 6261	Epi-Bio Skills Bldg Seminar
PUBH 6263	Advanced GIS
PUBH 6270	HIV/AIDS Surveillance
PUBH 6271	Disaster Epidemiology
PUBH 6299	Topics in Epi/Bio
PUBH 6358	Vaccine Policy
PUBH 6399	Topics in Health Policy (i.e.- Homeland Security and Public Health)
PUBH 6484	Prevention and Control of Vector Borne Diseases
PUBH 6487	Emerging Zoonotic Diseases & Global Food Production
MICR 6292	Tropical Infectious Diseases
Field/laboratory experience and final project (4 credits)	
PUBH 6016	Field/Laboratory Experience
PUBH 6280	MEID Final Project

Graduation requirements

1. Graduate Credit Requirement: 45 graduate credits required.
2. Course Requirements: Successful completion of the required courses.
3. Grade Point Requirements: An overall GPA of 3.0 (B average).
4. Time Limit Requirement: The degree must be completed within four years.
5. Transfer Credit Policy: Up to 12 credits that have not been applied to a previous graduate degree may qualify to be transferred to the MS program. Credits must have been earned from an accredited institution in the last 3 years with a grade point average of 3.0 or better.

Students will also be expected to participate in a poster presentation at GW Research Day.

DOCTOR OF PHILOSOPHY IN THE FIELD OF BIOSTATISTICS

Program Director and Academic Advisor E. Bura (CCAS)

The Ph.D. degree program in biostatistics provides doctoral training in the theory of probability, statistics focusing on biostatistical methodology. The 72-credit degree program is jointly administered by the Department of Statistics (https://statistics.columbian.gwu.edu) in the Columbian College of Arts and Sciences (CCAS) and the Department of Epidemiology and Biostatistics in the Milken Institute School of Public Health (http://publichealth.gwu.edu) (SPH) and its associated research facility, The Biostatistics Center. The program is accredited by the Middle States Commission on Higher Education through CCAS and by the Council on Education for Public Health through the Milken Institute SPH. Regulations and requirements for the graduate degree are compatible with policies and scholarship requirements of both CCAS and SPH. The degree is conferred by CCAS.

COMPETENCIES

At the completion of the PhD degree program in Biostatistics students will be able to:

- Conduct biostatistical methodology research.
- Have extensive knowledge of the theory and principles of probability, statistical inference, and biostatistical methods
- Apply and develop appropriate biostatistical methods for the design and analysis of biomedical studies.
- Provide biostatistical advice as a member of a team engaged in a biomedical research project
- Serve as biostatistics experts on collaborative teams of investigators

REQUIREMENTS

Undergraduate course requirements (or equivalents to these GW courses) for admission consideration:

MATH 1231	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
STAT 2118	Regression Analysis
MATH 2233	Multivariable Calculus

Additional course requirements* (or equivalents to these GW courses):

MATH 2184	Linear Algebra I
One of the following:	
STAT 1129	Introduction to Computing
STAT 2183	Intermediate Stat Lab/Packages
PUBH 6249	StatPackages/DataMgt&DataAnlys

* Applicants lacking these courses (or equivalents to these GW courses) will be considered for admission, but, if admissible, will be admitted conditionally with the expectation that these courses will be satisfactorily completed within two semesters following matriculation in the program. These credits do not count as credit toward the 72-credit graduation requirement nor are grades earned in additional courses reflected in the overall grade-point average.

Ph.D. in the field of biostatistics degree requirements: 72 credits of coursework and research, with a minimum of 51 credits of courses and a minimum of 12 credits of dissertation research.

Required statistics and public health core courses:

Required statistics core courses: 27 credits	
STAT 6201	Mathematical Statistics I
STAT 6202	Mathematical Statistics II (* Comprehensive Exam)
STAT 6210	Data Analysis
STAT 6213	Intermediate Probability and Stochastic Processes (* Comprehensive Exam)
PUBH 8365	Design of Medical Studies
PUBH 8366	Biostatistical Methods (* Comprehensive Exam)
STAT 8226	Advanced Biostatistical Methods
STAT 6227	Survival Analysis
STAT 8263	Advanced Statistical Theory I
Required public health core courses: 12 credits	
PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6121	Environmental and Occupational Epidemiology
One of the following:	
PUBH 6299	Topics in Epi/Bio
PUBH 6007	Social&BehaviorAppr-Pub.Hlth
or PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6006	Mgt & Policy Approaches to PH

9 credits from the following approved elective courses:	
Approved statistics elective courses (at least 3 credits must be taken from among the first 3 courses noted below):	
STAT 6214	Applied Linear Models
STAT 6231	Contingency Table Analysis
STAT 8262	Nonparametric Inference
STAT 6207	Methods of Statistical Computing I
STAT 6208	Methods of Statistical Computing II
STAT 6215	Applied Multivariate Analysis I
STAT 6216	Applied Multivariate Analysis II
STAT 6217	Design of Experiments
STAT 6218	Linear Models
STAT 6223	Bayesian Statistics: Theory and Applications
STAT 6242	Regression Graphics/Nonparametric Regression
STAT 6287	Modern Theory of Sample Surveys
STAT 6289	Topics in Statistics
STAT 8257	Probability
STAT 8258	Distribution Theory
STAT 8263	Advanced Statistical Theory I
STAT 8264	Advanced Statistical Theory II
STAT 8265	Multivariate Analysis
STAT 8273	Stochastic Processes I
STAT 8274	Stochastic Processes II
STAT 8281	Advanced Time Series Analysis
STAT 8288	Modern Theory/Sample Surveys
BIOS 8998	Advanced Reading and Research (see advisor)
Approved public health elective courses:	
PUBH 6242	ClinicalEpid&Decision Analysis (recommended)
PUBH 6245	InfectiousDisease Epidemiology
PUBH 8419	Measurement in Public Health & Health Services

Consulting:

Note: May be waived by the Biostatistics Program Director, based on written documentation of prior equivalent coursework or relevant work experience. Waiver of the consulting course increases the total number of electives by the number of consulting credits waived.	
PUBH 6258	Adv Topics/Biostat Consulting
PUBH 6283	Biostatistics Consulting Practicum

Dissertation research:

12-24 credits of the following:	
BIOS 8999	Dissertation Research

General and final examinations

The General Examination is given in two parts:

- Part I is a written comprehensive examination based on the course content of STAT 6202 Mathematical Statistics II, STAT 6213 Intermediate Probability and Stochastic Processes (administered by faculty of the Department of Statistics), and PUBH 6266 Biostatistical Methods (administered by the faculty of the Department of Epidemiology and Biostatistics). Students are expected to take the comprehensive examination within 24 months from the date of enrollment in the program. In addition, students are required to make up any deficiencies prior to taking the examination, e.g., by enrolling in appropriate master's-level courses as needed. A student who fails to pass the comprehensive examination may, with the approval of the faculty, repeat the examination the following year. Failure on the second attempt will result in termination from the Ph.D. program.
- Part II, the research proposal, consists of an oral examination based on a written dissertation research proposal. As soon as feasible after successful completion of the comprehensive exam, students are encouraged to identify a dissertation advisor and a topic of research. The written dissertation proposal is then submitted to the student's Dissertation Research Committee, and the student will make an oral presentation of his or her proposal to the Committee. The Committee will determine the student's readiness to pursue and successfully complete the proposed research, in addition to the appropriateness of the specific problem for dissertation-level research.

Upon successful completion of the required coursework and both parts of the General Examination, the candidate will generally be recommended to the Associate Dean for Graduate Affairs of The Columbian College of Arts and Sciences (CCAS) for promotion to Ph.D. Candidacy: the dissertation research. A candidate must file an approved dissertation research plan with the CCAS before being admitted to Ph.D. Candidacy. Prior to completion of the

General Examination, a student may register for at most 6 credits of BIOS 8999 Dissertation Research.

Consult with the biostatistics program director or academic advisor for the dissertation guidelines.

Professional enhancement requirement: 8 hours

Professional enhancement activities supplement the academic curriculum and help prepare students to participate actively in the professional community. They enhance practical knowledge and awareness of public health issues – either in general or in a student's specific area of study.

Students can fulfill this requirement by attending workshops, seminars, or other relevant professional meetings, which are often held at SPH and in the metropolitan Washington, DC area. Examples of conference sponsors include the National Academy for State Health Policy, the Pan American Health Organization, the American Public Health Association, the American College of Healthcare Executives, the Area Health Education Center, the American College of Sports Medicine, and the National Athletic Trainer's Association. Opportunities for professional enhancement are regularly publicized via the SPH Listserv and through the department or the biostatistics academic advisor.

Students must submit documentation of professional enhancement activities to the biostatistics academic advisor, which includes a ***prior*** approval, a description of the program agenda, and proof of attendance before applying for graduation.

DOCTOR OF PHILOSOPHY IN THE FIELD OF EPIDEMIOLOGY

Program Director S. Cleary

The purpose of the doctor of philosophy program is to prepare students for a career in epidemiologic research in an academic or industry setting. The Ph.D. graduate is expected to have knowledge across a wide range of epidemiologic theories and methods and specific knowledge of the epidemiology of one of the following areas: chronic disease, infectious disease, environmental and occupational health.

Doctoral students are required to pass a written comprehensive examination and to complete a dissertation. For the comprehensive examination the student must demonstrate advanced knowledge of epidemiologic and biostatistical methods. For the dissertation, the student must design and execute an original research study that contributes new knowledge to the field and demonstrates proficiency using advanced analytic methods.

In addition to MS and MPH competencies, doctoral students in epidemiology must demonstrate competencies in the following areas: demonstrate understanding of general and specialized advanced epidemiologic concepts, develop a research protocol, conduct and analyze a research study, and disseminate research findings.

At the completion of the doctoral program in epidemiology students will be able to:

- Demonstrate understanding of general and specialized epidemiologic concepts: Demonstrate knowledge of advanced epidemiologic concepts with specialized knowledge in a specific area of epidemiology (e.g., methods, infectious diseases, chronic diseases, environmental, or occupational); apply knowledge of disease pathogenesis to a study protocol; discuss major public health problems; and exhibit knowledge of ethical issues in research;
- Develop a research protocol: Synthesize and identify gaps and/or limitations of published research and present appropriate hypotheses to address gaps; develop a research protocol including identification of data sources, evaluate appropriate instruments for data collection, discuss the advantages and disadvantages of different epidemiologic study designs and sources of potential bias;
- Conducting and analyzing data from a research study: Demonstrate proficiency in data collection, data cleaning, primary or secondary data analysis, summarizing statistical analyses and results, and evaluating potential for bias; and
- Dissemination of research findings: Provide a structured proposal of a research study including the background, study hypotheses, design, methodology, and contribution to the field; communicate dissertation results to lay and scientific communities through presentations at conferences and publications in the peer-reviewed literature.

Admissions Requirements

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Applicants must hold an undergraduate degree from an accredited institution of higher learning. Applicants should have academic backgrounds of excellence, usually with majors, or equivalent, in the fields in which they intend to study for advanced degrees. Normally, a B average (or equivalent) from an accredited college is required. With evidence of special promise, such as high Graduate Record Examination scores, an applicant whose academic record falls short of a B average may be accepted on a conditional basis. Meeting the minimum requirements does not assure acceptance. The departments may, and often do, set higher admission standards. Moreover, the number of spaces available for new graduate students limits the number who can be accepted. Students who apply in their senior year must provide evidence of the completion of their baccalaureate work before registration in SPH is permitted. Applicants should be aware that graduate courses taken prior to admission while in non-degree status are not used in assessing admissibility to degree programs and may

not be transferable into those programs. The SPH-at-a-Glance (http://sph.washington.edu/about/quickfacts.asp) presents the Ph.D. curriculum for students admitted to the program with no intermediate master's degree.

If desired, a student may complete the M.S. or M.P.H. program prior to admission to the Ph.D. degree program, in which case no more than 24 credits from the M.S. degree may be applied to the Ph.D. course work requirements. In this instance the student will be required to take a minimum of 27 additional credits of course work. The distribution of these courses between epidemiology and statistics will depend on the nature of the M\master's degree and whether the transferred credits will be used to defray epidemiology or statistics course work. All applications are submitted through SOPHAS.org (http://SOPHAS.org).

For reporting GRE general test scores use the following institutional code: 5268.

COMPETENCIES

At the completion of the doctoral program in epidemiology students will be able to:

- Demonstrate understanding of general and specialized epidemiologic concepts.
- Demonstrate knowledge of advanced epidemiologic concepts with specialized knowledge in a specific area of epidemiology (e.g., methods, infectious diseases, chronic diseases, environmental, or occupational); apply knowledge of disease pathogenesis to a study protocol; discuss major public health problems; and exhibit knowledge of ethical issues in research.
- Develop a research protocol: Synthesize, identify gaps and/or limitations of published research and present appropriate hypotheses to address gaps; develop a research protocol including identification of data sources, evaluate appropriate instruments for data collection, the advantages and disadvantages of different epidemiologic study designs and sources of potential bias.
- Conducting and analyzing data from a research study: Demonstrate proficiency in data collection, data cleaning, primary or secondary data analysis, summarizing statistical analyses and results, and evaluating potential for bias.
- Dissemination of research findings: Provide a structured proposal of a research study including the background, study hypotheses, design, methodology, and contribution to the field; communicate dissertation results to lay and scientific communities through presentations at conferences and publications in the peer-reviewed literature.

REQUIREMENTS

The following requirements must be fulfilled:

The requirements for the Doctor of Philosophy Program (p. 82).

72 credits

Preparatory Requirements

Code	Title	Credits
Minimum prerequisite courses for admission consideration		
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
MATH 2233	Multivariable Calculus (option A only)	
Additional course requirements		
The courses listed below are additional course requirements. Applicants lacking these courses (or equivalents to these GW courses) will be considered for admission, but will be admitted conditionally with the expectation that these courses will be completed within two semesters following matriculation in the program. Credits for these courses do not count toward the 72-credit graduation requirement, or are grades earned in these additional courses reflected in the overall grade-point average.		
MATH 2184	Linear Algebra I	
STAT 2183	Intermediate Stat Lab/Packages	
or PUBH 6249	StatPackages/DataMgt&DataAnlys	

Degree Requirements

Code	Title	Credits
Public health core		
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6247	Design of Health Studies	
PUBH 6252	Advanced Epidemiology Methods	
PUBH 8419	Measurement in Public Health & Health Services	
One of the following for a total of 4 credits:		
PUBH 6299	Topics in Epi/Bio (taken for 2 credits)	
and		
PUBH 6004	Environmental and Occupational Health in a Sustainable World	

or PUBH 6007	Social and Behavioral Approaches to Public Health
OR	
PUBH 6299 & PUBH 6006	Topics in Epi/Bio and Management and Policy Approaches to Public Health (taken for 1 credit)
Statistics core	
STAT 6210	Data Analysis (OR)
PUBH 8365	Design of Medical Studies
PUBH 8366	Biostatistical Methods (basis for PhD general comprehensive)
Option A	
STAT 6201	Mathematical Statistics I
STAT 6202	Mathematical Statistics II
Option B	
PUBH 8364	Quantitative Methods
Electives	
A minimum of 17-20 public health elective credits, which may be selected from the following. Additional courses may be approved by the program director.	
PUBH 6299	Topics in Epi/Bio
PUBH 6123	Toxicology: Applications for Public Health Policy
PUBH 6124	Problem Solving in EOH
PUBH 6242	ClinicalEpid&Decision Analysis
PUBH 6244	Cancer Epidemiology
PUBH 6245	InfectiousDisease Epidemiology
PUBH 6250	Epidemiology of HIV/AIDS
PUBH 8242	DPH Topics:ClinEpi&DecAnalysis
PUBH 8244	DPH Topics:Cancer Epidemiology
PUBH 8245	DPH Topics:InfectDiseaseEpi
PUBH 8250	DPH Topics: Epi of HIV/AIDS
PUBH 6259	Epid Surveillance/PublicHealth
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 6262	Intro-Geog Information Systems
PUBH 6263	Advanced GIS
PUBH 6267	Time Series:Applications in PH
PUBH 6268	Advanced SAS
Statistics electives (only students pursuing Option A)	
STAT 6213	Intermediate Probability and Stochastic Processes
STAT 6215	Applied Multivariate Analysis I
STAT 6216	Applied Multivariate Analysis II
STAT 6217	Design of Experiments
STAT 6223	Bayesian Statistics: Theory and Applications
STAT 6227	Survival Analysis
STAT 6231	Contingency Table Analysis
STAT 8226	Advanced Biostatistical Methods
Consulting	
Three credits from the following:	
PUBH 6258	Adv Topics/Biostat Consulting
PUBH 6283	Biostatistics Consulting Practicum
The consulting requiement may be waived by the Epidemiology Program Director based on written documentation of prior equivalent course work or relevant work experience. Waiver of the consulting course increases the total number of electives proportionally.	
Dissertation research	
12-21 credits of the following:	
PUBH 8999	Dissertation Research (taken in units of 3 credits)

Graduation Requirements

1. Program options: Students may choose either curriculum Plan A or curriculum Plan B for the Doctor of Philosophy degree in the field of epidemiology.
2. Graduate credit requirement: 72 graduate credits are required.
3. Prerequisites**:** Review official program guide for minimum prerequisite requirements for admission.
4. Comprehensive (General) exam
   a. A written comprehensive exam will be administered within 24 months from date of matriculation based on the course content of PUBH 6247 Design of Health Studies, PUBH 6252 Advanced Epidemiology Methods,

and PUBH 8419 Measrmnt/PublHlth&HlthSrvcsRes. The exam is administered once per year in August.

b. An oral presentation of the proposal for dissertation is made to the students' Dissertation Research Committee. The Committee will determine the student's readiness to pursue and complete the proposed research.

5. Dissertation: 12-21 credits of dissertation research are required. Students may register for up to 6 credits of PUBH 8999 Dissertation Research prior to completion of the proposal defense.
6. Grade point requirements: An overall GPA of 3.0 (B average) is required.
7. Time limit requirement: The degree must be completed 8 years.
8. Transfer credit policy: Up to 24 credits from an applicable masters program may be approved to be transferred to the doctoral program. Credits must have been earned from an accredited institution with a grade point average of B or better.

The General Examinations

Part I is a written comprehensive examination consisting of one examination in the field of biostatistics and one in the field of epidemiology. The epidemiology examination is based on the course content of PUBH 6247 Design of Health Studies, PUBH 6252 Advanced Epidemiology Methods, and PUBH 8419 Measrmnt/PublHlth&HlthSrvcsRes as well as the biostatistics examination is based on the course content of PUBH 8366 Biostatistical Methods and is administered by the faculty of the Department of Epidemiology & Biostatistics. Students are expected to take the comprehensive examination within 24 months from the date of enrollment in the program. In addition, students are required to make up any deficiencies prior to taking the examination, e.g., by enrolling in appropriate master's-level courses as needed. The doctoral comprehensive examination is administered once per year in late August. A student who fails to pass the comprehensive examination may, with the approval of the faculty, repeat all or portions of the examination. Failure on the second attempt will result in termination from the Ph.D. program.

Part II, the research proposal, consists of an oral examination based on a written dissertation research proposal. As soon as feasible after successful completion of the comprehensive exam, students are encouraged to identify a dissertation advisor and a topic of research. The written dissertation proposal is then submitted to the student's Dissertation Research Committee, and the student will make an oral presentation of his or her proposal to the Committee. The Committee will determine the student's readiness to pursue and successfully complete the proposed research, in addition to the appropriateness of the specific problem for dissertation level research.

Upon successful completion of the required course work and both parts of the General Examination, the candidate will generally be recommended for promotion to PhD Candidacy: the dissertation research. Prior to completion of the General examination, a student may register for at most 6 credit hours of PUBH 8999 Dissertation Research.

Professional Enhancement Requirement (Two Days)

Professional enhancement activities supplement the academic curriculum and help prepare students to participate actively in the professional community. They enhance practical knowledge and awareness of public health issues – either in general or in a student's specific area of study.

Students can fulfill this requirement by attending workshops, seminars, or other relevant professional meetings, which are often held at SPH and in the metropolitan Washington, DC area. Examples of conference sponsors include the National Academy for State Health Policy, the Pan American Health Organization, the American Public Health Association, the American College of Healthcare Executives, the Area Health Education Center, the American College of Sports Medicine, and the National Athletic Trainer's Association. Opportunities for professional enhancement are regularly publicized via the SPH Listserv and through your department or advisor. It is hoped that PhD students will fulfill one day of this two day requirement by participating in a poster presentation at GWUMC Research Day.

Students must submit documentation of Professional Enhancement activities to the Epidemiology Program Director, which includes a prior approval, a description of the program agenda, and proof of attendance before applying for graduation.

EXERCISE AND NUTRITION SCIENCES

The Department of Exercise and Nutrition Sciences holds a unique position as an academic unit within a school of public health. The exercise and nutrition sciences program gives students the opportunity to learn not only how exercise, physical activity, and nutrition affect the individual, but also how these factors affect the health and function of communities at large. The Department provides its students with research and practice opportunities in settings as diverse as the National Institutes of Health, professional sports team, the U.S. Department of Agriculture, the Pentagon, and the D.C. public school system.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science with a major in exercise science (p. 885)
- Bachelor of Science with a major in exercise science, pre-athletic training/sports medicine concentration (p. 887)

- Bachelor of Science with a major in exercise science, pre-medical professional concentration (p. 890)
- Bachelor of Science with a major in exercise science, pre-physical therapy concentration (p. 892)

Minors

- Minor in exercise science (p. 897)
- Minor in nutrition (p. 898)

GRADUATE

Master's programs

- Master of Public Health in the field of physical activity in public health (p. 941)
- Master of Public Health in the field of public health nutrition (p. 944)
- Master of Science in the field of exercise science with a concentration in strength and conditioning (p. 947)

FACULTY

Professors J.V. Danoff, J.A. DeLoia, L. DiPietro *(Chair)*, L.F. Hamm

Associate Professors T. A. Miller, S.A. Talegawker, A. Visek, B.J. Westerman

Assistant Professors M. Barron, G.M. Hudson

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

- Exercise and Nutrition Sciences (EXNS) (p. 1214)
- Health and Wellness (HLWL) (p. 1253)
- Lifestyle, Sport, and Physical Activity (LSPA) (p. 1328)

MASTER OF PUBLIC HEALTH IN THE FIELD OF PHYSICAL ACTIVITY IN PUBLIC HEALTH

Program Director L. DiPietro

Mission Statement

The sedentary lifestyle and its consequent metabolic and cardiovascular complications now assumes a considerable public health burden in the United States. Indeed, the promotion of physical activity for people of all ages has become a top priority on public health agendas around the world. The mission of the Master of Public Health (M.P.H.) degree program in the Department of Exercise and Nutrition Sciences is to develop and train graduate students to integrate physical activity into the core of public health practice. The program encompasses an ecological perspective to the role of physical activity in the etiology, prevention, and treatment of chronic diseases at the community, national, and global levels. The program is designed to train students as public health scientists and practitioners in order to assist public and private agencies with program development and evaluation with regard to physical activity, health promotion, and disease prevention.

Goals

The goals of this M.P.H. program in the Department of Exercise and Nutrition Sciences are to ensure that graduates:

- Understand the pathophysiology of selected chronic disease processes.
- Understand exercise physiology and the role of physical activity and exercise in health promotion and disease prevention.
- Develop skills in physical activity assessment using state-of-the-art technology.
- Utilize epidemiological methods to develop and test hypotheses pertaining to physical activity and health and disease outcomes at the population level.
- Develop skills in designing, implementing, and evaluating interventions for improving physical activity at the community level.
- Appreciate the role of public health policy in altering physical activity patterns at the community level.

COMPETENCIES

Program Specific Competencies

Upon completion of the MPH in Physical Activity in Public Health, students will possess the following functional competencies:

Integrate evidence-based knowledge of the relation of physical activity to health and function across the life-span.

- Students will demonstrate knowledge and understanding of the pathophysiology of selected chronic disease processes. [Cognitive: levels 1 and 2].

EXNS 6202	Advanced Exercise Physiology I
EXNS 6203	Advanced Exercise Physiology II
EXNS 6208	Physical Activity: Physiology and Epidemiology
EXNS 6212	Exercise in Selected Chronic Diseases

- Students will demonstrate knowledge and understanding of the role of physical activity in the health and function of the general population. [Cognitive: levels 1 and 2].

EXNS 6202	Advanced Exercise Physiology I
EXNS 6203	Advanced Exercise Physiology II
EXNS 6208	Physical Activity: Physiology and Epidemiology
EXNS 6212	Exercise in Selected Chronic Diseases

- Students will demonstrate knowledge and understanding of various physiological and psychosocial mechanisms that mediate the relation between physical inactivity and chronic disease morbidity and mortality. [Cognitive: levels 1 and 2].

EXNS 6202	Advanced Exercise Physiology I
EXNS 6203	Advanced Exercise Physiology II
EXNS 6208	Physical Activity: Physiology and Epidemiology
EXNS 6212	Exercise in Selected Chronic Diseases

Utilize social and behavioral theories in designing physical activity and other health promotion programs.

- Students will apply various theories of social and behavioral change in patterns of physical activity adoption and maintenance. [Cognitive: level 3; Affective: levels 3 and 4].

EXNS 6208	Physical Activity: Physiology and Epidemiology
PUBH 6014	Practicum
PUBH 6015	Culminating Experience
Additional relevant courses for students in the Program Design and Evaluation option	
PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Program Evaluation

- Students will demonstrate skills in the design of physical activity interventions that are consistent with these social and behavioral theories. [Cognitive: levels 3-5].

EXNS 6208	Physical Activity: Physiology and Epidemiology
EXNS 6212	Exercise in Selected Chronic Diseases
PUBH 6014	Practicum
PUBH 6015	Culminating Experience
Additional relevant courses for students in the Program Design and Evaluation option	
PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Program Evaluation

Integrate physical activity within the core functions of public health.

- Students will demonstrate skills in physical activity assessment using state-of-the-art technology. [Cognitive: level 3; Affective: level 3; Psychomotor: level 4].

EXNS 6202	Advanced Exercise Physiology I
EXNS 6203	Advanced Exercise Physiology II
EXNS 6208	Physical Activity: Physiology and Epidemiology
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

- Students will apply epidemiological methods to develop and test hypotheses pertaining to physical activity and health and disease outcomes at the population level. [Cognitive: level 3].

EXNS 6208	Physical Activity: Physiology and Epidemiology
EXNS 6212	Exercise in Selected Chronic Diseases
PUBH 6014	Practicum
PUBH 6015	Culminating Experience
Additional relevant courses for student in the Epidemiology option	
PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods

- Students will design and evaluate interventions for improving physical activity at the community level. [Cognitive: levels 3-6].

EXNS 6208	Physical Activity: Physiology and Epidemiology
EXNS 6212	Exercise in Selected Chronic Diseases
PUBH 6014	Practicum
PUBH 6015	Culminating Experience
Additional relevant courses for student in the Epidemiology option	
PUBH 6247	Design of Health Studies

PUBH 6252	Advanced Epidemiology Methods

- Students will appreciate the role of public health policy in altering physical activity patterns at the community level. [Affective: levels 3 and 4].

EXNS 6208	Physical Activity: Physiology and Epidemiology
PUBH 6014	Practicum
Additional relevant course for students in the Program Design and Evaluation Option	
PUBH 6500	Planning and Implementing Health Promotion Programs

Work with other public health professionals in promoting physical activity research, practice, and policy at the community, state, and federal level.

- Students will integrate the science and practice of exercise science and public health in promoting an active lifestyle in the workplace, the school system, and within the community. [Cognitive: level 5; Affective: levels 3-6].

EXNS 6208	Physical Activity: Physiology and Epidemiology
PUBH 6014	Practicum
Additional relevant courses for student in the Program Design and Evaluation option	
PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Program Evaluation
PUBH 6503	Introduction to Public Health Communication and Marketing

- Students will appreciate the role of both traditional and non-traditional public health partners in physical activity promotion. [Cognitive: level 2; Affective; levels 3 and 4].

EXNS 6208	Physical Activity: Physiology and Epidemiology
PUBH 6014	Practicum

- Students will design public health policy that can alter physical activity patterns across multiple settings. [Cognitive: levels 3-5; Affective: levels 3 and 4].

EXNS 6208	Physical Activity: Physiology and Epidemiology
PUBH 6014	Practicum

REQUIREMENTS

Course Requirements

All GW SPH, MPH students who select the Physical Activity in Public Health program enroll in core courses (15 credits), program-specific courses (20 credits), and electives (6 credits). Program-specific courses include options to focus in epidemiology or program design and evaluation. The 45 credit degree program includes a practicum (2 credits) and a culminating experience (2 credits).

Program Requirements

Prerequisites:	
EXNS 2111	Exercise Physiology I
Required core courses:	
PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6004	Environmental and Occupational Health in a Sustainable World
PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6007	Social&BehaviorAppr-Pub.Hlth
Required department courses:	
EXNS 6202	Advanced Exercise Physiology I
EXNS 6203	Advanced Exercise Physiology II
EXNS 6208	Physical Activity: Physiology and Epidemiology
EXNS 6212	Exercise in Selected Chronic Diseases
Required program-specific courses:	
Select Option A or B	
Option A: Epidemiology option	
PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
Option B: Program design and evaluation option	
PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Program Evaluation

PUBH 6502	Practical Data Analysis: PCH
PUBH 6503	Introduction to Public Health Communication & Marketing
Sample electives:	
6 elective credits (5 credits in EXNS or PUBH):	
EXNS 6242	Nutrition Throughout the Life Cycle
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 6262	Intro-Geog Information Systems
PUBH 6536	Workplace Health Promotion
PUBH 6556	Maternal & Child Nutrition
PUBH 6560	School Health and Safety
Practicum and culminating experience courses:	
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits
2. Course requirements: Successful completion of core and program-specific courses
3. Grade point requirement: 3.0 (B average) overall grade point average
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF PUBLIC HEALTH IN THE FIELD OF PUBLIC HEALTH NUTRITION

Program Director K. Robien

Practicum Director K. Robien

Mission

The mission of the master of public health (M.P.H.) degree program in the field of public health nutrition is to develop and train graduate students to integrate nutrition into the core of public health practice. The program encompasses a social ecological perspective on the role of nutrition in the etiology, prevention, and treatment of both acute and chronic disease at the individual, community, national, and global levels. This program is designed to train students as public health scientists and practitioners in order to assist public and private agencies with program development, implementation, and evaluation with regard to nutrition in health promotion and disease prevention.

Goals

The goals of this M.P.H. program in the field of public health nutrition are to ensure that graduates:

- Understand the pathophysiology of common acute and chronic disease processes and the role that nutrition may play in the development of these diseases.
- Understand the factors impacting the accessibility, availability, adequacy, and safety of the food and water systems serving a community, and the relationship between community food and water systems and health outcomes.
- Develop skills in nutrition assessment of both individuals and communities.
- Utilize appropriate epidemiologic methods for developing and testing hypotheses relating to nutrition and health outcomes at the population level.
- Develop skills in designing, implementing, and evaluating nutrition interventions to improve the health of communities.
- Appreciate the role of public health policy in altering the food environment at the community level.

COMPETENCIES

Program-Specific Competencies

Upon completion of the MPH in Public Health Nutrition, students will possess the following functional competencies:

- Integrate nutrition within the core functions of public health.
  Students will be able to translate nutrition research into public health practice through application of skills in nutrition assessment/surveillance, program planning and evaluation, management, education and health promotion, public policy, and health communication.

  Relevant courses:

PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6610	Public Health Nutrition Practice and Leadership

- Describe the international and US public health nutrition system.
  Students will identify the governmental structures and processes involved in the development of public policy, legislation, regulations and delivery of services that influence food intake, nutritional status, and health of populations. Students will identify with international,

federal, state and local level nutrition surveillance and assistance programs. Students will identify the political, economic and social processes that influence food and nutrition policies and legislation.

Relevant courses:

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6482	International Food and Nutrition Policy
PUBH 6610	Public Health Nutrition Practice and Leadership
PUBH 6613	US Food Policy and Politics

- Assess the nutritional status of individuals and communities.
  Students will use appropriate and current methods to assess nutrition status and prioritize nutritional problems of target populations across the life span. Students will understand the process, rationale, and issues related to establishing nutrient requirements and dietary recommendations.

  Relevant courses:

EXNS 6242	Nutrition Throughout the Life Cycle
PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6241	Nutritional Epidemiology
PUBH 6610	Public Health Nutrition Practice and Leadership
PUBH 6611	Nutrition Assessment

- Evaluate the accessibility, adequacy and safety of the food and water systems for a given community, and understand how these factors could affect the desired outcomes of health promotion and disease prevention activities.
  Students will identify potential environmental, economic, behavioral, political, cultural and historical factors that impact the food system (including the production, processing, distribution, and consumption of food) and water supply. Students will implement or advocate for improvements in the food and water supply chain as needed to improve the health of the communities they serve.

  Relevant courses:

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6610	Public Health Nutrition Practice and Leadership
PUBH 6612	Food Systems in Public Health
PUBH 6613	US Food Policy and Politics
EXNS 6242	Nutrition Throughout the Life Cycle

- Apply evidence-based knowledge and understanding of the relationship between nutrition and health outcomes across the life-span.
  Students will describe the role of nutrition in the health of the general population. Students will identify the health consequences of both under- and over-nutrition. Students will identify and critically evaluate relevant nutrition research, and apply research findings to food and nutrition programs and policies.

  Relevant courses:

EXNS 6242	Nutrition Throughout the Life Cycle
PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6241	Nutritional Epidemiology
PUBH 6610	Public Health Nutrition Practice and Leadership
PUBH 6613	US Food Policy and Politics

- Design, implement, and evaluate population-based nutrition interventions, policies, and programs.
  Students will apply the principles of community assessment, planning, marketing, implementation and evaluation in order to assure the success of food and nutrition interventions. Students will understand and apply theories of social and behavioral change when developing nutrition interventions.

  Relevant courses:

PUBH 6014	Practicum
PUBH 6015	Culminating Experience

- Demonstrate effective communication, management and leadership skills to ensure the success of public health nutrition programs and services.
  Students will communicate food and nutrition information appropriate for broad and diverse audiences, including individuals, families, communities, health professionals, media, policy and decision makers, food industries, and businesses. Students will interact sensitively, effectively and professionally with persons from diverse cultural,

socioeconomic, educational, and professional backgrounds, and with persons of all ages and lifestyle preferences.

Relevant courses:

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6610	Public Health Nutrition Practice and Leadership

REQUIREMENTS

Preparatory Requirements

Prerequisites: Students who do not have an undergraduate degree in nutrition must complete successfully one introductory nutrition and one advanced nutrition or nutritional biochemistry course at the undergraduate level (or higher) with a minimum grade of *C* prior to matriculation into the program. GW's School of Public Health offers EXNS 2114 Nutrition Sciences I and EXNS 2115 Nutrition Sciences II. Together these courses satisfy the public health nutrition M.P.H. program prerequisite course work requirement. Alternatively, GW also offers graduate-level Introductory nutrition and nutritional biochemistry courses that satisfy the prerequisite requirement. Consult the Program Director for additional information.

The following requirements must be fulfilled: 45 credits, including 15 credits in core courses, 14 credits in program-specific courses, 4 credits in research courses, 8 credits in elective courses, and 4 credits in practicum and culminating experience courses.

Program Requirements

Code	Title	Credits
Core		
PUBH 6001	Biological Concepts in Public Health	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Program-specific		
PUBH 6241	Nutritional Epidemiology	
EXNS 6242	Nutrition Throughout the Life Cycle	
PUBH 6500	Planning and Implementing Health Promotion Programs	
PUBH 6610	Public Health Nutrition Practice and Leadership	
PUBH 6611	Nutrition Assessment	
PUBH 6612	Food Systems in Public Health	
PUBH 6613	US Food Policy and Politics	
or PUBH 6482	International Food and Nutrition Policy	
Research		
4 credits from the following:		
PUBH 6236	Systematic Review of Public Health Literature	
PUBH 6247	Design of Health Studies	
PUBH 6249	StatPackages/DataMgt&DataAnlys	
PUBH 6260	Adv DataAnalysis-Public Health	
PUBH 6262	Intro-Geog Information Systems	
PUBH 6263	Advanced GIS	
PUBH 6268	Advanced SAS	
PUBH 6273	Ethnographic Methods	
PUBH 6281	Analysis of Complex Surveys Using SAS and Stata	
PUBH 6282	Introduction to R Programming	
PUBH 6410	Global Health Study Design	
PUBH 6411	Global Health Qualitative Research Methods	
PUBH 6412	Global Health Quantitative Research Methods	
PUBH 6437	Case Study Methods for Global Health Evaluation	
PUBH 6488	Cost-effectiveness Analysis in Public Health and Healthcare	
PUBH 6499	Topics in Global Health (Evaluation of Food and Nutrition Programs and Policies)	
PUBH 6501	Program Evaluation	

PUBH 6504	Social and Behavioral Science Research Methods
PUBH 6530	Qualitative Methods in Health Promotion
PUBH 6533	Design of Comm Health Surveys
PUBH 6534	Comm-Based Participatory Res
PUBH 6572	Marketing Research for Public Health
Electives	
8 credits in elective courses; suggested related courses include:	
PUBH 6127	Germs: An Introduction to Environmental Health Microbiology
PUBH 6237	Chronic Disease Epidemiology
PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care
PUBH 6400	Global Health Frameworks
PUBH 6440	Global Health Economics and Finance
PUBH 6485	Prevention and Control of Water and Sanitation Diseases
PUBH 6487	Emerging Zoonotic Diseases & Global Food Production
PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6514	Preventing Health Disparities
PUBH 6515	High Risk&Special Populations
PUBH 6550	Maternal & Child Health I
PUBH 6551	Maternal & Child Health II
PUBH 6552	Women's Health
PUBH 6553	Adolescent Health
PUBH 6556	Maternal & Child Nutrition
PUBH 6562	Physical Activity and Obesity Interventions: From the Individual to the Environment
EXNS 6202	Advanced Exercise Physiology I
EXNS 6203	Advanced Exercise Physiology II
EXNS 6208	Physical Activity: Physiology and Epidemiology
EXNS 6209	Advanced Concepts in Nutrition Science
Practicum and culminating experience	
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits
2. Course requirements: Successful completion of core and program-specific courses
3. Grade point requirement: 3.0 (B average) overall grade point average
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF SCIENCE IN THE FIELD OF EXERCISE SCIENCE WITH A CONCENTRATION IN STRENGTH AND CONDITIONING

Program Director T.A. Miller

Mission Statement

The mission of the program is to provide formal graduate level academic instruction in the science and theory of resistance training, as well as to promote student production of research that directly relates to the neuromuscular adaptations involved with resistance training.

Goals

The goals of this program in the Department of Exercise and Nutrition Sciences are to:

- Establish scientific basis for the value of anaerobic exercise, and to provide internal and external programs that promote health behaviors across the lifespan;
- Meet an increasing demand for well-educated professionals capable of delivering a broad range of exercise-based preventive, technical, educational, and rehabilitative services;
- Gain insight into strategies for the prevention and treatment of sarcopenia, osteoporosis, and childhood obesity;
- Provide advanced training in exercise physiology as it relates specifically to resistance training for the purpose

of increasing athletic performance and the prevention or treatment of inactivity-related health disorders; and
- Prepare students with knowledge and skills to take the Certified Strength and Conditioning Specialist (CSCS) exam offered through the NSCA, and the Level One Weightlifting Coaching Course offered through United States Weightlifting (USAW).

This program is primarily delivered on-line. Contact Program Director for more information.

REQUIREMENTS

Course Requirements

The following requirements must be fulfilled: 36 credits, including 17 credits in core course, 19 credits in program-specific courses, a graduate internship, and successful completion of the comprehensive examination.

Program Requirements

Code	Title	Credits
Prerequisites		
Undergraduate exercise physiology - must be completed prior to beginning coursework at GW and must receive a grade of B or better.		
Core courses		
EXNS 6202	Advanced Exercise Physiology I	
EXNS 6203	Advanced Exercise Physiology II	
EXNS 6207	Psychological Aspects of Sport & Exercise	
EXNS 6208	Physical Activity: Physiology and Epidemiology	
EXNS 6209	Advanced Concepts in Nutrition Science	
PUBH 6002	Biostatistical Applications for Public Health	
Program-specific courses		
EXNS 6220	Power Training for Sports Performance	
EXNS 6221	Science & Theory of Training	
EXNS 6222	Current Topics in Strength and Conditioning	
EXNS 6223	Biomechanical Analysis	
Elective	Approved by the program director	
Culminating experience		
EXNS 6233	Graduate Internship	
Comprehensive examination		

Graduation requirements

1. Graduate credit requirement: 36 graduate credits
2. Course requirements: successful completion of core and program specific courses
3. Examination requirement: pass the American College of Sports Medicine Clinical Exercise Specialist® certification examination (clinical exercise physiology only)
4. Grade point requirement: 3.0 (B average) overall grade point average
5. Time limit requirement: the degree must be completed within four years
6. Transfer credit policy: up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the M.S.E.S. Courses need to have been taken within the past three years from an accredited institution with a grade of B or better.

GLOBAL HEALTH

The Department of Global Health offers diverse programs of study that prepare students to make a difference in the health of individuals and communities around the world. With three fields of study, a joint program with the department of Environmental and Occupational Health, a newly revised joint program managed in conjunction with the Department of Epidemiology and Biostatistics, several joint degree programs with other GW schools, and more than 20 international practicum opportunities, students have a wealth of opportunities to examine global health concepts and conduct interdisciplinary research.

GRADUATE

Master's programs

- Master of Public Health in the field of global environmental health (p. 951)
- Master of Public Health in the field of global health communication (p. 955)
- Master of Public Health in the field of global health epidemiology and disease control (p. 958)
- Master of Public Health in the field of global health policy (p. 960)
- Master of Public Health in the field of global health program design, monitoring, and evaluation (p. 962)

Doctoral program

- Doctor of Public Health in the field of global health (p. 965)

FACULTY

Professors M.C. Ellsberg, J.M. Sherry, L. Simonsen (*Research)*, C. Santos-Burgoa, J.M. Tielsch (*Chair)*, R.J. Waldman

Associate Professors S. Baird, J.F. Sandberg, P. Vigilance

Assistant Professors U. Colon-Ramos, C. Huang, S. Mookherji, K. Ndiaye, A. Roess, E. Uretsky

Adjunct Instructors K. Gamble-Payne, E.A. Migliaccio

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PUBH 2115. Health, Human Rights, and Displaced Persons. 3 Credits.
Concepts of health as a human right, ethics, and the participation of the international community in moving toward health for all. Civil and international conflict in the generation of displaced populations.

PUBH 2116. Global Delivery of Health Systems. 3 Credits.
Introduction to health systems and the basic concepts of health systems administration and financing and health care reform with examples from advanced, middle income, and poor countries.

PUBH 3133. Global Health and Development. 3 Credits.
Basic concepts of political, social, and economic determinants of health and how health status is measured; burden of diseases that impact development and their basic epidemiological characteristics including who they affect, when they occur, and where risk is greatest; relationships between socioeconomic development and global health can be observed, measured, and used for the management of health programs. Material are global in coverage, but with a strong emphasis on low-income countries. Students must have junior or senior standing. Prerequisites: BISC 1005, BISC 1111 and PUBH 2110.

PUBH 6400. Global Health Frameworks. 2 Credits.
Overview of current issues in global public health with particular emphasis on low and middle-income countries. Serves as both an introductory course for students entering the field of global health, as well as an update on current technical and policy issues for advanced students who may have considerable experience.

PUBH 6401. Comp Regional Determinants. 2 Credits.
Examines the set of social, cultural and economic issues most central to shaping health in each of the world's main regions. Overseas Learning Collaboration program in Bangladesh. Prerequisite: PubH 6400. Fee varies by year.

PUBH 6402. Washington Seminar. 2 Credits.
This seminar course will provide an overview of global health policy and practice institutional resources in Washington DC. Students gain an understanding of how global health issues are framed, presented and biased in a multi-institutional setting. This is a collaborative learning exercise where simple web based tools will be used to develop a virtual classroom of the current global health policy and practice dialogue among Washington DC based governmental, multilateral, NGO, private sector and policy institutes.

PUBH 6403. Scientific Basis GH Intervntn. 2 Credits.
Introduces the scientific basis of global health interventions and how they address proximal and underlying determinants of health. Successful students will obtain a strong technical grounding in the determinants, biology and pathogenesis of specific diseases, for which affordable tools for prevention, control, and case management exist and are in use in public health practice.

PUBH 6410. Global Health Study Design. 2 Credits.
A foundation in the tools necessary for planning and designing research related to identifying and solving problems in global health: choosing an appropriate research topic and research question, understanding the relationships between hypotheses and study objectives, conducting a literature review, choosing a research design to achieve the project purpose, writing a research proposal including planning for the challenges of global health research, and achieving productive dissemination of findings.

PUBH 6411. Global Health Qualitative Research Methods. 2 Credits.
An introduction to qualitative data collection and analysis in global health settings. Methodologies include survey design, interviews, focus groups, and participant observation. Archival research and clinical trial research are also addressed. The set of methods most commonly used to collect qualitative data in global health settings. Students are enabled to prepare interview guides, conduct in-depth interviews, and analyze and document the results from a qualitative field project. Prerequisites: PUBH 6002 and PUBH 6410.

PUBH 6412. Global Health Quantitative Research Methods. 3 Credits.
Continuation of the series of global health methods courses. Examination of the fundamental concepts of empirical analysis and qualitative analysis, including open and axial coding, the basis of grounded theory, and regression analysis. Prerequisites: PUBH 6002 and PUBH 6410.

PUBH 6430. Theories for Global Health Communication Interventions. 2 Credits.
Use of communication theory and methods in health promotion. Integration of multidisciplinary approaches to public health communication. Prerequisite: PUBH 6007, PUBH 6400.

PUBH 6431. Global Health Communication Strategies and Skills. 3 Credits.
Students conduct qualitative research to evaluate health communication programs, assess readability level and suitability of written health education materials, conduct content analyses, and review/critique current health communication literature. Prerequisites: PubH 6430-Theories and Applications in Global Health Promotion (unless waived by professor) PubH 6007- Social and Behavioral Approaches to Public Health.

PUBH 6435. Global Health Program Development and Implementation. 2 Credits.
Basic concepts and principles of program development and implementation including data collection methods, decision making, and problem-solving techniques. Application of program development techniques to specific interventions. Prerequisites: PUBH 6400.

PUBH 6436. Global Health Program Management and Leadership. 2 Credits.
Essential tools for successful project, personnel, and program management. Leadership and management theory; key issues in managing global health programs and projects; leadership and management skills development; use of data in management decision making; and importance of quality, supply chain, and resource management. Restricted to MPH in the field of global health program design, monitoring, and evaluation degree candidates. Prerequisites: PUBH 6400, PUBH 6400, and PUBH 6435.

PUBH 6437. Global Health Program Evaluation. 3 Credits.
Fundamentals of program monitoring and evaluation; developing and using program theory in evaluation; impact evaluation and mixed-methods approaches; qualitative methods and statistical analysis for program evaluation. Prerequisites: PubH 6002.

PUBH 6440. Global Health Economics and Finance. 2 Credits.
Examination of economics and finance principles as they apply to global health. Organization, delivery, and financing of health care in developing countries. Tools for analyzing issues related to global health economics and finance and application of those tools to a variety of a global health issues, including demand for health care, health care financing, social insurance, pharmaceuticals, and HIV/AIDS. Prerequisite: PUBH 6400.

PUBH 6441. Global Health Organizations and Regulations. 3 Credits.
The functions, capacities, and governance of international health organizations; the normative power of some international health organizations for regulatory processes; and evidence-based development of public health policies with attention to issues of global trade as it shapes worldwide and national health. Prerequisite: PUBH 6400.

PUBH 6442. Comparative Global Health Systems. 2 Credits.
Examination of national health systems, how they differ, and how they are performing. Health systems analyzed through four different lenses: health care organizations, health workforce development, health care financing, and health policy development. Comparison of health systems and health reforms in seven regions of the world and assessment of how health system performance might be improved. Course fee may apply. Prerequisite: PUBH 6400.

PUBH 6443. Global Health Agreements and Conventions. 2 Credits.
Explores the impact of regulations, trade and human rights on health by examining the relevant international declarations, agreements and conventions. This course will examine a variety of topics including the impact of international trade agreements on health, the International Health Regulations and other regulations affecting global health, and the relationship between health and human rights. Prerequisite: PUBH 6400.

PUBH 6480. Public Health in Complex Emergencies. 2 Credits.
Analyze security institutions, vulnerable groups, humanitarian operations and natural disasters and global security, the impact of global health threats such as HIV/AIDS, SARS, avian flu, tuberculosis and malaria on security institutions, vulnerable populations, civil/military cooperation, and humanitarian operations. Also explore the potential value of various institutions in mitigating global health threats and responding to humanitarian emergencies. Examine a range of scientific, policy, and program interventions designed to address these issues. Prerequisite: PUBH 6400.

PUBH 6481. Global Mental Health. 2 Credits.
Focus on global mental health knowledge and public health policy implementation skills regarding the integration of mental health, public health, and primary care in diverse health systems and challenging cultural contexts. Prerequisite: PubH 6400.

PUBH 6482. International Food and Nutrition Policy. 2 Credits.
Major global food and nutrition issues, their determinants, and the strategies that in place to address them. Students identify major nutrition and food challenges in a country or region as well as the policies and programs that have proven successful in addressing those challenges. Prerequisite: PUBH 6400.

PUBH 6484. Prevention and Control of Vector Borne Diseases. 2 Credits.
Study of insects and other vectors responsible for transmission of diseases in developing countries, including plague, malaria, dengue fever, onchocerciasis (river blindness), and chikungunya virus. Special focus on developing countries, particularly in the Middle East, Africa, Asia, and Latin America. Diseases such as West Nile Virus and Lyme disease in the United States and elsewhere are also addressed. New methods for effective management and control.

PUBH 6485. Prevention and Control of Water and Sanitation Diseases. 1 Credit.
Problems associated with providing adequate water and sanitation in developing countries; infectious diseases such as cholera, dysentery and typhoid. Innovative tools and solutions for improving water supply and sanitation.

PUBH 6492. Global Health Programs and Approaches to the Control of Chronic Diseases. 2 Credits.
Concepts, methods, and tools to address chronic non-communicable diseases (NCDs); global public health and development dimension of NCDs, their epidemiology and risks, and health systems approaches for their control with focus on low- and middle-income countries. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6400.

PUBH 6499. Topics in Global Health. 1-3 Credits.
Examination of a particular facet of public health. Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details.

MASTER OF PUBLIC HEALTH IN THE FIELD OF GLOBAL ENVIRONMENTAL HEALTH

Program Director G. Gray
Practicum Director S. McCormick

Mission

The mission of the master of public health (M.P.H.) in the field of global environmental health degree program—a joint program between the Departments of Global Health and Environmental and Occupational Health—is to educate individuals who are committed to working in resource-poor settings and applying analytic skills to prevent or mitigate the adverse impact of environmental hazards on human health. The program has a particular focus on traditional environmental health hazards—that is, health risks that are a consequence of a lack of access to clean water, inadequate sanitation, poor hygiene, household air pollution, solid waste disposal, and vector-borne diseases such as malaria.

Goals

The program seeks to help train graduates who will hold a multidisciplinary knowledge base and skill set that will provide them with a framework for addressing environmental health issues from environmentally mediated disease in the poorest performing regions of the world. They will understand the scientific and cultural foundations of environmental health in order to assess environmental exposures and understand the effects of these exposures on human health; interpret epidemiologic and other research findings related to global environmental health risks; and assume leadership roles in designing, implementing, and evaluating programs that focus on modification of environmental health-related behaviors at local, regional, national, and/or global levels.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs). (http://www.gwu.edu/all-graduate-programs)

Visit the program website (https://publichealth.gwu.edu/programs/global-environmental-health-mph) for additional information.

COMPETENCIES

Upon completion of the master of public health (M.P.H.) in the field of global environmental health degree program, students should possess the following functional competencies:

Epidemiology and Biostatistics

Critically assess existing epidemiologic research.

- Summarize goals, design, methods, and results of published research.

Code	Title	Credits
PUBH 6015	Culminating Experience	
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health	
PUBH 6400	Global Health Frameworks	
PUBH 6411	Global Health Qualitative Research Methods	

- Identify biases and evaluate the extent to which they threaten study validity.

Code	Title	Credits
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health	
PUBH 6411	Global Health Qualitative Research Methods	

- Apply statistical principles to interpret epidemiologic data.

Code	Title	Credits
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health	

Design appropriate studies for investigating EOH problems.

- Identify appropriate resources and databases to plan and conduct studies.

Code	Title	Credits
PUBH 6015	Culminating Experience	
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6400	Global Health Frameworks	
PUBH 6411	Global Health Qualitative Research Methods	

- Given a research question, identify appropriate study design, choose appropriate study populations, describe relevant exposure assessment methods, identify appropriate data collection instruments and processes, and describe procedures for protecting human subjects.

Code	Title	Credits
PUBH 6015	Culminating Experience	
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6126	Assessment&Control/Env Hazards	
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health	
PUBH 6411	Global Health Qualitative Research Methods	

Conceptualize and carry out data analysis to address study goals.

- Conceptualize research questions

Code	Title	Credits
PUBH 6015	Culminating Experience	
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6411	Global Health Qualitative Research Methods	

- Utilize appropriate approaches to manage and analyze data

Code	Title	Credits
PUBH 6015	Culminating Experience	
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health	
PUBH 6411	Global Health Qualitative Research Methods	

Assess Global Environmental and Occupational Risks

Assess environmental and occupational exposures.

- Describe the principle of operation, capability, and limitations of assessment instrumentation.

Code	Title	Credits
PUBH 6126	Assessment&Control/Env Hazards	

- Assess severity of potential hazards and select the appropriate instrument and measurement method.

Code	Title	Credits
PUBH 6126	Assessment&Control/Env Hazards	

- Interpret exposure measurements to assess the severity of a chemical, physical, or biological hazard.

Code	Title	Credits
PUBH 6126	Assessment&Control/Env Hazards	
PUBH 6435	Global Health Program Development and Implementation	

- Compare exposure data against established occupational and environmental health standards and guidelines.

Code	Title	Credits
PUBH 6126	Assessment&Control/Env Hazards	
PUBH 6128	Global Environmental and Occupational Health	

- Evaluate the strengths and weaknesses of epidemiologic exposure assessments.

Code	Title	Credits
PUBH 6121	Environmental and Occupational Epidemiology	

PUBH 6128	Global Environmental and Occupational Health

Recommend strategies to prevent and control environmental and occupational exposures.

- Recommend appropriate control strategies, such as; environmental health interventions, protective equipment, behavior change campaigns, to mitigate health hazards.

Code	Title	Credits
PUBH 6126	Assessment&Control/Env Hazards	
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6400	Global Health Frameworks	

Global Environmental Health Policy Analysis

Synthesize scientific evidence in order to inform global environmental health policy and reduce and prevent environmental health related disease and injury.

- Describe the authority and approaches of global environmental health agencies.

Code	Title	Credits
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6435	Global Health Program Development and Implementation	

- Apply the risk assessment, risk management, and Source-to-Effect frameworks.

Code	Title	Credits
PUBH 6126	Assessment&Control/Env Hazards	
PUBH 6128	Global Environmental and Occupational Health	

- Explain the role of scientific, economic, ethical, and political interests in development and implementation of global environmental health policy.

Code	Title	Credits
PUBH 6126	Assessment&Control/Env Hazards	
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6400	Global Health Frameworks	
PUBH 6435	Global Health Program Development and Implementation	

Conduct policy analysis relevant to global environmental health problems.

- Discuss interventions used in global environmental health.

Code	Title	Credits
PUBH 6126	Assessment&Control/Env Hazards	
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6400	Global Health Frameworks	
PUBH 6435	Global Health Program Development and Implementation	

- Analyze approaches used in global environmental health policy development.

Code	Title	Credits
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6400	Global Health Frameworks	
PUBH 6435	Global Health Program Development and Implementation	

- Analyze the role of global environmental health policies and politics in promoting sustainability.

Code	Title	Credits
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6435	Global Health Program Development and Implementation	

Design, Implement, Monitor and Evaluate Global Environmental Health Programs

Synthesize relevant information in order to assess and manage environmental and occupational risks.

- Characterize political, social, cultural, religious and economic context to determine feasible interventions.

Code	Title	Credits
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6400	Global Health Frameworks	
PUBH 6435	Global Health Program Development and Implementation	

- Given a specific context, design a plan to collect relevant information to fully characterize global environmental health hazards and related human health effects.

Code	Title	Credits
PUBH 6121	Environmental and Occupational Epidemiology	

PUBH 6128	Global Environmental and Occupational Health
PUBH 6435	Global Health Program Development and Implementation

- Evaluate data to characterize potential global environmental health hazards, potential for human exposure and health effects.

Code	Title	Credits
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6400	Global Health Frameworks	
PUBH 6411	Global Health Qualitative Research Methods	
PUBH 6435	Global Health Program Development and Implementation	

- Recommend possible approaches to reduce the risk and/or impact of exposure to global environmental health hazards, and evaluate these approaches with regard to ethical issues, technical feasibility, resource requirements, and policy context.

Code	Title	Credits
PUBH 6126	Assessment&Control/Env Hazards	
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6400	Global Health Frameworks	
PUBH 6435	Global Health Program Development and Implementation	

- Communicate with relevant stakeholder groups about environmental and occupational health issues and recommendations, using appropriate terminology and data.

Code	Title	Credits
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6435	Global Health Program Development and Implementation	

REQUIREMENTS

Program Requirements

Code	Title	Credits
Core		
PUBH 6001	Biological Concepts in Public Health	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Program-specific: environmental and occupational health		
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6126	Assessment&Control/Env Hazards	
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health	
Program-specific: global health		
PUBH 6400	Global Health Frameworks	
PUBH 6411	Global Health Qualitative Research Methods	
PUBH 6435	Global Health Program Development and Implementation	
Electives		
9 credits from the following:		
PUBH 6123	Toxicology: Applications for Public Health Policy	
PUBH 6132	Design, Implementation and Evaluation of Global Water, Sanitation and Hygiene (WASH) Programs	
PUBH 6125	Intro-Children's Health & Env	
PUBH 6127	Germs: An Introduction to Environmental Health Microbiology	

PUBH 6130	Sustainable Energy and the Environment
PUBH 6133	Social Dimenensions in Climate Change and Health
PUBH 6262	Intro-Geog Information Systems
PUBH 6271	Disaster Epidemiology
PUBH 6435	Global Health Program Development and Implementation
PUBH 6437	Case Study Methods for Global Health Evaluation
PUBH 6480	Public Health in Complex Emergencies
Practicum and Culminating Experience	
PUBH 6014	Practicum
PUBH 6015	Culminating Experience (offered in two parts, 1 credit each)

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits
2. Course requirements: Successful completion of core and program-specific courses
3. Grade point requirement: 3.0 (B average) overall grade point average
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF PUBLIC HEALTH IN THE FIELD OF GLOBAL HEALTH COMMUNICATION

Program Director K. Ndiaye

Mission

The mission of the master of public health (M.P.H.) in global health communication degree program is to train the next generation of public health professionals engaged in addressing global health issues that are directly related to human behavior. Human behavior is at the core of many of the world's most pressing public health challenges, including HIV/AIDS and obesity. The program is designed to train professionals to approach the development and evaluation of behavior-change communication programs that address individual- and community-level factors relevant to particular populations and settings.

Goals

Understanding human behavior and developing ways to affect change requires a diverse set of skill. The goals of the M.P.H. in global health communication are to teach students the following:

- How to recognize the complexity of behavior change, especially the multiple levels of influence on human behavior.
- How to apply behavior change and communication theories in the development and evaluation of health communication programs and activities.
- Appreciation for the challenges that may arise in addressing behavior change in global settings.
- Critical thinking skills necessary to interpret and apply public health literature related to health communication and behavior change in global health settings.
- Skills for developing and evaluating health communication interventions in resource-limited settings or for vulnerable populations.
- Qualitative and quantitative research methods relevant to health communication.
- Knowledge of the various types of stakeholders, including governments, international donors, and local players, that may shape health communication interventions in global settings.
- Cultural competency skills necessary to develop programs and work in diverse cultural settings.
- Awareness of the benefits and challenges to collaborating with organizations that serve disenfranchised/vulnerable communities.

COMPETENCIES

By the end of their MPH program, students should be able to:

- Apply multi-disciplinary perspectives to identify, analyze and address global health challenges.

Relevant courses:

PUBH 6400	Global Health Frameworks
PUBH 6410	Global Health Study Design
PUBH 6411	Global Health Qualitative Research Methods

- Distinguish between qualitative and quantitative methods and select the appropriate method depending on the specific research or programmatic need.

Relevant courses:

PUBH 6411	Global Health Qualitative Research Methods
PUBH 6412	Global Health Quantitative Research Methods

- Interpret and critique research and best practices to inform the development of evidence-based solutions for global health challenges.·

Relevant courses:

PUBH 6400	Global Health Frameworks
PUBH 6410	Global Health Study Design
PUBH 6412	Global Health Quantitative Research Methods

- Communicate public health evidence on global health topics to a variety of audiences, such as technical experts, policymakers, lay audiences, and other relevant stakeholders.

Relevant courses:

PUBH 6412	Global Health Quantitative Research Methods

- Identify and address the ethical issues of global health programs, policies and research.

Relevant courses:

PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs

- Engage with diverse individuals, organizations, and communities with respect for different values, beliefs and practices.·

Relevant courses:

PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs

- Explain multilevel determinants of problems in Global Health and the basis for strategies and interventions.

Relevant courses:

PUBH 6400	Global Health Frameworks

- Describe the governance and institutional landscape of global health.

Relevant courses:

PUBH 6400	Global Health Frameworks

- Demonstrate professionalism in practice, research and in communication activities. ·

Relevant courses:

PUBH 6410	Global Health Study Design
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs

- Explain the ways in which behavior change and communication theories can inform the development and evaluation of health communication interventions.·

Relevant courses:

PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6431	Global Health Communication Strategies and Skills

- Develop logic and conceptual models to design, monitor, and evaluate context-specific health communication interventions.

Relevant courses:

PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6431	Global Health Communication Strategies and Skills
PUBH 6571	Social Marketing: Theory and Practice

- Identify and describe essential components of health communication interventions and strategies, linking theory with practice.

Relevant courses

PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6431	Global Health Communication Strategies and Skills
PUBH 6571	Social Marketing: Theory and Practice

- Evaluate health communication activities and interventions.·

Relevant courses:

PUBH 6430	Theories for Global Health Communication Interventions

PUBH 6431	Global Health Communication Strategies and Skills

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 15 credits in core courses, 10 credits in global health departmental courses, 8 credits in communication program courses, 8 credits in electives, a 2-credit practicum, and a 2-credit culminating experience.

Code	Title	Credits
Core		
PUBH 6001	Biological Concepts in Public Health	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Global Health departmental		
PUBH 6400	Global Health Frameworks	
PUBH 6410	Global Health Study Design	
PUBH 6411	Global Health Qualitative Research Methods	
PUBH 6412	Global Health Quantitative Research Methods	
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs	
Communication program		
PUBH 6430	Theories for Global Health Communication Interventions	
PUBH 6431	Global Health Communication Strategies and Skills	
PUBH 6571	Social Marketing: Theory and Practice	
Electives (for a total of 8 credits)		
One from the following:		
ANTH 6301	The Anthropology of Development	
ANTH 6505	Medical Anthropology	
PUBH 6249	StatPackages/DataMgt&DataAnlys	
PUBH 6262	Intro-Geog Information Systems	
PUBH 6502	Practical Data Analysis: PCH	
PUBH 6533	Design of Comm Health Surveys	
PUBH 6534	Comm-Based Participatory Res	
PUBH 6572	Marketing Research for Public Health	
One from the following:		
IAFF 6502 & IAFF 6503	Professional Skills I and Professional Skills II	
PUBH 6435	Global Health Program Development and Implementation	
or PUBH 6500	Planning and Implementing Health Promotion Programs	
PUBH 6499	Topics in Global Health	
PUBH 6501	Program Evaluation	
PUBH 6515	High Risk&Special Populations	
PUBH 6531	HlthPromotion/HlthCareSettings	
PUBH 6570	AdvPublHlthComm: Theory & Prac	
PUBH 6574	Pub Hlth Branding Theory&Pract	
PUBH 6573	Media Advocacy for Public Hlth	
or PUBH 6532	Commnty Org,Devlpmnt&Advocacy	
PUBH 6575	CommunSkills for PubHProfsnls	
SMPA 6201	Strategic Communications Skills	
SMPA 6205	Media, Development, and Globalization	
Any SPH or other GW course(s) with advisor's approval via petition		
Practicum and culminating experience		
PUBH 6014	Practicum	
PUBH 6015	Culminating Experience	

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits
2. Course requirements: Successful completion of core and program-specific courses
3. Grade point requirement: 3.0 (B average) overall grade point average

4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF PUBLIC HEALTH IN THE FIELD OF GLOBAL HEALTH EPIDEMIOLOGY AND DISEASE CONTROL

Program Director J. Tielsch

Mission

The mission of the Global Health Epidemiology and Disease Control Program is to prepare global health professionals to develop and rigorously appraise programs for the control of infectious and chronic diseases as well as injuries. Students acquire the skills needed to improve program performance, thereby helping to ensure optimum investment of scarce resources in low and middle income countries and in underserved communities around the world.

Goals

The goals of the Global Health Epidemiology and Disease Control Program are to prepare students to be applied epidemiologists in public health program implementation and evaluation to:

- Use common epidemiological tools to generate evidence on interventions targeted to infectious and chronic disease control.
- Work within real-world settings to strengthen methodological rigor of program priority setting and evaluation.
- Generate and use data for assessing burden of disease, determining efficacy and effectiveness of interventions for infectious and chronic diseases.
- Translate evidence to support program and health systems improvements and policy recommendations.
- Communicate the results of research to a broad set of constituents.

COMPETENCIES

By the end of their MPH, Global Health Epidemiology and Disease Control program, students should be able to:

- Apply epidemiological and multi-disciplinary concepts to identify, analyze, and address global health challenges including burden of illness and the determinants and distribution disease in populations.

Relevant courses:

PUBH 6247	Design of Health Studies
PUBH 6400	Global Health Frameworks

- Select the appropriate qualitative and/or quantitative methods depending on the specific research or programmatic need and apply underlying principles to design and conduct such studies including observational and experimental designs, screening programs, and public health surveillance.

Relevant courses:

PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6441	Global Health Organizations and Regulations

- Apply appropriate data analysis methods and interpret the results from epidemiological studies.

Relevant courses:

PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods

- Interpret and critique research and best practices to inform the development of evidence-based solutions for global health challenges.

Relevant courses:

PUBH 6247	Design of Health Studies
PUBH 6252	Advanced Epidemiology Methods
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6486	Global Health Programs and Approaches to the Control of Infectious Diseases
PUBH 6492	Global Health Programs and Approaches to the Control of Chronic Diseases

- Communicate evidence on global health topics to a variety of audiences including technical experts, policymakers, lay audiences, and other relevant stakeholders.

Relevant courses:

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6400	Global Health Frameworks

- Work in a multidisciplinary team to identify and address the ethical issues of global health programs, policies and research.

Relevant courses:

PUBH 6400	Global Health Frameworks
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs

- Engage with diverse individuals, organizations, and communities with respect for different values, beliefs and practices.

Relevant course:

PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs

- Analyze multilevel determinants of problems in global health that form the basis for disease control strategies and interventions.

Relevant courses:

PUBH 6400	Global Health Frameworks
PUBH 6486	Global Health Programs and Approaches to the Control of Infectious Diseases
PUBH 6492	Global Health Programs and Approaches to the Control of Chronic Diseases

REQUIREMENTS

The following requirements must be fulfilled: 45 credits including, 15 credits in core courses, 18 credits in program specific courses, 8 credits in elective courses, a 2-credit practicum, and a 2-credit culminating experience.

Code	Title	Credits
Core (15 credits)		
PUBH 6001	Biological Concepts in Public Health	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Program specific (18 credits)		
PUBH 6247	Design of Health Studies	
PUBH 6249	StatPackages/DataMgt&DataAnlys	
PUBH 6252	Advanced Epidemiology Methods	
PUBH 6400	Global Health Frameworks	
PUBH 6411	Global Health Qualitative Research Methods	
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs	
PUBH 6486	Global Health Programs and Approaches to the Control of Infectious Diseases	
PUBH 6492	Global Health Programs and Approaches to the Control of Chronic Diseases	
Electives*		
Eight credits from the following:		
PUBH 6563	Global Child Health	
PUBH 6484	Prevention and Control of Vector Borne Diseases	
PUBH 6487	Emerging Zoonotic Diseases & Global Food Production	
PUBH 6245	InfectiousDisease Epidemiology	
PUBH 6250	Epidemiology of HIV/AIDS	
PUBH 6253	Issues in HIV Care & Treatment	
PUBH 6240	Pediatric HIV/AIDS	
PUBH 6270	HIV/AIDS Surveillance	
PUBH 6255	Org Responses to HIV/Epidemic	
PUBH 6259	Epid Surveillance/PublicHealth	
PUBH 6244	Cancer Epidemiology	
PUBH 6481	Global Mental Health	

PUBH 6269	Reproductive Epidemiology
PUBH 6262	Intro-Geog Information Systems
PUBH 6480	Public Health in Complex Emergencies
PUBH 6501	Program Evaluation
PUBH 6132	Design, Implementation and Evaluation of Global Water, Sanitation and Hygiene (WASH) Programs
PUBH 6242	ClinicalEpid&Decision Analysis
PUBH 6243	Topics:ClinicalEpi&DecAnalysis
Practicum and Culminating Experience (4 credits)	
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

*Alternate elective courses can be selected with approval of advisor.

MASTER OF PUBLIC HEALTH IN THE FIELD OF GLOBAL HEALTH POLICY

Program Director C. Santos-Burgoa

Mission

The mission of the master of public health in the field of global health policy degree program is to prepare global health professionals in the disciplines and perspectives necessary to contribute to the development, implementation, and evaluation of policies at the local, national, regional, and international levels that will improve the health and well-being of underserved populations in low and middle income settings abroad and within the United States.

Goals

The goals of the Global Health Policy program are to prepare students to:

- Assess the burden and determinants of health problems in an underserved low or middle income population.
- Assess and evaluate the relevant policy issues appropriate to addressing these health problems using a multidisciplinary approach.
- Assume leadership roles in the policy development process with the goal of maximizing the performance and financial integrity of the health system.

COMPETENCIES

By the end of their MPH, Global Health Policy program, students should be able to:

- Apply multi-disciplinary perspectives to identify, analyze and address global health challenges.

Relevant courses:

PUBH 6400	Global Health Frameworks
PUBH 6410	Global Health Study Design
PUBH 6411	Global Health Qualitative Research Methods

- Distinguish between qualitative and quantitative methods and select the appropriate method depending on the specific research or programmatic need.

Relevant courses:

PUBH 6411	Global Health Qualitative Research Methods
PUBH 6412	Global Health Quantitative Research Methods

- Interpret and critique research and best practices to inform the development of evidence-based solutions for global health challenges.

Relevant courses:

PUBH 6400	Global Health Frameworks
PUBH 6410	Global Health Study Design
PUBH 6412	Global Health Quantitative Research Methods

- Communicate public health evidence on global health topics to a variety of audiences, such as technical experts, policymakers, lay audiences, and other relevant stakeholders.

Relevant courses:

PUBH 6412	Global Health Quantitative Research Methods

- Identify and address the ethical issues of global health programs, policies and research.

Relevant courses:

PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs

- Engage with diverse individuals, organizations, and communities with respect for different values, beliefs and practices.

Relevant courses:

PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs

- Explain multilevel determinants of problems in Global Health and the basis for strategies and interventions.

Relevant courses:

PUBH 6400	Global Health Frameworks

- Describe the governance and institutional landscape of global health.

Relevant courses:

PUBH 6400	Global Health Frameworks

- Demonstrate professionalism in practice, research and in communication activities.

Relevant courses:

PUBH 6410	Global Health Study Design
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs

- Apply quantitative and qualitative tools and concepts to develop global health policy analyses for different audiences.

Relevant courses:

PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care
PUBH 6315	Intro-Health Policy Analysis

- Analyze major multi-institutional and multi-sectoral initiatives in global health and make recommendations from an organizational and financial perspective on how they might be strengthened. ·

Relevant courses:

PUBH 6441	Global Health Organizations and Regulations
PUBH 6442	Comparative Global Health Systems

- Describe how health system performance is affected by various approaches to health system organization, financing and workforce development.

Relevant courses:

PUBH 6440	Global Health Economics and Finance
PUBH 6442	Comparative Global Health Systems

- Assess the historical and ongoing development of international health regulations and intellectual property rights and how they could be addressed through national and international policies. Understand the role they play in controlling a major epidemic or health emergency.

Relevant courses:

PUBH 6441	Global Health Organizations and Regulations
PUBH 6443	Global Health Agreements and Conventions

- Assess the relationship between the protection, promotion, and progressive realization of human rights and global health outcomes.

Relevant courses:

PUBH 6441	Global Health Organizations and Regulations
PUBH 6443	Global Health Agreements and Conventions

- Describe the economic challenges faced by low and middle-income countries regarding health status of their populations and health care delivery options and how different policy approaches can be used to address these challenges.

Relevant courses:

PUBH 6440	Global Health Economics and Finance
PUBH 6442	Comparative Global Health Systems

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 15 credits in core courses, 21 credits in program-specific courses, 5 credits in elective courses, a 2-credit practicum, and a 2-credit culminating experience.

Program Requirements

Code	Title	Credits
Core		
PUBH 6001	Biological Concepts in Public Health	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	

PUBH 6004	Environmental and Occupational Health in a Sustainable World
PUBH 6006	Management and Policy Approaches to Public Health
PUBH 6007	Social and Behavioral Approaches to Public Health
Program-specific	
PUBH 6400	Global Health Frameworks
PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care
PUBH 6315	Intro-Health Policy Analysis
PUBH 6410	Global Health Study Design
PUBH 6412	Global Health Quantitative Research Methods
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs
PUBH 6440	Global Health Economics and Finance
PUBH 6441	Global Health Organizations and Regulations
PUBH 6442	Comparative Global Health Systems
PUBH 6488	Cost-effectiveness Analysis in Public Health and Healthcare
Electives	
5 elective credits, including 3 credits from the following courses and 2 credits in courses selected in consultation with the advisor.	
PUBH 6262	Intro-Geog Information Systems
PUBH 6320	Advanced Health Policy Analysis
PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6435	Global Health Program Development and Implementation
PUBH 6437	Case Study Methods for Global Health Evaluation
PUBH 6486	Global Health Programs and Approaches to the Control of Infectious Diseases
PUBH 6492	Global Health Programs and Approaches to the Control of Chronic Diseases
PUBH 6482	International Food and Nutrition Policy
PUBH 6575	CommunSkills for PubHProfsnls
PPPA 6015	Benefit-Cost Analysis
PPPA 6006	Policy Analysis
PPPA 6062	Community Development Policy and Management
IAFF 6198	Special Topics in International Trade and Investment Policy
IAFF 6158	Special Topics in International Science and Technology Policy
IAFF 6138	Special Topics in International Development Studies
Practicum and culminating experience	
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits
2. Course requirements: Successful completion of core and program-specific courses
3. Grade point requirement: 3.0 (B average) overall grade point average
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF PUBLIC HEALTH IN THE FIELD OF GLOBAL HEALTH PROGRAM DESIGN, MONITORING, AND EVALUATION

Program Director S. Baird

Mission

The mission of the Global Health Program Design, Monitoring, and Evaluation (DME) degree program is to prepare the next generation of global health professionals to implement and evaluate global health programs and initiatives. This program aims to train professionals who use evidence to improve

performance of and investments in global health programs that will improve the health and well-being of populations in low and middle income settings abroad and within the United States.

Goals

The goals of the Global Health Design, Monitoring, and Evaluation program are to prepare students to be skilled evaluators and practitioners who know how to:

- Utilize the full range of evaluation design options to generate the best evidence on how well a program is working, how it is working, and why;
- Work within real-world confines to strengthen methodological rigor of evaluation and program implementation;
- Use theory to ground program design, implementation, and evaluation;
- Generate and use data for management decision-making; and
- Translate evidence into implementation improvements and policy recommendations.

COMPETENCIES

By the end of the MPH, Global Health Program Design, Monitoring, and Evaluation program, students should be able to:

- Apply multi-disciplinary perspectives to identify, analyze and address global health challenges.

Relevant courses:

PUBH 6400	Global Health Frameworks
PUBH 6410	Global Health Study Design
PUBH 6411	Global Health Qualitative Research Methods

- Distinguish between qualitative and quantitative methods and select the appropriate method depending on the specific research or programmatic need.

Relevant courses:

PUBH 6411	Global Health Qualitative Research Methods
PUBH 6412	Global Health Quantitative Research Methods

- Interpret and critique research and best practices to inform the development of evidence-based solutions for global health challenges.·

Relevant courses:

PUBH 6400	Global Health Frameworks
PUBH 6410	Global Health Study Design
PUBH 6412	Global Health Quantitative Research Methods

- Communicate public health evidence on global health topics to a variety of audiences, such as technical experts, policymakers, lay audiences, and other relevant stakeholders.

Relevant courses:

PUBH 6412	Global Health Quantitative Research Methods

- Identify and address the ethical issues of global health programs, policies and research.

Relevant courses:

PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs

- Engage with diverse individuals, organizations, and communities with respect for different values, beliefs and practices.·

Relevant courses:

PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs

- Explain multilevel determinants of problems in Global Health and the basis for strategies and interventions.

Relevant courses:

PUBH 6400	Global Health Frameworks

- Describe the governance and institutional landscape of global health.

Relevant courses:

PUBH 6400	Global Health Frameworks

- Demonstrate professionalism in practice, research and in communication activities. ·

Relevant courses:

PUBH 6410	Global Health Study Design
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs

- Utilize epidemiological data, program theory, programmatic evidence, and health systems and

policy contextual information for the design of effective global health interventions and programs, as well as their monitoring and evaluation.

Relevant courses:

PUBH 6435	Global Health Program Development and Implementation
PUBH 6501	Program Evaluation

- Compare and select monitoring frameworks and evaluation methods according to specified purposes for each.

Relevant courses:

PUBH 6435	Global Health Program Development and Implementation
PUBH 6501	Program Evaluation

- Identify frameworks for the design of culturally acceptable and contextually feasible global health interventions and evaluations.

Relevant courses:

PUBH 6435	Global Health Program Development and Implementation

- Apply research, leadership, and communication skills to support the design, implementation, evidence and policy cycle.

Relevant courses:

PUBH 6435	Global Health Program Development and Implementation
PUBH 6436	Global Health Program Management and Leadership

REQUIREMENTS

The following requirements must be fulfilled: 32 credits in required courses, 9 credits in elective courses, and 4 credits in practicum and culminating experience.

Code	Title	Credits
Required core (15 credits)		
PUBH 6001	Biological Concepts in Public Health	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Required departmental (10 credits)		
PUBH 6400	Global Health Frameworks	
PUBH 6410	Global Health Study Design	
PUBH 6411	Global Health Qualitative Research Methods	
PUBH 6412	Global Health Quantitative Research Methods	
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs	
Required program-specific (7 credits)		
PUBH 6435	Global Health Program Development and Implementation	
PUBH 6501	Program Evaluation	
PUBH 6436	Global Health Program Management and Leadership	
Electives		
4 credits from the following:		
PUBH 6437	Case Study Methods for Global Health Evaluation	
PUBH 6440	Global Health Economics and Finance	
PUBH 6441	Global Health Organizations and Regulations	
PUBH 6442	Comparative Global Health Systems	
PUBH 6262	Intro-Geog Information Systems	
PUBH 6263	Advanced GIS	
ANTH 6505	Medical Anthropology	
PUBH 6340	Health Economics and Finance	
PUBH 6352	Basics of Econ for Health Pol	
5 credits from the following:		
PUBH 6480	Public Health in Complex Emergencies	
PUBH 6481	Global Mental Health	
PUBH 6482	International Food and Nutrition Policy	

PUBH 6484	Prevention and Control of Vector Borne Diseases
PUBH 6485	Prevention and Control of Water and Sanitation Diseases
PUBH 6132	Design, Implementation and Evaluation of Global Water, Sanitation and Hygiene (WASH) Programs
PUBH 6250	Epidemiology of HIV/AIDS
Any School of Public Health or other GW course(s) with the advisor's approval.	
Practicum and culminating experience	
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits
2. Course requirements: Successful completion of core and program-specific courses
3. Grade point requirement: 3.0 (B average) overall grade point average
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

DOCTOR OF PUBLIC HEALTH IN THE FIELD OF GLOBAL HEALTH

Program Director A. Roess

Mission

The doctor of public health in the field of global health (Dr.PH.) degree program is the terminal degree in the professional discipline of public health. Consistent with this advanced professional orientation, the Dr.PH. program prepares future public health leaders to apply critical thinking skills and rigorous research methods to the complex practical problems facing practitioners and policy-makers in public health practice. The program is designed to both follow and promote the principles of academic public health practice. As noted in a recent ASPH publication, public health practice is the strategic, organized, and interdisciplinary application of knowledge, skills, and competencies necessary to perform essential public health services and other activities to improve the populations' health. Academic public health practice is the applied, interdisciplinary pursuit of scholarship in the field of public health. Recent events sharply illustrate the need for public health professionals who can provide the leadership to expand and strengthen the US and global public health systems. The Dr.P.H program is designed to prepare professionals with skills to provide this leadership.

From the combination of course work and the implementation of the knowledge in the context of a thesis project in outstanding international placements, the Dr.P.H. degree program in Global Health will enable professionals to develop innovative approaches and ability to negotiate the complex interrelationship between health and political, economic, and human development.

Goals

The Dr.P.H. graduate will be prepared to assume an advanced level of leadership in global health, in the context of health research as well as implementation programs in an international setting.

Admissions Requirements

The Doctor of Public Health Program is designed for mid-career professionals seeking to become public health leaders. Applicants who have completed an M.P.H. degree from a Council of Education for Public Health (CEPH) accredited program are strongly preferred for admission to the Dr.P.H. program. Alternatively, applicants with a master's degree in another field may indicate their relevant training, research experience, or educational background comparable to the M.P.H. Doctoral applicants admitted without an M.P.H. will be required to take additional course work at the graduate level that does not apply toward the minimum 48 credits required for the Dr.P.H. Qualified applicants with degrees from institutions in foreign countries are also eligible for admission. All applicants must submit scores from the Graduate Record Exam (GRE) taken within five years of the date of application. Because admission to this program is highly selective, successful applicants have competitive academic credentials and substantial prior public health professional work experience related to the specialty field to which they are applying.

Program Policies and Procedures

For program policies and procedures, please refer to the Doctor of Public Health Handbook and other resources located on Dr.P.h. in the field of Global Health website (http://publichealth.gwu.edu/programs/global-health-drph).

REQUIREMENTS

Program requirements:

Code	Title	Credits
20 credits of required foundational courses and research methods		

PUBH 8401	Foundations in Public Health Leadership & Practice
PUBH 8402	Leadership in Public Health Practice & Policy
PUBH 8416	Study Design & Evaluation Methods
PUBH 8418	Applied Statistical Analysis
PUBH 8417	Qualitative Research Methods and Analysis
PUBH 8419	Measurement in Public Health & Health Services
PUBH 8420	Advanced Analysis & Dissemination
6 credits required global health specialty field courses	
PUBH 8406	Advanced Topics: Health Research in the Global Arena
PUBH 8407	Advanced Topics: Health Leadership in International Settings
Elective specialty field courses (sample list)	
7-10 credits from the following:	
PUBH 6123	Toxicology: Applications for Public Health Policy
PUBH 6128	Global Environmental and Occupational Health
PUBH 6242	ClinicalEpid&Decision Analysis
PUBH 6244	Cancer Epidemiology
PUBH 6245	InfectiousDisease Epidemiology
PUBH 6250	Epidemiology of HIV/AIDS
PUBH 6259	Epid Surveillance/PublicHealth
PUBH 6262	Intro-Geog Information Systems
PUBH 6263	Advanced GIS
PUBH 6270	HIV/AIDS Surveillance
PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6431	Global Health Communication Strategies and Skills
PUBH 6435	Global Health Program Development and Implementation
PUBH 6440	Global Health Economics and Finance
PUBH 6441	Global Health Organizations and Regulations
PUBH 6442	Comparative Global Health Systems
PUBH 6443	Global Health Agreements and Conventions
PUBH 6481	Global Mental Health
PUBH 6482	International Food and Nutrition Policy
4 credits of professional leadership courses	
PUBH 8413	Research Leadership
PUBH 8415	Instructional Leadership
Dissertation	
8-11 credits of dissertation preparation and dissertation	
PUBH 8422	Advanced Health Care and Public Health Research Design
Before enrolling in PUBH 8422, students must have completed the comprehensive examination successfully, obtained the approval of the Program Director, and presented a one-page abstract	
PUBH 8423	Dissertation Research

Graduation Requirements

1. Graduate credit requirement: 48 graduate credits are required.
2. Course requirements: successful completion of the foundational and research methods courses. The program-specific specialty field courses and the professional leadership credits are required.
3. Comprehensive exam: Once the course of study is completed, students are required to pass the comprehensive exam to be officially admitted to the candidacy phase.
4. Dissertation: PUBH 8422 Advanced Health Care and Public Health Research Design plus 6-9 dissertation research credits are required. Once the proposal has been successfully defended and dissertation research credits have been met, the oral defense may be scheduled.
5. Grade point requirement: A 3.0 (B average) overall grade-point average is required.
6. Time limit requirement: The degree must be completed within seven (7) years.
7. No transfer credits are accepted.

HEALTH POLICY AND MANAGEMENT

In early 2015, the Department of Health Policy and the Department of Health Services Management and Leadership consolidated to create a larger, integrated department that is even better prepared to lead education, research, and practice efforts related to public health policy, health care policy, and health services management. This positive evolution creates new and dynamic synergies for faculty, staff, students, and alumni, and maximizes our education and research potential.

The mission of the Department of Health Policy and Management—a practice-oriented academic community in Washington, D.C.—is to improve health and health systems locally, nationally, and globally through: excellence in education; innovative scholarship; applied research that is translated into practice and policy; and the promotion of transformational leadership that advances health policy and health services management.

We are committed to:

- Preparing graduates who will become innovative and effective leaders in public health and health policy, health services delivery, and health system transformation.
- Conducting rigorous multidisciplinary research that addresses significant health challenges, is objective, and is translated to inform and affect health policy, health care management, and public health practice.
- Being a trusted resource for shaping and advancing health policy and management practices because of our research integrity and rigor, the real-world leadership experiences of our faculty and staff, and our exceptional students.
- Leveraging our unique location in Washington, DC which allows for strong collaborations with health policy and management leaders and practitioners.
- Improving the health and health care of under-served and vulnerable populations.
- Promoting and learning from the diversity among our faculty, staff, students, and alumni in terms of background, experience, and thought.

GRADUATE

Master's programs

- Master of Health Administration (p. 968)
- Master of Health Administration – online/executive program (p. 971)
- Master of Public Health in the field of health policy (p. 972)
- Master of Science in the field of health policy (p. 978)
- Master of Science in the field of management of health informatics analytics (p. 979)
- Health Services Administration Specialist (p. 979)

Doctoral programs

- Doctor of Philosophy in the field of public policy and administration (health policy track) (p. 980)
- Doctor of Public Health in the field of health policy (p. 981)

CERTIFICATE

- Graduate certificate in health administration generalist (p. 982)
- Graduate certificate in health policy (p. 983)
- Graduate certificate in long-term care (p. 984)

FACULTY

University Professor V.N. Gamble

Professors R.E. Burke, L. Chun-lee Ku, L.R. Deyton, A. Dor, L.H. Friedman, J.K. Greene, K.Horton *(Research)*, T.A. LaVeist *(Chair),* J.W. Levi, F.S.M. Mullan, M.J. Regenstein, J.J. Reum *(Emeritus),* S. Rosenbaum, J.L. Scott, J. P. Wisdom

Associate Professors T.L.Burke, L. Cartwright-Smith (*Research),* J.Fischer (*Research),* S.L. Frehywot (*Research),* M.M. Goldstein *(Teaching)*, L. Helmchen, R.L. Katz, A.R. Markus, M.McCarthy, P. Pittman, N.Seiler (*Research),* P.W. Shin, A.M.Stewart, J.B. Teitelbaum, J.H.Thorpe, S.F. Wood

Assistant Professors M. Harty (*Research),* S. Li, L. Masselink, K.H. Mead, W. Psek

Teaching Instructors S. Hanna

Aduncт Instructors T. Jazweicki, P.Z. Marghella, N. McKelvey

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

- Health Services Management and Leadership (HSML) (p. 1250)
- Public Health (PUBH) (p. 1420)

MASTER OF HEALTH ADMINISTRATION

Program Director L. Friedman

Mission

The master of health administration degree program will develop leaders who possess the values, knowledge, and skills to achieve optimal delivery of healthcare.

Overview

Since its founding in 1959, the master of health administration program (M.H.A.) has offered education in health services administration to help meet the growing need for skilled executives to manage health-related organizations and programs. Because it recognizes and responds to the fast-paced, dynamic changes occurring in the industry today, the program is well-positioned to prepare not only health care managers, but the health care leaders of tomorrow. An M.H.A. degree from the Department of Health Policy and Management incorporates business and medical informatics training, knowledge of health care systems, management theory, ethics, law, and policy, critical values in decision making, and much more.

The program's special strengths include an emphasis on experiential learning and community service, distinguished faculty, research collaborations, and relationships with policy-making and health care organizations in Washington, D.C. Active alumni (p. 968) and student (http://publichealth.gwu.edu/projects/hsml-student-association) associations foster mentoring, networking, and other professional development opportunities.

The curriculum focuses on leadership and strategic management trends, quality and performance improvement, leadership skills, community health planning and advocacy, organizational theory, finance, and health law. The program also offers residency and internship opportunities that allow students to apply their classroom knowledge in healthcare settings. Numerous seminar, conference, and networking opportunities are made possible through relationships with professional organizations and associations.

Goals

Graduates of the program will be able to:

- Effectively manage organizational change and promote organizational and clinical excellence.
- Manage health services organizations under alternative financing mechanisms.
- Lead and manage human resources in diverse organizational environments.
- Manage information resources to assist in effective decision making and clinical management.
- Use statistical, quantitative, and economic analyses in decision making.
- Have the skills to improve both business and clinical outcomes of health services organizations.

COMPETENCIES

Broadly defined, the goal of the Master of Health Administration program is to provide health care delivery organizations with talented graduates who possess the knowledge, skills, and attitudes to deliver health services in the most effective and efficient manner possible. The Master of Health Administration degree is designed to provide students with the ability to develop and demonstrate leadership, communication and relationship management, business skills and knowledge, professionalism and healthcare knowledge applied across the widest possible spectrum of health care delivery organizations. Upon completion of the Master of Health Administration graduates will be competent to:

1. Lead and manage others, plan and implement change and engage in honest self-assessment.

   Relevant courses:

HSML 6203	Introduction to Health Management
HSML 6213	Health Services, Marketing & Planning
HSML 6216	HumanResourcesMgt&OrgBehavior
HSML 6218	Sem-HlthServicesMgt&Leadership
HSML 6231	Management-Acute Care Hospital
HSML 6237	Managing/SkilledNursngFacility
HSML 6238	Ambulatory Care Management

2. Enhance and improve communication and relationship management within interpersonal communication, verbal and written communication, and team-based processes.

   Relevant courses:

HSML 6202	Intro/Health Services Delivery
HSML 6203	Introduction to Health Management
HSML 6204	Quality&PerformanceImprovement
HSML 6212	CommunityHealth Mgt & Advocacy
HSML 6213	Health Services, Marketing & Planning
HSML 6216	HumanResourcesMgt&OrgBehavior
HSML 6218	Sem-HlthServicesMgt&Leadership
HSML 6231	Management-Acute Care Hospital

HSML 6237	Managing/SkilledNursngFacility

3. Demonstrate the breadth of core business skills and knowledge in the following areas:
   - Solving business problems and decision making and project management.

     Relevant courses:

HSML 6203	Introduction to Health Management
HSML 6204	Quality&PerformanceImprovement
HSML 6213	Health Services, Marketing & Planning
HSML 6218	Sem-HlthServicesMgt&Leadership
HSML 6231	Management-Acute Care Hospital
HSML 6246	Service Line & Project Mgt

   - Quantitative skills, financial management, economic analysis and information and technology management.

     Relevant courses:

HSML 6206	QuanMethds&Epid/HealthServices
HSML 6207	HealthServicesInfoApplications
HSML 6208	Medical Informatics
HSML 6209	Health Services Finance
HSML 6210	Hlth Serv Financl Applications
HSML 6211	Health Economics

   - Legal principles, marketing, quality improvement, organizational dynamics, and governance.

     Relevant courses:

HSML 6203	Introduction to Health Management
HSML 6204	Quality&PerformanceImprovement
HSML 6213	Health Services, Marketing & Planning
HSML 6215	Health Law for Managers
HSML 6231	Management-Acute Care Hospital
HSML 6237	Managing/SkilledNursngFacility
HSML 6238	Ambulatory Care Management

4. Apply the core elements of ethics and professionalism to improve management practice within health care delivery organizations.

   Relevant courses:

HSML 6202	Intro/Health Services Delivery
HSML 6203	Introduction to Health Management
HSML 6212	CommunityHealth Mgt & Advocacy
HSML 6218	Sem-HlthServicesMgt&Leadership

5. Apply appropriate knowledge of healthcare issues and trends, healthcare personnel, standards and regulations and population health, and assessment to optimize the delivery of services.

   Relevant courses

HSML 6202	Intro/Health Services Delivery
HSML 6203	Introduction to Health Management
HSML 6204	Quality&PerformanceImprovement
HSML 6211	Health Economics
HSML 6212	CommunityHealth Mgt & Advocacy
HSML 6215	Health Law for Managers
HSML 6231	Management-Acute Care Hospital
HSML 6236	Aging&Disability:Needs&Srvcs
HSML 6245	Disaster Management for Healthcare Organizations
PUBH 6004	Environmental and Occupational Health in a Sustainable World

REQUIREMENTS

Prerequisites for admission into the M.H.A. program include an undergraduate course in introductory accounting and an introductory course in statistics earned with a minimum grade of *B*.

The following requirements must be fulfilled: 50 credits, including 31 credits in core courses, a 2-credit health policy selective course, 8-14 credits in elective courses, and 3-9 credits in field experience.

Students select one of five focus areas. The following two focus areas require 9 credits in a residency to fulfill the field experience requirements: acute and ambulatory care management and post-acute care management (including long-term care). The following three focus areas require 3 credits in an internship to fulfill the field experience requirement: information systems and financial management;

operations management; and strategic management and policy.

Code	Title	Credits
Core		
HSML 6202	Intro/Health Services Delivery	
HSML 6203	Introduction to Health Management	
HSML 6204	Quality&PerformanceImprovement	
HSML 6206	QuanMethds&Epid/HealthServices	
HSML 6207	HealthServicesInfoApplications	
HSML 6208	Medical Informatics	
HSML 6209	Health Services Finance	
HSML 6210	Hlth Serv Financl Applications	
HSML 6211	Health Economics	
HSML 6212	CommunityHealth Mgt & Advocacy	
HSML 6213	Health Services, Marketing & Planning	
HSML 6215	Health Law for Managers	
HSML 6216	HumanResourcesMgt&OrgBehavior	
HSML 6218	Sem-HlthServicesMgt&Leadership	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
Health policy elective		
One health policy course from the following:		
PUBH 6315	Intro-Health Policy Analysis	
PUBH 6325	Federal Policymaking and Policy Advocacy	
PUBH 6356	State Health Policy	
PUBH 6366	Health Care Corporate Compliance	
PUBH 6368	Law, Medicine, and Ethics	
PUBH 6374	Pharmaceutical Policy	
PUBH 6378	HIV Policy in the U.S.	
PUBH 6384	Health Care Quality and Health Policy	
PUBH 6399	Topics in Health Policy	
Program-specific electives		
Students whose focus area requires a residency select 8 credits from the following; students whose focus area requires an internship select 14 credits:		
HSML 6222	GroupLdrship&TeamFacilitation	
HSML 6231	Management-Acute Care Hospital	
HSML 6236	Aging&Disability:Needs&Srvcs	
HSML 6237	Managing/SkilledNursngFacility	
HSML 6238	Ambulatory Care Management	
HSML 6244	SupplyChainMgt/HealthServices	
HSML 6245	Disaster Management for Healthcare Organizations	
HSML 6246	Service Line & Project Mgt	
HSML 6247	Consulting in Health Care	
HSML 6270	Research-Health Services Admin (Independent Study)	
HSML 6285 & HSML 6286	Readings-Health Services Mgt and Readings-Health Services Mgt	
HSML 6299	Topics in HSML	
Field experience:		
Students select either the residency or internship focus area.		
Students pursuing the residency focus area in acute and ambulatory care management or post-acute care management (including long term care) take the following three courses for a total of 9 credits:		
HSML 6273	Residency	
HSML 6274	Residency	
HSML 6275	Residency	
Students pursuing an internship in one of the following areas take HSML 6271 Field Problem Studies for 3 credits.		
Information Systems and Financial Management		
Operations Management		
Strategic Management and Policy		

Graduation Requirements

1. Graduate Credit Requirement: 50 graduate credits are required.
2. Grade Point Requirement: A 3.0 (B average) overall grade point average is required.
3. Time Limit Requirement: The degree must be completed within five years.

4. Transfer Credit Policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the MHA, upon approval. Up to 18 credits may be transferred to the MHA from the Health Administration Generalist Certificate. Credits must have been earned from a CAHME accredited institution in the last 3 years with a grade point average of 3.0 or better.
5. Residency or Internship Requirement: Successful completion of a nine credit residency or three-credit internship.
6. Prerequisites: Undergraduate course in accounting and statistics with a grade of B or better.

MASTER OF HEALTH ADMINISTRATION – ONLINE/ EXECUTIVE PROGRAM

Program Director L. Friedman

Mission

The Executive Master of Health Administration (MHA@GW) degree program will develop leaders who possess the values, knowledge, and skills to achieve optimal delivery of healthcare.

Overview

The MHA@GW curriculum focuses on developing the leadership and ethical skills needed for persons who seek to create highly effective healthcare organizations. An MHA@GW degree from the Department of Health Policy and Management incorporates business and medical informatics training, knowledge of health care systems, law, and policy, critical values in decision making, and much more.

The Department's special strengths include an emphasis on experiential learning and community service, distinguished faculty, research collaborations, and relationships with policy making and health care organizations in Washington, DC. Active alumni (http://publichealth.gwu.edu/services/alumni/HSML-alumni) and student (http://publichealth.gwu.edu/projects/hsml-student-association) associations foster mentoring, networking, and other professional development opportunities.

Building on our 55 years of experience preparing health care leaders and our recent success in e-learning, the MHA@GW degree is designed for adult learners who possess either clinical or administrative experience in healthcare delivery. The MHA@GW is designed to be completed in two years but can be completed in five years. Classes are taught in a hybrid model combining online classes (ten weeks in length) and executive format intensive classes.

The MHA@GW curriculum focuses on two main themes. The first is developing the leadership and ethical skills needed for persons who seek to create highly effective healthcare organizations. Leadership and ethics will be taught throughout the curriculum. Eight online, integrated learning modules include: management and strategy; informatics and decision-science; finance; community and public health; economics and quantitative methods; quality improvement; law and policy; and a capstone seminar. The culminating activities for the MHA@GW are a field-based research project and completion of a leadership portfolio.

Students entering the program are expected to have undergraduate courses in financial accounting and statistics with a grade of *B* or better.

Goals

Graduates of the program will be expected to:

- Effectively manage organizational change and promote organizational and clinical excellence;
- Manage health services organizations under alternative financing mechanisms;
- Lead and manage human resources in diverse organizational environments;
- Manage information resources to assist in effective decision making and clinical management;
- Use statistical, quantitative, and economic analyses in decision making;
- Have the skills to improve both business and clinical outcomes of health services organizations; and
- Develop the skills to consistently use ethical decision making practices

COMPETENCIES

The goal of health services management and leadership is to provide health care delivery organizations with talented graduates who possess the knowledge, skills and attitude to deliver health services in the most effective and efficient manner possible. The Executive Master of Health Administration (MHA@GW) degree is designed to provide students with the ability to develop and demonstrate leadership, communication and relationship management, business skills and knowledge, professionalism and healthcare knowledge applied across the widest possible spectrum of healthcare delivery organizations. Upon completion of the MHA@GW in Health Services Management and Leadership, students will demonstrate competence to:

1. Demonstrate leadership by leading and managing others, planning and implementing change and engaging in honest self-assessment. Related courses: Modules 1 and 8 and immersions 1, 2 and 4
2. Enhance and improve communication and relationship management within interpersonal communication, verbal and written communication, and team based processes. Related courses: All modules, immersions, organizational research project and final portfolio
3. Demonstrate the breadth of core business skills and knowledge in the following areas:

4. Solving business problems and decision making, and project management. Related courses: Modules 1, 6 and 8 and immersion 2
5. Quantitative skills, financial management, economic analysis and information and technology management. Related courses: Modules 2, 3 and 5.
6. Legal principles, marketing, quality improvement, organizational dynamics and governance. Related courses: Modules 1, 6, 7, 8 and immersion 3
7. Apply the core elements of ethics and professionalism to improve management practice within health care delivery organizations. Related courses: All modules and immersions
8. Apply appropriate knowledge of healthcare policy issues and trends, healthcare personnel, standards and regulations and population health and assessment to optimize the delivery of services. Related courses: Module 4 and immersion 3.

REQUIREMENTS

The following requirements must be fulfilled: 50 credits in required courses.

Code	Title	Credits
HSML 6255	Leadership and Ethics I	
HSML 6256	Leadership and Ethics II	
HSML 6258	Health System Analysis	
HSML 6264	Healthcare Mgmt & Strategy	
HSML 6265	Medical Informatics and Decision Management	
HSML 6266	Healthcare Financial Management	
HSML 6267	Community Engagement	
HSML 6268	Health Economics & Quantitative Methods	
HSML 6269	Quality and Performance Improvement	
HSML 6280	Health Law and Policy	
HSML 6281	Systems Thinking and Learning	
HSML 6282	Organizational Research Project 1	
HSML 6283	Organization Research Project 2	

Visit the MHA@GW website (http://mha.gwu.edu) for additional information.

Graduation Requirements

1. Graduate Credit Requirement: 50 graduate credits are required.
2. Grade Point Requirement: A 3.0 (B average) overall grade point average is required.
3. Time Limit Requirement: The degree must be completed within five years.

MASTER OF PUBLIC HEALTH IN THE FIELD OF HEALTH POLICY

Program Director L. Cartwright-Smith

Practicum Directors L. Cartwright-Smith, M. Malcarney

Mission Statement

The Department of Health Policy and Management of the Milken Institute School of Public Health is an intellectual and practice-oriented community in the nation's capital dedicated to advancing innovative and effective health policy education, research, and service to improve public health and health services domestically and globally.

We are committed to:

- Offering a cutting-edge, multidisciplinary curriculum that provides students with deep content knowledge and the analytic, communication, and professional skills needed to be the next generation of health policy leaders.
- Conducting rigorous multidisciplinary research that addresses significant health challenges, is objective, and is translated to inform and impact health policy and public health practice.
- Being a trusted resource for shaping and advancing health policy options because of our research rigor, the real-world health policy leadership experiences of our faculty and staff, our deep expertise regarding a wide range of policy issues, and our exceptional students.
- Leveraging our unique location which allows for strong collaborations with health policy leaders and practitioners in Washington, D.C.
- Improving the health and health care of underserved and vulnerable populations.
- Learning from the diversity among our faculty, staff, and students in terms of background, experience, and thought.

Overview

The Department of Health Policy and Management is the home for health policy studies and research at the Milken Institute School of Public Health (SPH). The Department focuses on virtually all facets of U.S. health policy related to both public health and health services, and emphasizes preparing students to understand and analyze health policy matters in a broad, cross-cutting, and real-world context. Among schools of public health, the Milken Institute SPH Department of Health Policy and Management is unique, having been created to take maximum advantage of its location in Washington, D.C., the nation's health policy-making epicenter. The M.P.H. in Health Policy is for students who wish to develop in-depth policy

analysis skills for use in various practice settings, including both federal and state levels of government, private-sector health policy consulting, and not-for-profit advocacy. Additionally, this program is available to GW law students (the J.D./M.P.H. and LL.M./M.P.H. programs), lawyers seeking to develop expertise in all facets of health policy and practice, and to GW medical students (the M.D./M.P.H. and P.A./M.P.H. programs) who wish to enhance their clinical training with a thorough understanding of health policy.

COMPETENCIES

A. Knowledge Domain: Graduates of the program will have a thorough understanding of public health and health care system issues, specifically the following areas:

- The various theories of policymaking and politics.

Related courses:

PUBH 6015	Culminating Experience
PUBH 6315	Intro-Health Policy Analysis
PUBH 6320	Advanced Health Policy Analysis
PUBH 6325	Federal Policymaking and Policy Advocacy

- Comparative models of structuring and financing public health activities and health care services, with emphasis on the mechanisms employed in the U.S., including private health insurance, Medicare, Medicaid, managed care, and directly-financed services.

Related courses:

PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care
PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6335	Public Health and Law

- The complex systems for delivery of public health and health care services, including facilities, workforce, technology, and the incentives at work in these systems.

Related courses:

PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care
PUBH 6320	Advanced Health Policy Analysis
PUBH 6325	Federal Policymaking and Policy Advocacy

- The methods and mechanisms for determining the benefits of public health and health care services, including measures of health outcomes and quality, measuring population health and disparities, public health surveillance, the use of HIT, and issues of privacy and access to data.

Related courses:

PUBH 6242	ClinicalEpid&Decision Analysis
PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care
PUBH 6310	Statistical Analysis in Health Policy
PUBH 6320	Advanced Health Policy Analysis
PUBH 6335	Public Health and Law

- The systems and activities in place to provide a safety net for vulnerable populations and reduce health disparities, including community health centers, major federal programs, and public health clinics, and related concepts such as uncompensated care and disparities in access.

Related courses:

PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care
PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6330	Health Services and Law

- The framework of laws and regulations governing public health and health care services, including constitutional rights and limitations, federal and state statutes, regulations, judicial opinions, and other public policy instruments.

Related courses:

PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care
PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law

B. Analysis Domain: Graduates of the program will have skills in policy analysis, legal analysis, economic analysis, statistical analysis and population health assessment, and will be able to:

Policy Analysis:

- Locate, assess, appropriately use and synthesize information relevant to key issues in health policy, including evidence related to the legislative, regulatory and judicial processes, peer-reviewed literature, and the "gray literature" produced by think tanks, research organizations, and government agencies.

Related courses:

PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care
PUBH 6315	Intro-Health Policy Analysis
PUBH 6320	Advanced Health Policy Analysis
PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law
PUBH 6340	Health Economics and Finance
PUBH 6014	Practicum

- Understand and critique the research design/methods of different types of applied policy analyses, including program evaluations, cost benefit/cost effectiveness studies, and forecasting/simulation models.

Related courses:

PUBH 6242	ClinicalEpid&Decision Analysis
PUBH 6310	Statistical Analysis in Health Policy
PUBH 6315	Intro-Health Policy Analysis
PUBH 6320	Advanced Health Policy Analysis
PUBH 6335	Public Health and Law
PUBH 6340	Health Economics and Finance

- Apply the core elements of a sophisticated policy options analysis to key issues in health care and public health.

Related courses:

PUBH 6014	Practicum
PUBH 6015	Culminating Experience
PUBH 6315	Intro-Health Policy Analysis
PUBH 6320	Advanced Health Policy Analysis
PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6335	Public Health and Law
PUBH 6340	Health Economics and Finance

- Design and implement process, impact and economic assessments of health programs and policies that have been implemented.

Related courses:

PUBH 6015	Culminating Experience
PUBH 6242	ClinicalEpid&Decision Analysis
PUBH 6320	Advanced Health Policy Analysis
PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6340	Health Economics and Finance

Legal Analysis:

- Apply the basic legal rights and responsibilities of relevant stakeholders in the health care and public health systems.

Related courses:

PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care
PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law

- Comparatively analyze, interpret, and apply legislation and administrative regulations, judicial rulings, and relevant constitutional law to legal questions pertaining to the health care and public health systems.

Related courses:

PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law

Economic Analysis:

- Assess key microeconomic concepts, including supply and demand, markets, taxes and subsidies, public goods and the case for government intervention.

Related courses:

PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care

PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6335	Public Health and Law
PUBH 6340	Health Economics and Finance

- Apply microeconomic tools in analyses of health care markets, government intervention in markets, the functioning of private/public insurance, and the forecasting of health care utilization and workforce needs.

Related course:

PUBH 6340	Health Economics and Finance

- Apply models of profit-maximization to health care firms such as hospitals and nursing homes, and appropriate adjustments for the non-profit sector.

Related course:

PUBH 6340	Health Economics and Finance

- Measure competition and evaluate its consequences in health care delivery, pharmaceutical development, and other markets.

Related courses:

PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6340	Health Economics and Finance

Statistical Analysis:

- Access data sets relevant to health policy, including public use data sets.

Related course:

PUBH 6310	Statistical Analysis in Health Policy

- Analyze, interpret and present multivariate statistics, such as regression or logic models.

Related courses:

PUBH 6310	Statistical Analysis in Health Policy
PUBH 6320	Advanced Health Policy Analysis

- Run basic statistical analyses using a standard statistical software package.

Related courses:

PUBH 6310	Statistical Analysis in Health Policy

Population Health Assessment:

- Identify key sources of population health data.

Related course:

PUBH 6242	ClinicalEpid&Decision Analysis
PUBH 6325	Federal Policymaking and Policy Advocacy

- Describe a public health problem in terms of magnitude, person, time and place.

Related courses:

PUBH 6320	Advanced Health Policy Analysis

- Draw appropriate inferences from epidemiologic data.

Related courses:

PUBH 6242	ClinicalEpid&Decision Analysis
PUBH 6310	Statistical Analysis in Health Policy
PUBH 6320	Advanced Health Policy Analysis

- Calculate basic epidemiology measures.

Related course:

PUBH 6242	ClinicalEpid&Decision Analysis

C. Leadership Domain: Graduates of the program will be able to:

- Think creatively to develop and implement innovative policies that effect change and to identify strategies to successfully implement policies.

Related courses:

PUBH 6315	Intro-Health Policy Analysis
PUBH 6320	Advanced Health Policy Analysis
PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

- Work collaboratively with decision-makers, stakeholders, and colleagues with a variety of viewpoints to achieve policy goals.

Related courses:

PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

- Manage time, resources, and people strategically and effectively to develop and implement policies; demonstrate negotiation and conflict management skills.

Related courses:

PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6015	Culminating Experience

- Motivate and influence others to reach their highest level of effectiveness in the policymaking and implementation process.

Related courses:

PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6015	Culminating Experience

- Adhere to professional ethics while promoting a high standard of personal integrity, compassion, and respect for others. Demonstrate transparency, integrity, and honesty in all actions.

Related courses:

PUBH 6320	Advanced Health Policy Analysis
PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6335	Public Health and Law
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

- Persuade others to support a point of view, position, or recommendation through advocacy.

Related courses:

PUBH 6315	Intro-Health Policy Analysis
PUBH 6320	Advanced Health Policy Analysis
PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law
PUBH 6015	Culminating Experience

D. Communication Domain: Graduates of the program will be able to:

- Speak and write clearly and effectively, adapting communication styles and content so they are appropriate to the needs of the intended audience.

Related courses:

PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care
PUBH 6315	Intro-Health Policy Analysis
PUBH 6320	Advanced Health Policy Analysis
PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

- Convey information and opinions in a structured and credible way.

Related courses:

PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care
PUBH 6315	Intro-Health Policy Analysis
PUBH 6320	Advanced Health Policy Analysis
PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law
PUBH 6015	Culminating Experience

- Encourage others to share their views, and take time to understand and consider these views.

Related courses:

PUBH 6242	ClinicalEpid&Decision Analysis
PUBH 6315	Intro-Health Policy Analysis

PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law

- Ensure that messages have been heard and understood.

Related courses:

PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6335	Public Health and Law

- Keep others informed of key and relevant issues.

Related courses:

PUBH 6315	Intro-Health Policy Analysis
PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6335	Public Health and Law

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 12 credits in core courses, 19-20 credits in program-specific courses, 9-10 credits in elective courses, a 2-credit practicum, and a 2-credit culminating experience.

Program Requirements

Code	Title	Credits
Required core courses (12 credits):		
PUBH 6001	Biological Concepts in Public Health	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Required program-specific courses (19-20 credits):		
PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care	
PUBH 6310	Statistical Analysis in Health Policy	
PUBH 6315	Intro-Health Policy Analysis	
PUBH 6325	Federal Policymaking and Policy Advocacy	
PUBH 6330	Health Services and Law	
or PUBH 6335	Public Health and Law	
PUBH 6340	Health Economics and Finance	
or PUBH 6242 and PUBH 6243		
Advanced health policy requirement		
One of the following:		
EMSE 6740	Systems Thinking and Policy Modeling I	
PPPA 6015	Benefit-Cost Analysis	
PPPA 6016	Public and Nonprofit Program Evaluation	
PUBH 6242 & PUBH 6243	ClinicalEpid&Decision Analysis and Topics:ClinicalEpi&DecAnalysis	
PUBH 6247	Design of Health Studies	
PUBH 6249	StatPackages/DataMgt&DataAnlys	
PUBH 6320	Advanced Health Policy Analysis	
PUBH 6345	Health Policy Research Design	
PUBH 6501	Program Evaluation	
Health Services Management Requirement Selectives		
Choose one course from list below:		
HSML 6204	Quality&PerformanceImprovement	
HSML 6209	Health Services Finance	
HSML 6216	HumanResourcesMgt&OrgBehavior	
HSML 6231	Management-Acute Care Hospital	
HSML 6238	Ambulatory Care Management	
HSML 6246	Service Line & Project Mgt	
HSML 6247	Consulting in Health Care	
Elective courses (9-10 credits):		
A personalized combination of elective courses		
Practicum and culminating experience courses (4 credits):		
PUBH 6014	Practicum	
PUBH 6015	Culminating Experience	

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits
2. Course requirements: Successful completion of core and program-specific courses
3. Grade point requirement: 3.0 (B average) overall grade point average
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF SCIENCE IN THE FIELD OF HEALTH POLICY

Program Director K.H. Meade

The master of science in health policy (M.S.) degree program is designed to prepare students to enter academic or research careers in health policy. The program prepares candidates for subsequent doctoral study or for research roles in health-delivery systems, regulatory and other government agencies, or university settings. The program emphasizes individual study design and allows students to focus their training in particular areas of health policy such as long-term care policy, maternal and child health policy, and health services research and policy. The M.S. is also suitable as a terminal degree for students, such as physicians in fellowship training, who wish to gain research skills.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs). (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://bulletin.gwu.edu/public-health/health-policy-management/ms/%20http://publichealth.gwu.edu/programs/health-policy-ms) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits, including 31-33 credits in required courses (including thesis) and 15-17 in elective courses.

Code	Title	Credits
Required		
Core		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6242 & PUBH 6243	ClinicalEpid&Decision Analysis and Topics:ClinicalEpi&DecAnalysis	
Program-specific		
PUBH 6013	Master's Thesis	
PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care	
PUBH 6310	Statistical Analysis in Health Policy	
PUBH 6315	Intro-Health Policy Analysis	
PUBH 6330	Health Services and Law	
or PUBH 6335	Public Health and Law	
PUBH 6340	Health Economics and Finance	
PUBH 6345	Health Policy Research Design	
Advanced health policy analysis elective		
PUBH 6320	Advanced Health Policy Analysis	
Or one of the following:		
EMSE 6740	Systems Thinking and Policy Modeling I	
PPPA 6015	Benefit-Cost Analysis	
PPPA 6016	Public and Nonprofit Program Evaluation	
PUBH 6247	Design of Health Studies	
PUBH 6249	StatPackages/DataMgt&DataAnlys	
PUBH 6411	Global Health Qualitative Research Methods	
PUBH 6501	Program Evaluation	
PUBH 6530	Qualitative Methods in Health Promotion	
PUBH 6533	Design of Comm Health Surveys	
PUBH 8417	Qualitative Research Methods and Analysis	
PUBH 8419	Measurement in Public Health & Health Services	
Health services management elective		

One of the following:	
HSML 6204	Quality&PerformanceImprovement
HSML 6209	Health Services Finance
HSML 6216	HumanResourcesMgt&OrgBehavior
HSML 6231	Management-Acute Care Hospital
HSML 6238	Ambulatory Care Management
HSML 6246	Service Line & Project Mgt
HSML 6247	Consulting in Health Care
Electives (15-17 credits)	
Any SPH graduate courses	

Graduation Requirements

1. Graduate Credit Requirement: 48
2. Course Requirements: Successful completion of the core and elective courses, including completion of the Master's Thesis, are required.
3. Grade Point Requirement: A 3.0 (B average) overall grade point average is required.
4. Time Limit Requirement: The degree must be completed within five years.
5. Transfer Credit Policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the MS. Credits must have been earned from an accredited institution in the last 3 years with a grade point average of 3.0 or better.

MASTER OF SCIENCE IN THE FIELD OF MANAGEMENT OF HEALTH INFORMATICS AND ANALYTICS

Program Director S.Hanna

The goal of the master of science in management of health informatics and analytics (MHIA) degree program is to develop leaders who possess the knowledge and skills to achieve optimal delivery of healthcare through the use of information to make sound decisions.

An informatics-related degree from the Department of Health Policy and Management incorporates business and medical informatics training, knowledge of healthcare systems, law and policy, critical values in decision making, and much more. The MHIA is designed for adult students who possess either clinical or administrative experience in health care delivery. Classes are taught in a hybrid model, combining ten-week distance learning modules and executive format, face-to-face immersion classes.

The MHIA curriculum focuses on developing the skills and values needed for persons who seek to create highly effective healthcare organizations and utilize technology to make better healthcare decisions. Culminating activities for MHIA students include a capstone course that gives students the opportunity to develop a practical solution for a major healthcare problem that can be solved using Informatics.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs). (http://www.gwu.edu/all-graduate-programs)

REQUIREMENTS

The following requirements must be fulfilled: 45 credits in required courses.

Code	Title	Credits
HSML 6255	Leadership and Ethics I	
HSML 6264	Healthcare Mgmt & Strategy	
HSML 6265	Medical Informatics and Decision Management	
HSML 6280	Health Law and Policy	
HSML 6290		
HSML 6291		
HSML 6292		
HSML 6293		
HSML 6294		
HSML 6295		
HSML 6296		
HSML 6297		

HEALTH SERVICES ADMINISTRATION SPECIALIST

Program Director L. Friedman

Mission

The Health Services Administration Specialist degree program will develop leaders who possess the values, knowledge, and skills to achieve optimal delivery of healthcare. The degree is designed for individuals who have earned a post-baccalaureate degree and wish to either change careers by gaining knowledge and skills in health services administration

or to upgrade their formal knowledge and skills in healthcare administration to include the latest advancements in the field.

Applicants must hold a post-baccalaureate degree from an accredited college or university.

REQUIREMENTS

Course Requirements

All Health Services Administration Specialist degree candidates complete 30 graduate credits of approved coursework.

1. Thirty graduate credits are required. The Specialist has one required course: HSML 6270 Research-Health Services Admin (Independent Study). All other courses are chosen in consultation with the program director.
2. The program director must pre-approve all course selections and sequencing by developing a "program of study" with the student prior to initial registration. Specialist candidates must meet with the program director each semester before registration; all changes to the program of study must be approved.
3. The program director may approve up to eight graduate credits that have not been applied to a previous graduate degree as transfer credit into the Specialist degree program. Course(s) must be relevant to the Specialist degree; credit must have been earned from an accredited institution within the past three years with a grade of B, or better.
4. Grade Point Requirement: A 3.0 (B average) overall grade point average, or better, is required.
5. Time Limit Requirement: The degree must be completed within four years.

Program Requirements

Code	Title	Credits
Required course:		
HSML 6270	Research-Health Services Admin	
HSML courses that may be taken for the specialist:		
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
HSML 6202	Intro/Health Services Delivery	
HSML 6203	Introduction to Health Management	
HSML 6204	Quality&PerformanceImprovement	
HSML 6206	QuanMethds&Epid/HealthServices	
HSML 6207	HealthServicesInfoApplications	
HSML 6208	Medical Informatics	
HSML 6209	Health Services Finance	
HSML 6210	Hlth Serv Financl Applications	
HSML 6211	Health Economics	
HSML 6212	CommunityHealth Mgt & Advocacy	
HSML 6213	Health Services, Marketing & Planning	
HSML 6215	Health Law for Managers	
HSML 6216	HumanResourcesMgt&OrgBehavior	
HSML 6218	Sem-HlthServicesMgt&Leadership	
HSML 6231	Management-Acute Care Hospital	
HSML 6236	Aging&Disability:Needs&Srvcs	
HSML 6237	Managing/SkilledNursngFacility	
HSML 6238	Ambulatory Care Management	
HSML 6244	SupplyChainMgt/HealthServices	
HSML 6245	Disaster Management for Healthcare Organizations	
HSML 6246	Service Line & Project Mgt	
HSML 6247	Consulting in Health Care	
HSML 6285	Readings-Health Services Mgt	
HSML 6286	Readings-Health Services Mgt	
HSML 6299	Topics in HSML	

DOCTOR OF PHILOSOPHY IN THE FIELD OF PUBLIC POLICY AND ADMINISTRATION (HEALTH POLICY TRACK)

Program Director A. Dor

Students in the doctor of philosophy in the field of public policy and administration (health policy track) degree program are prepared to analyze a broad array of health policy issues, such as assessing health and health needs, financing health services, health care reform, global health, care for underserved populations, and long-term care. A multidisciplinary approach to these issues brings together the disciplines of economics, philosophy, sociology, law, public health, and health management.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program webpage (https://tspppa.gwu.edu/phd-field-health-policy) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits

Students who choose this field will be prepared to analyze a broad array of health policy issues. These problems include, for example, assessing health and health needs, financing health services, health care reform, global health, care for underserved populations and long-term care. A multidisciplinary approach to these issues will combine the curricula of economics, philosophy, sociology, law, public health and health management.

General examination core	
PUBH 8404	AdvTpc-HlthSystms&HlthPolRsrch
PUBH 8408	AdvTpc-HlthBehavRes&PractcAppl
Field electives	
Public Health/Health Policy	
HSML 6202	Intro/Health Services Delivery
HSML 6207	HealthServicesInfoApplications
HSML 6236	Aging&Disability:Needs&Srvcs
PUBH 6004	Environmental and Occupational Health in a Sustainable World
PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6315	Intro-Health Policy Analysis
PUBH 6320	Advanced Health Pol Analysis
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law
PUBH 6340	Health Economics and Finance
PUBH 6364	Fed Budget Process/Health Care
PUBH 6374	Pharmaceutical Policy
PUBH 6442	Comparative Global Health Systems
PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
PUBH 8419	Measrmnt/PublHlth&HlthSrvcsRes
Methods	
ECON 8375	Econometrics I
ECON 8376	Econometrics II
ECON 8379	Laboratory in Applied Econometrics
PPPA 6013	Econometrics–Policy Research I
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6260	Adv DataAnalysis-Public Health
Economics	
ECON 8342	Labor Economics II
ECON 8345	Industrial Organization I
ECON 8363	Public Finance I

DOCTOR OF PUBLIC HEALTH IN THE FIELD OF HEALTH POLICY

Program Director A. Markus

Mission

The doctor of public health (DrPH) health policy specialty field degree program focuses on understanding and learning to apply to complex and real world problems the policy framework of public health and health care. Particular emphasis is placed on areas affecting medically underserved and vulnerable populations. The specialty field allows candidates to work at the nexus of health policy, public health practice, and health services research.

Goals

The goal of the health policy specialty field is to create doctoral-level public health professionals who are uniquely equipped to provide real-world leadership at the national and state levels in all phases of public health, health care, and health policy development and implementation. The objectives of this specialty field are to:

- Provide advanced training on cutting edge issues in health policy;
- Equip candidates with the research and analytic methods to conduct the types of advanced analyses that can make a real difference in health care and public health.

Admissions Requirements

The Doctor of Public Health Program is designed for mid-career professionals seeking to become public health leaders. Applicants who have completed an MPH degree from a Council of Education for Public Health (CEPH) accredited program are strongly preferred for admission to the program. Alternatively, applicants with a master's degree in another field may indicate their relevant training, research experience, or educational background comparable to the MPH. Doctoral applicants admitted without an MPH will be required to take additional course work at the graduate level that does not apply toward the minimum 48 credits required for the DrPH. Qualified applicants with degrees from institutions in foreign countries are also eligible for admission. All applicants must submit scores from the Graduate Record Exam (GRE) taken within five years of the date of application. Because admission

to this program is highly selective, successful applicants must have competitive academic credentials and substantial prior public health professional work experience related to the specialty field to which they are applying.

Program Policies and Procedures

For program policies and procedures, please refer to the Doctor of Public Health Handbook and other resources located on the program website (http://publichealth.gwu.edu/programs/health-policy-drph).

REQUIREMENTS

Code	Title	Credits
22 credits of required foundational and research methods courses		
PUBH 8401	Foundations in Public Health Leadership & Practice	
PUBH 8402	Leadership in Public Health Practice & Policy	
PUBH 8403		
PUBH 8416	Study Design & Evaluation Methods	
PUBH 8417	Qualitative Research Methods and Analysis	
PUBH 8418	Applied Statistical Analysis	
PUBH 8419	Measurement in Public Health & Health Services	
PUBH 8420	Advanced Analysis & Dissemination	
6 credits of required specialty field courses		
PUBH 8404	Advanced Topics: Health Systems and Health Policy Research	
PUBH 8405	Advanced Topics: Health Economics Research	
7 to 10 credits of specialty field courses		
PUBH 6330	Health Services and Law	
PUBH 6325	Federal Policymaking and Policy Advocacy	
PUBH 6335	Public Health and Law	
PUBH 6360	AdvMaternal&ChildHealthPolicy	
PUBH 6362	Civil Rights Issue/Health Care	
PUBH 6376	Primary Health Care Policy	
2 credits of professional leadership courses (minimum of 2 must be Instructional Leadership)		
PUBH 8413	Research Leadership	
PUBH 8415	Instructional Leadership	
8 to 11 credits of dissertation preparation and dissertation		
PUBH 8422	Advanced Health Care and Public Health Research Design	
PUBH 8423	Dissertation Research	

Graduation Requirements

1. Graduate credit requirement: 48 graduate credits are required.
2. Course requirements: successful completion of the foundational and research methods courses. The program-specific specialty field courses and the professional leadership credits are required.
3. Comprehensive exam: Once the course of study is completed, students are required to pass the comprehensive exam to be officially admitted to the candidacy phase.
4. Dissertation: PUBH 8422 Advanced Health Care and Public Health Research Design plus 6-9 dissertation research credits are required. Once the proposal has been successfully defended and dissertation research credits have been met, the oral defense may be scheduled.
5. Grade point requirement: A 3.0 (B average) overall grade-point average is required.
6. Time limit requirement: The degree must be completed within seven (7) years.
7. No transfer credits are accepted.

GRADUATE CERTIFICATE IN HEALTH ADMINISTRATION GENERALIST

Program Director L. Friedman
Program Advisor L. Friedman

The health administration generalist certificate develops health sector leaders, innovators, and managers who are dedicated to advancing the health of local, national, and global communities. Combining the master's degree in one of the Milken Institute School of Public Health academic departments with this graduate certificate uniquely positions graduates for careers that require breadth and depth of knowledge and skills in health services. This certificate program is open to applicants with a master's or higher degree who may wish to gain knowledge and skills in health services management. Applicants without a master's degrees (e.g., public health nursing (RN)) may be eligible depending on their professional

experience in public health. Students work with an advisor to tailor a program suited to the student's individual professional goals.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs). (http://www.gwu.edu/all-graduate-programs)

Visit the program website (https://publichealth.gwu.edu/programs/health-administration-generalist-certificate) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses; substitutions may be allowed with the advisor's approval.

Required	
18 credits from the following (with advisor approval)	
HSML 6202	Intro/Health Services Delivery
HSML 6203	Introduction to Health Management
HSML 6204	Quality&PerformanceImprovement
HSML 6206	QuanMethds&Epid/HealthServices
HSML 6207	HealthServicesInfoApplications
HSML 6208	Medical Informatics
HSML 6209	Health Services Finance
HSML 6210	Hlth Serv Financl Applications
HSML 6211	Health Economics
HSML 6212	CommunityHealth Mgt & Advocacy
HSML 6213	Health Services, Marketing & Planning
HSML 6215	Health Law for Managers
HSML 6216	HumanResourcesMgt&OrgBehavior
HSML 6218	Sem-HlthServicesMgt&Leadership
PUBH 6004	Environmental and Occupational Health in a Sustainable World
Other courses may be used to fulfill the requirement with advisor approval.	

Graduation Requirements

1. The Program Director/Advisor must pre-approve all course selections and course sequencing by developing a "program of study" prior to the student's initial registration. Graduate Certificate students meet with their advisor each semester before registration. All changes in this program of study must be pre-approved by the Program Director/Advisor.
2. Course Requirements. Since most graduate certificate students are currently enrolled in an MPH program or have previously earned a graduate degree, most course credits will be selected from the program-specific course list. Under no circumstances may a certificate student enroll in fewer than 9 credits of program-specific courses.
3. Grade Point Requirement. A 3.0 (B average) overall grade point average or better is required for the award of the certificate
4. Time Limit Requirement. The certificate must be completed within 2 years.
5. Transfer Credit Policy. The Program Director/Advisor may approve up to 4 graduate credits that have not been applied to a previous graduate degree to be transferred to the Graduate Certificate. The course(s) must be relevant to the Graduate Certificate. Credits must have been earned in the last 3 years from an accredited institution with a grade point of 3.0 or better.

GRADUATE CERTIFICATE IN HEALTH POLICY

Program Director L. Cartwright-Smith

For those seeking a solid foundation in the substance of health policy and the skills of health policy analysis, but who do not wish to undertake the full master of public health degree program, the Milken Institute School of Public Health (SPH) Department of Health Policy and Management offers an 18-credit graduate certificate. Designed to provide both basic and advanced-level skills in policy research and analysis, the program curriculum includes elective course offerings; in consultation with their advisor, students use these options to craft a personalized course of study to fit their particular needs and interests.

The graduate certificate in health policy may be taken on its own; as a supplement to a master of public health degree from a different Milken Institute SPH department or as a supplement to a graduate degree from another school. When pursued as a supplement to the master's degree from a different Milken Institute SPH department, 6 credits from the M.P.H. degree may be counted toward the 18 credits required for the certificate, allowing students to complete both the degree and certificate program simultaneously by taking 57 credits.

Specific admission requirements are shown on the Graduate Program Finder.

Visit the program webpage (http://publichealth.gwu.edu/programs/health-policy-certificate) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 12 credits in required courses and 6 credits in elective courses.

Required	
PUBH 6002	Biostatistical Applic for PubH
PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care
PUBH 6310	Statistical Analysis in Health Policy
PUBH 6315	Introduction to Health Policy Analysis
PUBH 6320	Advanced Health Policy Analysis
Electives	
Six credits of elective courses in health policy	

Graduation Requirements

- Graduate credit requirement: 18 graduate credits are required.
- The program director/advisor must pre-approve all course selections and course sequencing by developing a "program of study" prior to the student's initial registration. Graduate certificate students meet with their advisor each semester before registration. All changes in this program of study must be pre-approved by the program director/advisor.
- Successful completion of the required on-line CITI human subject research training modules.
- Successful completion of 8 Professional Enhancement hours.
- Grade point requirement: A 3.0 (B average) overall grade point average or better is required.
- Time limit requirement: The certificate must be completed within 2 years.
- Transfer credit policy: The program director/advisor may approve up to 4 graduate credits that have not been applied to a previous graduate degree to be transferred to the graduate certificate. The course(s) must be relevant to the graduate certificate. Credits must have been earned in the last 3 years with a grade point average of 3.0 or better.

GRADUATE CERTIFICATE IN LONG-TERM CARE

Program Director R. Burke

The graduate certificate in long-term care program is designed to prepare students to best meet the needs of a rapidly aging population in the United States by providing the academic course requirements necessary for licensure of post-acute and senior services programs and facilities. The objectives of the certificate are to master the requirements and strengthen understanding of facility management, provider services and programs, and federal policies to achieve the highest levels of quality of care in senior and long-term care services.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

Visit the program website (http://publichealth.gwu.edu/programs/long-term-care-certificate) for additional information.

REQUIREMENTS

Course Requirements

1. Graduate credit requirement. 18 graduate credits are required.
2. The program director/advisor must pre-approve all course selections and course sequencing by developing a "program of study" prior to the student's initial registration. Graduate certificate students meet with their advisor each semester before registration. All changes in this program of study must be pre-approved by the program director/advisor.
3. Course requirements. Since most graduate certificate students are currently enrolled in an MPH program or have previously earned a graduate degree, most course credits will be selected from the program-specific course list. Under no circumstances may a certificate student enroll in fewer than 9 credits of program-specific courses.
4. Grade point requirement. A 3.0 (B average) overall grade point average or better is required.
5. Time limit requirement. The certificate must be completed within 2 years.
6. Transfer credit policy. The program director/advisor may approve up to 4 graduate credits that have not been applied to a previous graduate degree to be transferred to the graduate certificate. The course(s) must be relevant to the graduate certificate. Credits must have been earned in the last 3 years from an accredited institution with a grade point of 3.0 or better.

Program Requirements

Required courses	**credits**	**semester offered**
HSML 6203	Intro to Health Management	
HSML 6207	HealthServicesInfoApplications	
HSML 6216	HumanResourcesMgt&OrgBehavior	
HSML 6236	Aging&Disability:Needs&Srvcs	
HSML 6237	Managing/SkilledNursngFacility	
Electives (6 credits)		

The following is a sample list. Topics vary from semester to semester.	
HSML 6299	Topics in HSML
HSML 6299	Topics in HSML
HSML 6299	Topics in HSML
HSML 6204	Quality&PerformanceImprovement
PUBH 6537	Health Promotion & Aging
PUBH 6099	Topics in Public Health
PUBH 6099	Topics in Public Health

PREVENTION AND COMMUNITY HEALTH

The Department of Prevention and Community Health is concerned with social and behavioral change for the health and well-being of people around the world. Its degree programs focus on prevention and the promotion of health and well-being with the active participation of individuals and communities, and are appropriate for students who are interested in putting into practice the latest public health research, or making significant scholarly contributions to the evidence base of public health. Master of public health students study four interrelated fields—community-oriented primary care; health promotion; maternal and child health; and public health communication and marketing. Doctoral students develop innovations in the science of health behavior.

GRADUATE

Master's programs

- Master of Public Health in the field of community oriented primary care (p. 1003)
- Master of Public Health in the field of health promotion (p. 1007)
- Master of Public Health in the field of maternal and child health (p. 1009)
- Master of Public Health in the field of public health communication and marketing (p. 1011)

Doctoral program

- Doctor of Philosophy in the field of social and behavioral sciences in public health (p. 1014)
- Doctor of Public Health in the field of health behavior (p. 1013)

FACULTY

Professors J.F. Cawley, W.D. Evans, K.A. Horn, R.N. Rimal *(Chair)*

Associate Professors L.C. Abroms, J. Bingenheimer, M.C. Edberg, K.A. McDonnell, M.A. Napolitano, O.A. Price, K.M. Roche, W.S. Schroth, S. Silver, C.H. Sparks, F. Spielberg, M. Turner, A.N. Vyas

Assistant Professors E.L. Andrade *(Research)*, C. Harrington, S. Hull, M.W. Long, E.B. Parrish, M. Ruiz *(Research)*, S. Straker

Adjunct Insturctor A.Franz

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PUBH 0920. Continuing Research - Master's. 1 Credit.
Continuing Research Credit- Master's Level.

PUBH 0940. Continuing Research - Doctoral. 1 Credit.
Continuing Research Credit- Doctoral.

PUBH 1101. Introduction to Public Health & Health Svcs. 3 Credits.
Introduction to aspects of public health and health services, including health services administration and policy, maternal and child health, environmental health, and health promotion.

PUBH 1102. History of Public Health. 3 Credits.
Historical and philosophical development of public health and its contributions to understanding, preventing, and controlling disease and disabilities.

PUBH 2110. Public Health Biology. 3 Credits.
Basic scientific mechanisms, concepts, and principles in health and the pathogenesis of diseases; a foundation for applications to public health. Prerequisite: BISC 1005 or BISC 1111.

PUBH 2112. Principles of Health Education and Health Promotion. 3 Credits.
Social and behavioral theories underlying health promotion program development and evaluation. Practical applications in a variety of domestic and global public health settings. PUBH 1101 may be taken as a corequisite. Prerequisite: PUBH 1101.

PUBH 2113. Impact of Culture upon Health. 3 Credits.
Relationships between cultural values and the development of modern health systems based on Western models of health care practice. Reliance upon traditional forms of health care. Examples of successful incorporation of traditional practices into evolving health care systems.

PUBH 2114. Environment, Health, and Development. 3 Credits.
Survey of the relationship between health and development and environmental trends. Topics include deforestation, urban contamination, and desertification.

PUBH 2115. Health, Human Rights, and Displaced Persons. 3 Credits.
Concepts of health as a human right, ethics, and the participation of the international community in moving toward health for all. Civil and international conflict in the generation of displaced populations.

PUBH 2116. Global Delivery of Health Systems. 3 Credits.
Introduction to health systems and the basic concepts of health systems administration and financing and health care reform with examples from advanced, middle income, and poor countries.

PUBH 2117. Service Learning in Public Health. 3 Credits.
A service-learning course that combines classroom instruction with practical learning. Students are responsible for securing an approved service site before the beginning of the semester; the instructor is available to assist with this placement.

PUBH 3130. Health Services Management and Economics. 3 Credits.
Basics of management theory, finance, and economics as applied to managing in the public health and health services field. Prerequisite: ECON 1011.

PUBH 3131. Epidemiology: Measuring Health and Disease. 3 Credits.
Principles of epidemiology applied to disease surveillance, control of infectious and chronic diseases, and health services/health policy. Understanding the basic research designs and their relationship to establishing cause and effect and effectiveness of interventions to prevent and cure disease. Prerequisite: PUBH 1101, STAT 1127 .

PUBH 3132. Health and Environment. 3 Credits.
Introduction to environmental and occupational health and implications for individual and population health. Issues of clean water, environmental toxins, air pollution, and the environmental impact on infectious diseases.

PUBH 3133. Global Health and Development. 3 Credits.
Basic concepts of political, social, and economic determinants of health and how health status is measured; burden of diseases that impact development and their basic epidemiological characteristics including who they affect, when they occur, and where risk is greatest; relationships between socioeconomic development and global health can be observed, measured, and used for the management of health programs. Material are global in coverage, but with a strong emphasis on low-income countries. Students must have junior or senior standing. Prerequisites: BISC 1005, BISC 1111 and PUBH 2110.

PUBH 3135W. Health Policy. 3 Credits.
An introduction to the fundamentals of the health care system in the United States and strategies available to policymakers when addressing problems relating to access, financing, and delivery of health care. Prerequisite: PUBH 1101.

PUBH 3136. Health Law. 3 Credits.
Legal concepts related to individual health care and public health systems in the United States. Health care law, public health law, and bioethics.

PUBH 3137. Global Public Health Nutrition. 3 Credits.
Consideration of hunger and other nutrition issues globally, including food insecurity, under/over nutrition, and micronutrient deficiencies. Application of UNICEF malnutrition framework to describe vulnerable groups, critique program strategies, and identify multisectorial strategies to reduce hunger and malnutrition. Prerequisites: Required: PubH 3133 Global Health and Development Recommended: EXSC 2119 Basic Nutrition.

PUBH 3150. Sustainable Energy & Env Hlth. 3 Credits.
Sustainability issues from the perspective of environmental health. Technical, social, and health implications of specific energy sources. Energy conservation and efficiency in the context of population growth, food and water resources, and maintenance of a healthy environment for future generations.

PUBH 3151. Current Issues in Bioethics. 3 Credits.
Recent advances in science and technology make biomedical ethics a continuing matter of concern for students, health professionals and laypersons alike. This course offers an opportunity to investigate both general and specific ethical questions and ethical decision making from both a personal and organizational perspective, including topics such as the right to health care, research with human subjects, reproductive issues, genetics, professional and student roles and responsibilities, and end-of-life issues. Such investigation requires exposure to the issues and to various attempts to address and resolve them. The course requires participation in group discussions as well as independent critical writing.

PUBH 3199. Topics in Public Health. 1-5 Credits.
Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

PUBH 4140W. Senior Seminar. 3 Credits.
Students develop a public health intervention incorporating various domains of the discipline of public health. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to public health majors in their senior year. Prerequisite: PUBH 3130.

PUBH 4199. Independent Study. 3 Credits.
For departmental majors only. Prerequisite: outline of intended project must be approved prior to registration by instructor and dean's office.

PUBH 6001. Biological Concepts in Public Health. 2 Credits.
An overview of current knowledge about biological mechanisms of major diseases causing death and disability in the United States and globally; understanding and interpreting the reciprocal relationships of genetic, environmental, and behavioral determinants of health and disease in an ecologic context; analyzing, discussing, and communicating biologic principles of disease from a public health perspective.

PUBH 6002. Biostatistical Applications for Public Health. 3 Credits.
Application of biostatistical principles to critical analysis of retrospective studies, prospective studies, and controlled clinical trials, as well as studies in the health services literature. Selection, basic calculations, and interpretation of statistical methods for detection of significant associations and differences.

PUBH 6003. Principles and Practices of Epidemiology. 3 Credits.
General principles, methods, and applications of epidemiology. Outbreak investigations, measures of disease frequency, standardization of disease rates, study design, measures of association, hypothesis testing, bias, effect modification, causal inference, disease screening, and surveillance. Case studies apply these concepts to a variety of infectious, acute, and chronic health conditions affecting the population.

PUBH 6004. Environmental and Occupational Health in a Sustainable World. 2 Credits.
Examination of the connection between population health and exposures to chemical, physical, and biological agents in the environment. Problem-solving frameworks familiarize students with data sources, methodologies, and policy approaches being used to address the public health impacts of environmental and occupational health hazards, including the consequences of climate change, natural resource degradation, and industrial chemicals. Integration of key concepts of environmental health with principles of sustainability illustrate how public policies and practices on the local, national, and global level affect population health.

PUBH 6006. Management and Policy Approaches to Public Health. 3 Credits.
Introduction to the basic principles, concepts, and skills related to public health management and policy. Management and policy approaches to public health at the system, organization, and group and individual levels. The interrelated nature of management and policy.

PUBH 6007. Social and Behavioral Approaches to Public Health. 2 Credits.
Social and behavioral science theories, models, and concepts that can be applied to public health problems and interventions. The role of social and community factors, including race, ethnicity, and culture, in both the onset and solution of public health problems; the interrelationship between the social and behavioral sciences.

PUBH 6010. Independent Study. 1-6 Credits.
Designed to provide the student with an opportunity to gain or enhance public health knowledge and to explore an area of interest related to public health research or the delivery and/or administration of health services. Permission of instructor/advisor required.

PUBH 6013. Master's Thesis. 3 Credits.
See Advisor.

PUBH 6014. Practicum. 1-3 Credits.
This course provides the opportunity for MPH students to apply the knowledge and skills acquired through their programs of study. A planned, supervised and evaluated practice experience that is relevant to the student's program is an essential component of a public health professional degree program. These opportunities can take place in a variety of agencies or organizations. Each program customizes Practicum requirements to meet students' needs. (Credit/No Credit) [For 45-credit MPH students who started Summer 06 or after.].

PUBH 6015. Culminating Experience. 1-3 Credits.
Students synthesize and integrate knowledge acquired in coursework and other learning experiences and apply theory and principles to a situation that approximates some aspect of professional practice. Program faculty evaluate the student's mastery of the body of knowledge and ability to demonstrate proficiency in the required competencies. Requirements evaluated are adapted to the degree program.

PUBH 6016. Field/Laboratory Experience. 2 Credits.
The overall purpose of the field/laboratory experience requirement is to introduce students in the MS-PHMEID degree program to a supervised practical experience in a Public Health Laboratory or other qualifying public health entity from the perspective of the actual wet laboratory operations. Students that already have this laboratory experience will be introduced to epidemiologic research, particularly surveillance, and its tie-in with laboratories either in the United States or in an international setting.

PUBH 6050. Introduction to Health Services Delivery. 2 Credits.
Introduction to the U.S. health services financing and delivery system with a focus on the major components of the system, the interaction of elements of the system, and the history of the development of today's system. Addresses the national context and history of health services, population health and health care spending in the US, employment-based health insurance, Medicaid and the uninsured, Medicare, international health care systems, managed care, hospitals and facilities, physicians and health workforce, long-term care and prescription drugs, and health care reform. (Same as HSML 6202).

PUBH 6052. Practical Data Management and Analysis for Public Health. 2 Credits.
Practical aspects of dataset creation, data management, rudimentary statistical analysis, and tabular and graphical presentation of results. Tasks covered include creating codebooks, entering and cleaning data, deriving new variables from existing ones, choosing and implementing appropriate analytical techniques, graphing and tabulating results, and documenting and protecting work.

PUBH 6054. Community Engagement and Advocacy. 2 Credits.
Tools and strategies for public health practitioners to understand, respect, organize, and collaborate with community groups and organizations for promotion of healthy behaviors. Development of practical skills to harness available resources in a community to advocate for healthy living and positive health outcomes.

PUBH 6056. Public Health Leadership Seminar. 1 Credit.
Leadership lessons taken from the careers of a diverse group of executives and entrepreneurs from the corporate, government, nonprofit, and art sectors. Leadership theory and styles. Building networks; skills for effectively engaging with peers, potential employers, and business partners.

PUBH 6058. Researching Violence Against Women and Girls. 2 Credits.
The intersection of violence against women and girls (VAWG) and public health; the impact that violence has on the health of the survivor, her current and future children, and communities; methods and best practices for designing applied research on VAWG. Prerequisites: PUBH 6001, PUBH 6002, PUBH 6003, PUBH 6004, PUBH 6006, and PUBH 6007.

PUBH 6090. Practicum/Culminating Exp. 4 Credits.
Individually tailored. Culminating Experience for the MPH program. Advisor approval required prior to registration.

PUBH 6091. Special Project. 1-4 Credits.
Under faculty supervision, the student undertakes an original project that applies the skills and knowledge gained in the chosen track and/or concentration within the MPH program. Prerequisite: Permission of the instructor. NOTE that credits vary by program; please consult your program plan to register for the appropriate number of credits. [For 36-credit MPH students only].

PUBH 6099. Topics in Public Health. 0-3 Credits.
In-depth examination of a particular facet of public health. Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

PUBH 6121. Environmental and Occupational Epidemiology. 3 Credits.
Demonstration and application of epidemiologic methods for the study of environmental and occupational health problems. Epidemiologic exposure assessment methods and methods relevant to cohort, case-control, cross-sectional, and case cross-over studies. Survey design and sources and evaluation of biases and confounding. Emphasis on written and oral communication skills. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6004.

PUBH 6122. Protecting Public Health and the Environment: Policies, Politics, and Programs. 3 Credits.
The legislative, regulatory, judicial, and political system in the United States developed to protect human health and the environment. National and global public and environmental health agencies, policy development, and current topics. Prerequisites: PUBH 6004 or permission of the intructor.

PUBH 6123. Toxicology: Applications for Public Health Policy. 3 Credits.
Toxicology as both a scientific discipline and a source of information for public health policy with respect to the regulation of foods, pesticides, drugs (pharmaceuticals), environmental chemical pollutants, and other chemicals that may affect human and environmental health. How chemicals interact with biological systems to produce adverse effects. The ways in which toxicologic information is developed and applied to regulatory decision making and the use of toxicology in regulatory risk assessment. Prerequisite: PUBH 6004.

PUBH 6124. Problem Solving in EOH. 3 Credits.
This culminating course uses problem-based learning methods to examine a variety of real-world EOH issues in depth. Cases stimulate students to integrate their cumulative knowledge across all required courses and demonstrate their professional competencies. Students to conduct activities characteristic of EOH practice: evaluating a variety of technical, public, and media, reports; integrating and interpreting environmental, exposure, and health information effectively; designing analytic and communication strategies; presenting in writing and orally relevant materials to address EOH issues; and, making appropriate policy and/or program decisions and recommendations. Prerequisites: PubH 6121, 6123, 6126.

PUBH 6125. Intro-Children's Health & Env. 2 Credits.
Describes the impact of environmental toxicants on children's health and reviews some of the major policy issues in the field of children's environmental health. Prerequisites: PubH 6004.

PUBH 6126. Assessment&Control/Env Hazards. 3 Credits.
Introduces the anticipation, recognition, assessment, and control of hazards in the workplace and the ambient environment. It emphasizes an understanding of the characteristic features of specific hazards, which may be chemical, biological, or physical/ergonomic.

PUBH 6127. Germs: An Introduction to Environmental Health Microbiology. 2 Credits.
Basics of public health microbiology as it relates to the environment, food, water, and bioterrorism. Examines from an environmental health perspective how the principles of microbiology are applied to current and emerging public health issues, whether from intentional or unintentional contamination of the environment. Specific topics will include: industrial animal production and increasing prevalence of antibiotic resistance; effectiveness of various point of use technologies for water purification; recent advances in quantitative microbial risk assessment; one medicine (where public and veterinary health meet); detection strategies for microorganisms (including bioterrorism agents); and current approaches in food defense and agroterrorism. Prerequisites: PUBH 6004.

PUBH 6128. Global Environmental and Occupational Health. 2 Credits.
Examination of the global environmental and occupational health factors that contribute significantly to the global burden of disease, focusing primarily on low- and middle-income countries. Principles from behavioral sciences, development economics, risk assessment, and epidemiology are included. Potential solutions to environmental health problems, metrics used to measure impacts, and areas for future research. Prerequisite: PUBH 6004.

PUBH 6130. Sustainable Energy and the Environment. 2 Credits.
The sustainability of various energy strategies, including energy conservation, green building principles, renewable energy, and mitigation and adaption policies for climate change. Emphasis on the life cycle framework. Topics include natural resource depletion, water and energy consumption, and air, water, and solid waste pollutant emissions. Prerequisite: PUBH 6004.

PUBH 6131. Applied Data Analysis in Environmental and Occupational Health. 3 Credits.
Application of biostatistical and epidemiologic concepts and methods to analysis of environmental and occupational health (EOH) data. Students manage datasets, conduct data analyses, present data graphically, and interpret data for relevance to EOH research, policy, and practice. Development and practice of skills needed for analyzing complex exposures and communicating environmental and occupational research findings. Prerequisites: PUBH 6002, PUBH 6003, and PUBH 6004.

PUBH 6132. Water, Sanitation, and Hygiene (WASH) in Low-Income Countries. 2 Credits.
Introduction to working in both disaster and development settings in countries where contaminated water, inadequate sanitation, and poor hygiene (WASH) cause serious health problems. Students gain practical experience applying WASH methods in the field. Prerequisite: PUBH 6004.

PUBH 6133. Social Dimensions in Climate Change and Health. 3 Credits.
The drivers of climate change and outcomes with particular focus on health dimensions; obstacles, vulnerabilities, inequality, and adaptation as well as technical and social solutions.

PUBH 6134. Communicating Science for Public Health. 2 Credits.
Evaluating the primary scientific literature and communicating research findings in outlets ranging from peer-reviewed journals to 140 character Tweets. Identifying target audiences and shaping messages to maximize impact, while maintaining the integrity of the supporting evidence. Written and oral communication and critical evaluation are emphasized. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6135. Researching Climate Change and Public Health. 3 Credits.
Study of the effects of climate change on human health using evidence compiled by the National Climate Assessment (NCA); widespread impacts, ecological context, oceans of change, infrastructure, water resources, energy, land use, heat, and air quality. Recommended background: PUBH 6003 and PUBH 6004.

PUBH 6136. Introduction to Environmental and Occupational Epidemiology. 3 Credits.
Epidemiologic research designs; methods for the study of environmental and occupational health problems; exposure assessment methods; design aspects of cross-sectional, case-control, cohort, and case cross-over studies; sources and evaluation of biases and confounding; survey and questionnaire design. Prerequisite: PUBH 6002, PUBH 6003 and PUBH 6004.

PUBH 6199. Topics in EOH. 0-3 Credits.
In-depth examination of a particular facet of public health. Topics and prerequisites vary.

PUBH 6235. Epidemiology of Obesity. 1 Credit.
Introduction to the epidemiology of obesity; descriptive epidemiology, measurement, consequences, and determinants of obesity; adiposity and body composition; obesity interventions and policy. Prerequisites: PUBH 6003.

PUBH 6236. Systematic Review of Public Health Literature. 1 Credit.
The process of conducting systematic reviews of literature in order to translate research into public health practice recommendations. Recommended for MPH candidates planning to conduct a systematic review of the literature for their culminating experience. Prerequisites: PUBH 6002 or EXNS 6204; PUBH 6003 or EXNS 6205.

PUBH 6237. Chronic Disease Epidemiology. 2 Credits.
An overview of the descriptive, analytic, and etiologic epidemiology of chronic diseases, with an emphasis on cardiovascular disease, cancer, and diabetes. The role of modifiable risk factors for chronic diseases such as obesity, diet, physical activity, smoking, and environmental exposures in relation to chronic disease prevention and control. Epidemiologic methods and study design and public health approaches to disease control, including surveillance, screening, and interventions. Past or concurrent enrollment in PUBH 6001 or EXSC 6202 and PUBH 6203 and PUBH 6247 or EXSC 6204 is strongly recommended. Prerequisites: PUBH 6002 or EXNS 6204 and PUBH 6003 or EXNS 6205.

PUBH 6238. Molecular Epidemiology. 1 Credit.
Concepts, principles, and use of molecular methods in epidemiologic and clinical research. Common molecular measures and their interaction with environmental factors. Development of a framework for interpreting, assessing, and incorporating molecular measures in their area of research. Prerequisites: PubH 6003.

PUBH 6239. Epidemiology of Foodborne and Waterborne Diseases. 1 Credit.
Foodborne and waterborne toxicants; diseases linked to eating and drinking and their prevention. Topics include transmission of disease and disease processes; microbial toxins, mycotoxins, chemical toxins, bacterial infections (e.g., salmonellosis, shigellosis, vibrio, listeria), virus and parasitic infections; issues in food and water safety. Prerequisites: PubH 6003.

PUBH 6240. Pediatric HIV/AIDS. 1 Credit.
Comprehensive overview of HIV infection in children, with emphasis on the global pediatric HIV epidemic. Biological, epidemiological, clinical, and psychosocial issues; public health programmatic approaches to prevention, care, and treatment. The national and global experience with scaling up prevention services in the global effort to virtually eliminate HIV/AIDS in children. Prerequisites: PubH 6003. Recommended background: PubH 6250 and PubH 6253.

PUBH 6241. Nutritional Epidemiology. 2 Credits.
Methodological issues related to dietary assessment, nutrition surveillance, and the epidemiology of obesity. Current trends, including the health impacts of vitamin D and sodium. Interpretation of the scientific literature in the field. Examples drawn from the National Health and Nutrition Examination Survey. Prerequisites: PubH 6003.

PUBH 6242. ClinicalEpid&Decision Analysis. 2,3 Credits.
Quantitative and qualitative approaches to decision making, including risk- benefit analysis, decision analysis, and cost-effective analysis. Applications to technology assessment; development of clinical guidelines. Note: MPH Health Policy, MS Health Policy and Doctoral Students concurrently take PubH 6299 topics course by the same name for 1 credit, thereby enrolling for three total credits (PubH 6242=2 credits plus PubH 6299.xx, same name =1 credit). Prerequisites: PUBH 6002, PUBH 6003.

PUBH 6243. Topics:ClinicalEpi&DecAnalysis. 1 Credit.
This class takes an evidence-based problem solving approach for Masters level students interested in the health policy focus of clinical epidemiology utilizing methods taught in PubH 6242. Prerequ: PubH 6003. Corequis: PubH 6242.

PUBH 6244. Cancer Epidemiology. 2 Credits.
Epidemiology of specific cancers, with an emphasis on molecular and genetic epidemiology. Current research in the field. Prerequisites: PubH 203.

PUBH 6245. InfectiousDisease Epidemiology. 2 Credits.
The role and conduct of laboratory and field investigations in the epidemiology of infectious diseases. Prerequisite: PubH 6003.

PUBH 6247. Design of Health Studies. 3 Credits.
Epidemiologic concepts and methods applied to specific research questions especially new types of public health problems. Recognition and development of the most appropriate study design for a specific health issue. Ecologic, cross-sectional, case-control, cohort studies and clinical trials. Sampling, measurement, questionnaire design, causality and causal criteria. Development of a research proposal. Co-requisite: PubH 6002. Prerequisite: PubH 6003.

PUBH 6248. Epidemiology of Aging. 2 Credits.
Methodological challenges in studying older populations. Epidemiologic endpoints in aging populations. Basic concepts and theories explored in aging research. Fall. Prerequisites: PUBH 6003.

PUBH 6249. StatPackages/DataMgt&DataAnlys. 3 Credits.
This course familiarizes the student with one of the most widely used database management systems and statistical analysis software packages, the SAS System, operating in a Windows environment. Throughout the course, several database management system techniques and data analytical strategies for the appropriate analysis of datasets obtained from a variety of studies will be presented. Statistical techniques covered include linear regression, analysis of variance, logistic regression, and survival analysis. Prerequisite: PubH 6002.

PUBH 6250. Epidemiology of HIV/AIDS. 2 Credits.
Methodological issues central to HIV/AIDS research. Biases peculiar to HIV/AIDS epidemiologic studies (both observational and experimental designs). The natural history of HIV, diagnosis, surveillance, vulnerable subpopulations, behavioral facets, and evaluation of epidemiologic studies with an emphasis on methodological considerations. Prerequisite: PubH 6003, Recommended PubH 6002.

PUBH 6252. Advanced Epidemiology Methods. 3 Credits.
Advanced quantitative epidemiologic methods, with a focus on basic data analytic techniques, identifying and evaluating bias and adjusting for confounding. Dose-response, trend analysis, and multiple linear and logistic regression models. Prerequisites: PubH 6002, 6003, 6247. Co- or prerequisite PubH 6249.

PUBH 6253. Issues in HIV Care & Treatment. 1 Credit.
This course will provide an overview and in depth consideration of some of the major issues in treatment of HIV disease, including the assessment of efficacy and effectiveness, drug resistance, monitoring of drug toxicity, special populations, the interrelationship between treatment and prevention, and quality of care. The course has been designed with an interdisciplinary audience in mind. In discussions and assignments, students will be able to emphasize their own area of interest and/or expertise (e.g. epidemiology, policy, etc).

PUBH 6255. Org Responses to HIV/Epidemic. 2 Credits.
This seminar focuses on the rapidly evolving responses of local, national and global governmental and non-governmental organizations to the HIV/AIDS epidemic. Inspirational leaders of selected HIV/AIDS organizations are invited to describe how their organizations contribute to fighting the epidemic; the leadership and management skills that they use in their daily work; and their strategic decision-making processes. Basic principles of epidemiology, leadership and organizational strategy and structure are addressed through didactic presentations and interactive faculty-student dialogue. Lessons learned through the lens of HIV/AIDS organizations are broadly applicable to other public health problems. Students will learn about the strengths and challenges of different types of public health organizations as they make career decisions about their own transition to the public health work force. Prerequisite: PubH 6003, HIV/AIDS experience, or permission of Instructor.

PUBH 6258. Adv Topics/Biostat Consulting. 1 Credit.
Principles and practice of biostatistical consulting in public health and medical research environments.

PUBH 6259. Epid Surveillance/PublicHealth. 2 Credits.
Focus on foundations of public health surveillance systems for communicable as well as chronic diseases. Outbreak investigation methods will be included, as well as surveillance data sources, data management, data analysis, ethical issues, surveillance system evaluation, and use of information for prevention. Surveillance systems for reportable diseases, nosocomial infections, bioterrorism events, cancer, environmental disease, vaccine-related adverse events, bovine spongiform encephalopathy, and military personnel will be discussed. Prerequisites: PubH 6003.

PUBH 6260. Adv DataAnalysis-Public Health. 3 Credits.
Advanced data analysis using the SAS System to expand on the analytic techniques gained in PubH 6002 and PubH 6249 and to provide students with the applied statistical skills required to analyze various types of public health datasets. Prerequisites: PubH 6002, 6249.

PUBH 6261. Epi-Bio Skills Bldg Seminar. 1 Credit.
Assists students in developing the skills needed to complete degree requirements and to provide them with practical applied public health training. By the end of the course, students will be able to describe essential skills needed for preparation, implementation, presentation and communication of public health data.

PUBH 6262. Intro-Geog Information Systems. 1 Credit.
Geographic information systems (GIS) for mapping and display of health data. The course makes use of ArcGIS 8.3. The use of spatial statistics for the detection of clusters and patterns in the spread of diseases. Working with geodatabases, shape files, layers, query information from attribute tables, geocode addresses and customizing GIS applications.

PUBH 6263. Advanced GIS. 1 Credit.
Provides mid to advanced level training in GIS for display and analysis of health data. Use software ArcGIS 9.3 and additional extensions such as Spatial Analyst and Geostatistical Analyst. Also uses GeoDa software. Emphasizes benefits of using GIS to do more than simply manage and map data. GIS supports a range of spatial analysis functions that enable researchers to extract additional meaning from manipulating geographic data. Learn to work with raster datasets and geodatabases to build spatial models for analyzing health data and evaluating spatial patterns of health events based on notion of distance. Prerequisite: PubH 6262.

PUBH 6264. Quantitative Methods. 3 Credits.
Introduces basic concepts in mathematical statistics. Topics will include probabilities (unconditional and conditional), density and distribution functions of continuous and discrete random variables, including expected values. Specific distribution functions discussed will be Binomial, Poisson, Hypergeometric, and Gaussian distributions. Additional topics include bivariable distributions, variance-covariance matrix, limiting theory, asymptotic results, and maximum likelihood estimation. Prerequisites: Math 1231, 1232 and PubH 6002, 6249.

PUBH 6265. Design of Medical Studies. 3 Credits.
Design of medical investigations, including the randomized clinical trial, observational cohort study, and the retrospective case-control study. Specific methods regarding sample size, power and precision and statistical procedures for randomization and sa.

PUBH 6266. Biostatistical Methods. 3 Credits.
Biostatistical methods for asymptotically efficient tests and estimates of relative risks and odds ratios from prospective and retrospective matched and unmatched studies. Fixed and random effects models. Logistic regression, conditional logistic regression. Poisson regression. Maximum likelihood and efficient scores. Prerequisites: STAT 6201-6202, PubH 6264.

PUBH 6267. Time Series:Applications in PH. 2 Credits.
Introduce basic concepts for the identification and modeling of time series in the time domain approach. Learn a new set of terminology standards and a different way to analyze these type of data and to forecast future values of a time series and its accuracy. Software used is SAS/ETS and 3 procedures: ARIMA, AUTOREG, FORECAST. New mathematical notation will be used. Prerequisite: PubH 6249.

PUBH 6268. Advanced SAS. 1 Credit.
Intensive in advanced programming using SAS. Expand technical skills to provide advanced SAS tools for data management and graphics. Topics to include Interactive Matrix Language (IML), SAS Macro facility language, and drill-down graphs using SAS/GRAPH. Prerequisites: PubH 6002, 6249 or Instructor's permission.

PUBH 6269. Reproductive Epidemiology. 1 Credit.
Current research, controversial issues and methodological problems in epidemiology of reproductive and perinatal health. Present reproductive health issues such as conception and infertility; perinatal issues such as complications of pregnancy, infections in pregnancy, adverse pregnancy outcomes, and birth defects. Prerequisite: PubH 6003.

PUBH 6270. HIV/AIDS Surveillance. 1 Credit.
Overview of surveillance methods used domestically and internationally to monitor HIV/AIDS epidemic. Surveillance systems including sentinel, population based, behavioral, and incidence surveillance will be presented and discussed. Strengths and weaknesses of these various systems will be discussed in addition to how data from these systems impact and inform HIV/AIDS related policies and programs. Prerequisite: PubH 6003.

PUBH 6271. Disaster Epidemiology. 1 Credit.
Introduction to disaster epidemiology that elucidates the important role epidemiologists play in assessing the health and psychological effects of natural and man-made disasters and in identifying factors that contribute to these effects. Focus will be on applications of epidemiologic methods to the study of public health consequences of disasters, case studies from actual disasters used to illustrate various roles of epidemiologist in responding to these events and lessons learned. Highlight key skills that epidemiologists need to be part of a response and recovery . Identify methodological issues for future work. Prerequisites: PubH 6002, 6003.

PUBH 6272. Infectious Agents- Cancer. 1 Credit.
Describes the role of infectious agents in the etiology of human cancer. Emphasis on differences between specific oncogenic viruses. Other oncogenic agents, bacterial and parasitic, will also be discussed. Discuss laboratory approaches to the documentation of their pathogenicity, how behavior affects mode of transmission, and which types of data provide strongest support for documenting oncogenic potential for humans. Prerequisite: PubH 6003.

PUBH 6273. Ethnographic Methods. 1 Credit.
Use ethnographic field methods in conjunction with epidemiological research. Introduction to specific methods used to examine health phenomena and determinants of disease. Learn specific applied skills that can be modified with socio-cultural modifications to evaluate urban sites and other settings. Basic skills in application of ethnographic methods, including recursive observations, participant observations, and variety of approaches to interviewing such as in-depth, structured and non-structured as well as conversational interviewing. Discuss use of multiple approaches in conjunction with ethnography, including focus groups, archival, document, statistical and secondary data analysis, and survey research methods. Course emphasizes use of ethnographic research methods in community-based health settings and evaluates issues in cultural competency and how to garner stakeholder support to conduct epidemiologic studies. Prerequisite: PubH 6003.

PUBH 6274. Emerging ID for PH Pro's. 2 Credits.
Focus on epidemiology of emerging infectious diseases of public health importance, including factors leading to their development, management of emerging infectious diseases from a public health and laboratory standpoint, including biosafety, and strategies for emergency preparedness from a national and international perspective. Course emphasizes the context of emerging infectious diseases and strategic approaches to their containment. Prerequisites: PubH 6003 or Micr 6292 or Instructor permission.

PUBH 6275. Essential PH Lab Skills. 2 Credits.
This course will provide public health students with practical laboratory experience Prerequ: Micr 6239 or Micr 6212 or permission of instructor.

PUBH 6276. Health Microbiology. 3 Credits.
Gain in-depth understanding of important non-viral pathogens pertinent to PH Microbiology. Learn how to isolate & identify pathogens using critical thinking & problem solving skills.

PUBH 6277. Public Health Genomics. 2 Credits.
Learn about molecular technology and how it is impacting public health practice & discourse in the post genomic era. Explore ways in which genomics is being used to solve or help alleviate PH problems through case-focused discussions. Prerequisite: genetics or molecular biology within 6 years or permission of course instructor.

PUBH 6278. Public Health Virology. 3 Credits.
In-depth understanding of viral pathogenesis by focusing on current research, controversial issues and PH relevance. Survey of family of viruses most relevant to today's public health efforts, concentrating on virus-host interactions & therapeutic strategies.

PUBH 6280. MEID Final Project. 2 Credits.
Focus on the synthesis and summary of data acquired through epidemiologic and/or public health laboratory research. Prerequisites: PubH 6002, 6003, 6292, 6245; Biosafety training, CITI training, HIPAA training, permission of instructor.

PUBH 6281. Analysis of Complex Surveys Using SAS and Stata. 1 Credit.
An applied data analysis course focusing on procedures commonly used to analyze data from complex surveys such as the National Health and Nutrition Examination Survey. Review of various types of sampling, sample design focusing on core components of complex surveys, and the statistical justification and procedures for including design effects in analytic models. Application of these concepts to real data using SAS and Stata. Prerequisites: PubH 6003 and PubH 6249 or equivalent Stata course.

PUBH 6282. Introduction to R Programming. 1 Credit.
R is an open source software environment for statistical computing and graphics. Data transfer between SAS and R, data manipulation and visualization within R, programming and debugging, R libraries, and graphics theory. Prerequisites: PubH 6249. Recommended background: Programming experience in a statistical package such as Stata or in high level language such as C, Python, Perl.

PUBH 6283. Biostatistics Consulting Practicum. 1 Credit.
Supervised experience involving the synthesis of biostatistical skills with client consultation. Students consolidate their skills through an experience-based understanding of how biostatistical skills are utilized in one or more domains of health research. Prerequisites: STAT 6201 and PUBH 6003. Recommended background: PUBH 6249 or PUBH 6210.

PUBH 6299. Topics in Epi/Bio. 1-3 Credits.
In-depth examination of a particular facet of public health. Topics and prerequisites vary.

PUBH 6305. Fundamentals for Health Policy: Public Health and Health Care. 2 Credits.
An overview of public health and health care in the United States as an introduction to the study and analysis of health policy. Presents the governmental framework, institutions, financing streams, workforce, constituencies, and interest groups engaged in the health sector to ensure that students begin their policy analytic training with grounding in the political, economic, and social realities of public health and health care.

PUBH 6310. Statistical Analysis in Health Policy. 3 Credits.
Quantitative and statistical methods of data analysis for health policy and health services research. Instruction in conducting data analyses using Stata statistical and data analysis software and application of acquired skills to health policy and health services research. Practical experience in programming and analysis of various health policy-related questions. Entering and importing data; creating, saving, and merging data sets; creating and modifying variables; labeling variables and values; and conducting analysis ranging from univariate to multivariate analyses, including multiple regression and logistic regression. The use of existing data sets to analyze health policy issues and interpret these analyses for policy purposes. Prerequisites: PUBH 6002.

PUBH 6315. Intro-Health Policy Analysis. 2 Credits.
Core elements of health policy analysis: problem definition, background, the political, economic, and social landscape; development of policy options and recommendations. Written, graphic, and oral presentation skills associated with policy analysis. Prerequisites: PubH 6305.

PUBH 6316. Introduction to Environmental and Occupational Epidemiology. 3 Credits.

PUBH 6320. Advanced Health Policy Analysis. 2 Credits.
Critical elements of health policy applications. Problem definition; political, social, and economic assessment of a problem; program evaluation and data analysis; development of policy options; and the written and oral presentation of findings and recommendations. Practical application of basic quantitative tools in health policy. Prerequisites: PUBH 6310 and PUBH 6315.

PUBH 6325. Federal Policymaking and Policy Advocacy. 2 Credits.
The federal health policymaking process, including an overview of the legislative, administrative, and judicial processes that affect policymaking. The federal budget, authorization, and appropriation processes. An advocacy campaign framework is used to demonstrate common techniques and strategies used to advance legislative and regulatory policies, including coalition building and the use of policy studies and media relations. Prerequisite: PUBH 6305.

PUBH 6330. Health Services and Law. 3 Credits.
Examination of the ways in which the law and legal system in the United States influence and are influenced by the health care system. How judicial, statutory, regulatory, and constitutional sources of law embody health policy and affect access to and quality and financing of health care, as well as the regulation of patient rights.

PUBH 6335. Public Health and Law. 3 Credits.
Designed for students in the health professions and law, to examine how law can both promote public health and conflict with the constitutionally-protected rights of individuals. Introduces the legal concepts that underlie the public health system and inform public health policymaking in the US. Topics include the role of law in public health care and policy (e.g., governmental powers vs. civil liberties, regulation of public health); major areas of public health activity (e.g., health promotion, immunization, screening, and treatment); and the future of public health (e.g., emerging infectious diseases, bioterrorism, obesity, and public health genetics).

PUBH 6340. Health Economics and Finance. 3 Credits.
Examination of economic principles as they apply to health policy in the public and private sectors. The basic framework of economics is used to analyze the behavior of consumers, hospitals, physicians, and insurers, as well as pharmaceutical companies and long-term care providers. Overview of Medicare and Medicaid. Economic analyses of current issues in the marketplace, including rising health spending in the context of the national economy and the federal budget, insurance market dynamics, key issues in the long-term care industry, shifting market forces and power within the health care arena, and new payment initiatives and delivery system models. Prerequisite: PUBH 6352 or an undergraduate economics course.

PUBH 6345. Health Policy Research Design. 2 Credits.

PUBH 6352. Basics of Econ for Health Pol. 1 Credit.
An introduction to modern microeconomics- the study of how consumers, firms, industries, and the public sector make decisions and allocate their resources in the economy. The principles of supply and demand and elasticity in both the private and public sectors will be analyzed.

PUBH 6353. Child Health Advocacy. 1 Credit.
Introduction to child health advocacy. Affordable Care Act (ACA), preventive care, school health, environmental issues, and emergency care. The use of data for advocacy.

PUBH 6354. Mental Health/Subst Abuse Pol. 2 Credits.
Provides an overview of the U.S. mental health and substance abuse delivery system, its components, and the policy challenges created by the organization of this system. Considers the behavioral health care system from the perspective of several main "actors" in the system: patients, providers 9primarily doctors & hospitals), health plans, and payers (public & private). Prerequisite: PubH 6305.

PUBH 6355. Comparative Health Policy. 1 Credit.
Introduction to international health systems and world health policy innovations and potential relevance to the United States. The origins and comparative performance of a range of international healthcare systems and comparative responses to specific health policy challenges. Methodological challenges of international comparisons and theoretical implications. Students design and conduct comparative analysis in the form of a short policy research proposal. Prerequisites: PubH 6305.

PUBH 6356. State Health Policy. 2 Credits.
Students develop a briefing on health and health care for a new governor and health secretary in order to gain a practical understanding of state health policy and programs. The course is designed to replicate the experience of a newly hired policy staff member learning the requirements for the position in a particular state. Prerequisite: PUBH 6305.

PUBH 6357. Health Economics and Policy: Cost Containment Strategies. 2 Credits.
Health care cost containment in the context of the current implementation of national health reform. Cost containment strategies; economic underpinnings, anticipated impacts, perspectives of and implications for health care providers and systems, and political considerations. Prerequisites: PubH 6340.

PUBH 6358. Vaccine Policy. 2 Credits.
Examines the development of U.S. vaccine policy and the growth of various markets targeting routine vaccination of all populations. The interactions among business, legal, political, public health, medical, federal/state/local government, and consumer communities that combine to influence vaccine delivery in a broad range of settings. Prerequisite: PUBH 6305.

PUBH 6359. Reproductive Health Policy. 1 Credit.
Overview of reproductive health policy at the federal and state levels. Balancing the interests of competing stakeholders; the fundamental underlying role of significant disparities in financing for and access to reproductive health services; and how policymaking can alleviate or exacerbate preexisting issues.

PUBH 6360. AdvMaternal&ChildHealthPolicy. 1 Credit.
In-depth exploration of maternal and child health policy in the U.S., with a particular emphasis on the role of personal and public health services for women, children, youth and their families in the context of health and human services system change. Prerequisite: PubH 6561.

PUBH 6361. Health Workforce Policy. 2 Credits.
Strategies for the prevention and control of infectious diseases; focus on low and middle income countries. Goals, strategies, and challenges of major global health intervention programs. Surveillance systems. Vaccination programs; chemotherapy as a prevention and treatment tool; nutritional supplementation; environmental approaches; and potential benefits of integrating multiple interventions. Prerequisites: PUBH 6305.

PUBH 6363. The Health Care Legislative Process. 1 Credit.
How health care legislation is developed in and moves through the U.S. House of Representatives and Senate. The roles of the committees of jurisdiction in each house and how the rules of each house affect legislative outcomes.

PUBH 6364. Fed Budget Process/Health Care. 1 Credit.
Focuses on how the Congressional budget process shapes the funding and design of federal health care programs, ranging from entitlement programs like Medicare to appropriated programs like community health centers. Discussions will cover budget resolutions, appropriations bills, and budget reconciliation legislation, as well as Congressional procedures & committees through which they are considered. Prerequisite: PubH 6305.

PUBH 6365. Advanced Global Health Security & Diplomacy. 2 Credits.
The development of foreign policy at the nexus of global health and national security; the evolving concept of global health diplomacy. Science and technology policy, biodefense and counter terrorism, weapons of mass destruction nonproliferation, food security, global health challenges, and U.S. diplomacy. Role of government and non-governmental organizations.

PUBH 6366. Health Care Corporate Compliance. 2 Credits.
The federal laws and regulations that affect U.S. health care industry participants, particularly those relating to the prevention of fraud and abuse, and the role of corporate compliance programs. Prerequisite: HSML 6215 or PUBH 6330.

PUBH 6368. Law, Medicine, and Ethics. 2 Credits.
Legal, ethical, and policy issues that arise in the biomedical arena. Controversial and challenging questions including those related to the definitions of life and death, nature of personal identity, requirements of justice, and boundaries of liberty. Legal, medical, and ethical/philosophical literature are used in examining these issues. Prerequisite: PUBH 6330.

PUBH 6370. Medicare/Medicaid Law & Policy. 2 Credits.
Describes current legal and public policy issues in the Medicare and Medicaid programs, including the legal, operational, financial, and organizational rules for the two programs. Prerequisite: PubH 6315.

PUBH 6372. Minority Health Policy. 2 Credits.
Introduces students to the concept of health disparities and the implications of disparities for health care practice and policy. Students will learn how disparities are defined and measured, as well as emerging approaches in practice and policy to reducing disparities. Prerequisite: 6315.

PUBH 6374. Pharmaceutical Policy. 2 Credits.
Legal and regulatory frameworks related to the demand for and supply / quality of pharmaceutical products. Policies specific to drug development, pricing, reimbursement, use, dissemination of information, and post-marketing surveillance. Prerequisite: PUBH 6315.

PUBH 6376. Primary Health Care Policy. 2 Credits.
Politics and policy behind the provision of primary healthcare in the United States. The rise of the field of primary care and how it is supported and financed; the role of insurers and government in regulation and oversight in the areas of access, cost, and quality. Prerequisite: PUBH 6315.

PUBH 6378. HIV Policy in the U.S.. 2 Credits.
Examines the policy response to the HIV epidemic in the United States and how the epidemic itself has helped to shape U.S. policy. How and why HIV became a national policy issue; circumstances surrounding the discovery of and early response to HIV; and main policy and programmatic developments and key players over time. The role and implications of the Affordable Care Act for individuals with HIV, the future of the Ryan White HIV/AIDS Program, and the impact of new treatment and prevention strategies on the future course of the epidemic.

PUBH 6380. Bridging Health Policy and Health Information Technology. 2 Credits.
Basics of health care informatics policy and core technological components for health services managers, public health professionals, health policy analysts, and health information technology staff. Policy and legal frameworks, governance and financial issues, technological infrastructure, and business and technological operations. Concepts and roles of information and how information technology can support the healthcare industry in promoting quality improvement.

PUBH 6382. Community Health Center Policy. 2 Credits.

PUBH 6384. Health Care Quality and Health Policy. 2 Credits.
The role of quality in the U.S. health care delivery system from the perspective of multiple stakeholders, including public and private payers, providers, consumers, and employers. Defining and measuring quality; how quality information is used; and policy implications of quality improvement. Recent changes under health reform legislation. Prerequisites: PUBH 6305.

PUBH 6386. Public Health Preparedness Policy. 2 Credits.
Issues in public health emergency preparedness and response at the nexus of homeland and national security. The relationship between public health and criminal investigation, forensic epidemiology, and surveillance; biodefense; and the role of the scientific community. Infrastructure, threat themes, and associated preparedness and response policy.

PUBH 6399. Topics in Health Policy. 0-3 Credits.
In-depth examination of a particular facet of public health policy. Topics and prerequisites vary.

PUBH 6400. Global Health Frameworks. 2 Credits.
Overview of current issues in global public health with particular emphasis on low and middle-income countries. Serves as both an introductory course for students entering the field of global health, as well as an update on current technical and policy issues for advanced students who may have considerable experience.

PUBH 6401. Comp Regional Determinants. 2 Credits.
Examines the set of social, cultural and economic issues most central to shaping health in each of the world's main regions. Overseas Learning Collaboration program in Bangladesh. Prerequisite: PubH 6400. Fee varies by year.

PUBH 6402. Washington Seminar. 2 Credits.
This seminar course will provide an overview of global health policy and practice institutional resources in Washington DC. Students gain an understanding of how global health issues are framed, presented and biased in a multi-institutional setting. This is a collaborative learning exercise where simple web based tools will be used to develop a virtual classroom of the current global health policy and practice dialogue among Washington DC based governmental, multilateral, NGO, private sector and policy institutes.

PUBH 6403. Scientific Basis GH Intervntn. 2 Credits.
Introduces the scientific basis of global health interventions and how they address proximal and underlying determinants of health. Successful students will obtain a strong technical grounding in the determinants, biology and pathogenesis of specific diseases, for which affordable tools for prevention, control, and case management exist and are in use in public health practice.

PUBH 6410. Global Health Study Design. 2 Credits.
A foundation in the tools necessary for planning and designing research related to identifying and solving problems in global health: choosing an appropriate research topic and research question, understanding the relationships between hypotheses and study objectives, conducting a literature review, choosing a research design to achieve the project purpose, writing a research proposal including planning for the challenges of global health research, and achieving productive dissemination of findings.

PUBH 6411. Global Health Qualitative Research Methods. 2 Credits.
An introduction to qualitative data collection and analysis in global health settings. Methodologies include survey design, interviews, focus groups, and participant observation. Archival research and clinical trial research are also addressed. The set of methods most commonly used to collect qualitative data in global health settings. Students are enabled to prepare interview guides, conduct in-depth interviews, and analyze and document the results from a qualitative field project. Prerequisites: PUBH 6002 and PUBH 6410.

PUBH 6412. Global Health Quantitative Research Methods. 3 Credits.
Continuation of the series of global health methods courses. Examination of the fundamental concepts of empirical analysis and qualitative analysis, including open and axial coding, the basis of grounded theory, and regression analysis. Prerequisites: PUBH 6002 and PUBH 6410.

PUBH 6416. Ethical and Cultural Issues in Global Health Research and Programs. 1 Credit.
Examine procedures and concerns for protecting communities and human subjects involved in public health programs and research. Consider cultural considerations integral to ethical conduct of public health research and programming in the global context. Discuss history behind rules and regulations that govern ethical principles around conduct of research involving human subjects. Consider contribution that awareness of cultural contexts where we work makes to ethical nature of our work as global health professionals.

PUBH 6430. Theories for Global Health Communication Interventions. 2 Credits.
Use of communication theory and methods in health promotion. Integration of multidisciplinary approaches to public health communication. Prerequisite: PUBH 6007, PUBH 6400.

PUBH 6431. Global Health Communication Strategies and Skills. 3 Credits.
Students conduct qualitative research to evaluate health communication programs, assess readability level and suitability of written health education materials, conduct content analyses, and review/critique current health communication literature. Prerequisites: PubH 6430-Theories and Applications in Global Health Promotion (unless waived by professor) PubH 6007- Social and Behavioral Approaches to Public Health.

PUBH 6435. Global Health Program Development and Implementation. 2 Credits.
Basic concepts and principles of program development and implementation including data collection methods, decision making, and problem-solving techniques. Application of program development techniques to specific interventions. Prerequisites: PUBH 6400.

PUBH 6436. Global Health Program Management and Leadership. 2 Credits.
Essential tools for successful project, personnel, and program management. Leadership and management theory; key issues in managing global health programs and projects; leadership and management skills development; use of data in management decision making; and importance of quality, supply chain, and resource management. Restricted to MPH in the field of global health program design, monitoring, and evaluation degree candidates. Prerequisites: PUBH 6400, PUBH 6400, and PUBH 6435.

PUBH 6437. Global Health Program Evaluation. 3 Credits.
Fundamentals of program monitoring and evaluation; developing and using program theory in evaluation; impact evaluation and mixed-methods approaches; qualitative methods and statistical analysis for program evaluation. Prerequisites: PubH 6002.

PUBH 6440. Global Health Economics and Finance. 2 Credits.
Examination of economics and finance principles as they apply to global health. Organization, delivery, and financing of health care in developing countries. Tools for analyzing issues related to global health economics and finance and application of those tools to a variety of a global health issues, including demand for health care, health care financing, social insurance, pharmaceuticals, and HIV/AIDS. Prerequisite: PUBH 6400.

PUBH 6441. Global Health Organizations and Regulations. 3 Credits.
The functions, capacities, and governance of international health organizations; the normative power of some international health organizations for regulatory processes; and evidence-based development of public health policies with attention to issues of global trade as it shapes worldwide and national health. Prerequisite: PUBH 6400.

PUBH 6442. Comparative Global Health Systems. 2 Credits.
Examination of national health systems, how they differ, and how they are performing. Health systems analyzed through four different lenses: health care organizations, health workforce development, health care financing, and health policy development. Comparison of health systems and health reforms in seven regions of the world and assessment of how health system performance might be improved. Course fee may apply. Prerequisite: PUBH 6400.

PUBH 6443. Global Health Agreements and Conventions. 2 Credits.
Explores the impact of regulations, trade and human rights on health by examining the relevant international declarations, agreements and conventions. This course will examine a variety of topics including the impact of international trade agreements on health, the International Health Regulations and other regulations affecting global health, and the relationship between health and human rights. Prerequisite: PUBH 6400.

PUBH 6450. Global Health Diplomacy. 2 Credits.
Introduction to the concept of global health diplomacy; how diplomacy has been used to advance health agendas and how health issues have been used to improve diplomatic relations between countries; formal health, multi-stakeholder health, and informal health diplomacy; comparative study of how different countries have devised health diplomacy strategies.

PUBH 6480. Public Health in Complex Emergencies. 2 Credits.
Analyze security institutions, vulnerable groups, humanitarian operations and natural disasters and global security, the impact of global health threats such as HIV/AIDS, SARS, avian flu, tuberculosis and malaria on security institutions, vulnerable populations, civil/military cooperation, and humanitarian operations. Also explore the potential value of various institutions in mitigating global health threats and responding to humanitarian emergencies. Examine a range of scientific, policy, and program interventions designed to address these issues. Prerequisite: PUBH 6400.

PUBH 6481. Global Mental Health. 2 Credits.
Focus on global mental health knowledge and public health policy implementation skills regarding the integration of mental health, public health, and primary care in diverse health systems and challenging cultural contexts. Prerequisite: PubH 6400.

PUBH 6482. International Food and Nutrition Policy. 2 Credits.
Major global food and nutrition issues, their determinants, and the strategies that in place to address them. Students identify major nutrition and food challenges in a country or region as well as the policies and programs that have proven successful in addressing those challenges. Prerequisite: PUBH 6400.

PUBH 6484. Prevention and Control of Vector Borne Diseases. 2 Credits.
Study of insects and other vectors responsible for transmission of diseases in developing countries, including plague, malaria, dengue fever, onchocerciasis (river blindness), and chikungunya virus. Special focus on developing countries, particularly in the Middle East, Africa, Asia, and Latin America. Diseases such as West Nile Virus and Lyme disease in the United States and elsewhere are also addressed. New methods for effective management and control.

PUBH 6485. Prevention and Control of Water and Sanitation Diseases. 1 Credit.
Problems associated with providing adequate water and sanitation in developing countries; infectious diseases such as cholera, dysentery and typhoid. Innovative tools and solutions for improving water supply and sanitation.

PUBH 6486. Global Health Programs and Approaches to the Control of Infectious Diseases. 2 Credits.
Review strategies used for the control of infectious diseases with a focus on the situation in low and middle income countries. Review and critique the goals, strategies and challenges of major global health intervention programs designed to prevent and control infectious diseases. Course includes a historical perspective of achievements to date and the importance of surveillance systems as a core component of effective programs. Intervention strategies addressed include vaccination programs and methods for analysis of effectiveness; the use of chemotherapy as prevention and treatment tools on a population basis; the role of nutritional supplementation; environmental approaches to infectious disease control; and combined/integrated approaches that involve multiple interventions and potential benefits. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6400.

PUBH 6487. Emerging Zoonotic Diseases & Global Food Production. 1 Credit.
Analysis of trends in emerging zoonotic diseases and their links to global food production. Case studies on the use of surveillance systems and outbreak detection techniques to monitor emerging zoonotic diseases. Development of skills to analyze surveillance systems, policy reports, and literature related to emerging zoonotic diseases and food-borne outbreaks within a global context. Prerequisites: PUBH 6003.

PUBH 6488. Cost-effectiveness Analysis in Public Health and Healthcare. 2 Credits.
The application of cost-effectiveness analysis (CEA) to enhance the efficiency of programs and services both in the United States and developing countries. A variety of topics and related analytical tools such as cost benefit analysis, decision analysis, and sensitivity analysis are covered. Students learn to perform cost-benefit and cost-effectiveness analyses and understand the strengths and limitations of these methods and how to apply them to a broad range of health issues.

PUBH 6489. Evaluation of Food and Nutrition Programs and Policies. 1 Credit.
Application of evaluation approaches to existing or proposed nutrition and food programs and policies; competencies in the use of program impact theory as the foundation for evaluating such programs. Students should have a basic knowledge of the biological determinants of various nutritional statuses and some familiarity with program evaluation fundamentals. Prerequisites: PUBH 6001.

PUBH 6491. Public Health Leadership Seminar. 1 Credit.
Leadership lessons derived from the careers of a diverse group of successful executives and entrepreneurs from multiple sectors, including corporate, government, non-profit, and the arts. Development of skills for effective engagement with peers, personal network, potential employers, and business partners. Restricted to students who have faculty permission to register for course.

PUBH 6492. Global Health Programs and Approaches to the Control of Chronic Diseases. 2 Credits.
Concepts, methods, and tools to address chronic non-communicable diseases (NCDs); global public health and development dimension of NCDs, their epidemiology and risks, and health systems approaches for their control with focus on low- and middle-income countries. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6400.

PUBH 6493. Fundamentals of Supply Chain Management in Developing Countries. 2 Credits.
Practical approaches used by government policymakers, essential drugs program managers, NGOs, donors, and others to ensure that high-quality essential drugs are available, affordable and used rationally; existing and potential challenges and workable solutions related to managing the drug supply in developing countries. Restricted to graduate students.

PUBH 6499. Topics in Global Health. 1-3 Credits.
Examination of a particular facet of public health. Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details.

PUBH 6500. Planning and Implementing Health Promotion Programs. 3 Credits.
Students develop skills to effectively plan, design, and implement programs that address public health problems for defined populations in a variety of settings. Prerequisites: PubH 6007.

PUBH 6501. Program Evaluation. 3 Credits.
The knowledge, competencies, and skills needed to plan and implement evaluations of public health programs in a variety of settings. Types of program evaluation, including needs assessment, process evaluation, quantitative and qualitative monitoring of outputs, outcomes, and impact. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6007, PUBH 6435, and PUBH 6500.

PUBH 6502. Practical Data Analysis: PCH. 1 Credit.
Practical aspects of dataset creation, data management, rudimentary statistical analysis & tabular/graphical presentation of results in the user-friendly environments of PASW (formerly SPSS) and MS Excel. Students will create codebooks, enter & clean data, derive new variables from existing ones, choose appropriate analytical techniques & implement them, graph & tabulate results, and document & protect work. Examples will be drawn from commonly-encountered situations in prevention and community health, such as needs assessments & program evaluations. Prerequisites: PUBH 6002, PUBH 6003, and PUBH 6500.

PUBH 6503. Introduction to Public Health Communication and Marketing. 3 Credits.
The application of health communication theories, principles and techniques, as well as marketing constructs and concepts, to advancing public health through practitioner-oriented health communication and social marketing campaign and programs.

PUBH 6504. Social and Behavioral Science Research Methods. 3 Credits.
The processes of study design, data collection, and analysis using SPSS for quantitative research in prevention and community health. All phases of the observational/survey research process considered sequentially, from formulation of research questions to preparation of the final report. Prerequisites: PubH 6002 and PubH 6007 or instructor permission.

PUBH 6510. COPC Principles and Practice. 3 Credits.
Theory and practice of community-oriented primary care, including an extended small group exercise carrying out a COPC project with a simulated community using Web-based data sets.

PUBH 6512. Comm-OrientedPrimryCarePol&Iss. 2 Credits.
Advanced work on COPC methods and policy, focusing on issues related to the provision of health care in underserved communities. Prerequisite: PubH 6510.

PUBH 6513. Community Health Management. 2 Credits.
Management and development of community health services. Builds upon principles for management and community-oriented primary care. Prerequisite: PubH 6510, 6003.

PUBH 6514. Preventing Health Disparities. 2 Credits.
Provides students with an understanding of how social, political, and economic factors contribute to disparities (e.g. racial, ethnic, gender, and geographical) in health and health care and how to use evidence-based approaches to prevent or address health disparities.

PUBH 6515. High Risk&Special Populations. 2 Credits.
Provides students with an overview of the methods to plan, implement and evaluation health promotion and education programs targeted towards high risk and special populations. The course will review the socioeconomic, political-economic, cultural and psychosocial factors of populations who are considered to be at high risk for specific health problems and efforts that have been addressed in current health promotion programs. Prerequisite: PubH 6007.

PUBH 6516. Community Health InfoResources. 2 Credits.
COPC and community health promotion require diverse information skills in order to assess community needs and strengths, determine priority health issues, analyze data, plan interventions, and evaluate programs. This course will introduce students to the information resources useful in planning and implementing COPC and community health projects that address racism. The selected resources will support methods for defining a community, characterizing a community's social and health characteristics, investigating a prioritized problem, and developing programs and solutions. Students will learn how to choose resources, search them, and consider bias in information sources.

PUBH 6530. Qualitative Methods in Health Promotion. 2 Credits.
Application of qualitative methods in the development of health promotion interventions, evaluations, and research. Collecting and analyzing qualitative date through participant observation, interviewing, group methods, and case studies. Prerequisite: PUBH 6007.

PUBH 6531. HlthPromotion/HlthCareSettings. 2 Credits.
Behavioral change counseling and training skills to improve health by changing individuals' behaviors and by developing training materials for use with providers, health professionals and high risk groups. This is an advanced course for second year students. Prerequisite: PubH 6007, 6500.

PUBH 6532. Commnty Org,Devlpmnt&Advocacy. 3 Credits.
Educates health promotion practitioners in how to organize community groups to promote health. The focus is on learning how to use resources available in the community to advocate change. Prerequisite: PubH 6007.

PUBH 6533. Design of Comm Health Surveys. 2 Credits.
This course teaches students how to frame questions in health promotion surveys using sound principles of questionnaire design with emphasis on reliability and validity. Students learn survey design principles and methods and how to analyze survey data.

PUBH 6534. Comm-Based Participatory Res. 1 Credit.
Students learn how to conduct community research in collaboration with community leaders and residents. This course emphasizes the principles of CBPR for addressing health promotion issues in communities including community needs and administrative and policy changes.

PUBH 6535. Promotion of Mental Health. 2 Credits.
Increases understanding about issues in mental health promotion. The emphasis is on mental health as a public health issue and linkages between individual mental health and the environment. Prerequisite: PubH 6007.

PUBH 6536. Workplace Health Promotion. 2 Credits.
Planning, management and evaluation of programs designed to serve employees' needs, promotion of employee health and reduction of health care costs in the workplace. Prerequisite: PubH 6007.

PUBH 6537. Health Promotion & Aging. 2 Credits.
Introduces students to the basic health aspects of the aging process and special health promotion needs for this group. Problems of aging and public health solutions for older Americans will be examined. Students will be able to define the public health concerns for aging Americans, how aging is affected by a multitude of factors, identify health promotion strategies to assist in reaching out to this population and develop methods of collaboration with agencies and organizations to improve the health of the aging population. Prerequisite: PubH 6007.

PUBH 6550. Maternal & Child Health I. 3 Credits.
Public health issues affecting the health and well-being of women, children, and families. A multidisciplinary perspective that integrates the biological, demographic, epidemiological, economic, behavioral, social, cultural and environmental aspects.

PUBH 6551. Maternal & Child Health II. 3 Credits.

PUBH 6552. Women's Health. 2 Credits.
Issues of women's health through the life cycle. The process of critically evaluating women's health research and issues.

PUBH 6553. Adolescent Health. 2 Credits.
Issues of physical, mental, and social development and their bearing on the health of adolescents, with special emphasis on prevention.

PUBH 6554. Children & Youth/Special Needs. 2 Credits.
In order to place children and youth with special needs into a public health framework, this course presents an introduction to and an overview of children and youth with special needs due to a developmental disability. Many aspects of developmental disability will be addressed including 'concept' and definitions of disability, causes, epidemiological considerations, and development of federal legislation. The scope and range of developmental disabilities will be reviewed along with classification schemes. Both national and international distributions will be considered from a sociopolitical viewpoint.

PUBH 6555. ReprodctvHealth:US&GloblPerspc. 2 Credits.
Reproductive health from a variety of public health perspectives, from defining reproductive health, past perspectives, needed improvements, and the factors that influence reproductive health.

PUBH 6556. Maternal & Child Nutrition. 2 Credits.
Covers the nutritional needs of women during the child bearing years, infants, children and adolescents. The course emphasizes the life course approach to nutrition and has a special emphasis on the effects of diet during infancy on obesity and degenerative diseases in later life. Students will examine the biological basis of nutrition, identify risk factors associated with poor nutrition in individuals and populations and evaluate domestic and international programs. Summer (1-credit) and Spring (2-credits).

PUBH 6557. ChildDevelopment&PublicHealth. 2 Credits.
Examination of the development of children from a public health perspective and provide a detailed examination of the indicators of children's health that are needed to assist public health professionals improve children's health.

PUBH 6558. Women, Gender and Health. 2 Credits.
Focuses on gender as a social determinant of health. Emphasis will be placed on examining the frameworks that are used in public health research to understand gender-based issues and how these frameworks affect the types of programs and intervention efforts developed.

PUBH 6559. HIV Prevntn:IntrdisplnryApprch. 2 Credits.
Provides an interdisciplinary overview of HIV prevention research from the behavioral, biological and biomedical perspective. Students are encouraged to approach the assignments and discussions from their own particular expertise and career interests/goals.

PUBH 6560. School Health and Safety. 1,2 Credit.
Examines the history, organization, financing, and politics of school health programs. It will provide an overview of the core components of school health as defined by the Center for Disease Control and Prevention: health services, health education, physical education, nutrition services, counseling or mental health, school environmental health, health promotion, and family/community involvement. Summer (1 credit); Spring (2 credits).

PUBH 6561. Maternal&ChildHlthPolAnalysis. 2 Credits.
Provides instruction in maternal and child health policy in the U.S. with a particular emphasis on policies related to the organization, financing, delivery, and quality oversight of personal health services for mothers and children.

PUBH 6562. Physical Activity and Obesity Interventions: From the Individual to the Environment. 2 Credits.
This course will broadly examine the public health issues related to physical activity and obesity, particularly as they relate to solutions for addressing individual factors and the obesogenic environment. Students will gain a further understanding of the social, physiological, behavioral, and environmental factors related to both obesity and physical activity. The course will focus on examining multiple levels of solutions, specifically: 1) individual and behavioral interventions; 2) school-based and community-level interventions; 3) environmental interventions; 4) policy-level interventions. Students will be expected to critically evaluate the necessary components of interventions, and apply that knowledge to future programmatic efforts.

PUBH 6563. Global Child Health. 2 Credits.
Science, policy, challenges, and successes of global child health; focus on low and middle income countries and children under five years of age. Communicable diseases of childhood and relevant chronic disease pandemics such as HIV and over-nutrition. The burden of disease and associated risk factors; cost-effective interventions and tools. Restricted to graduate students.

PUBH 6570. AdvPublHlthComm: Theory & Prac. 3 Credits.
Focuses on the use of communication to positively influence people's – and population's – understanding of health information, decision-making, and health behavior. In this skills-based course students will study, and in a group project apply, a range of theories and techniques germane to effective message design and delivery. Prereq: PubH 6503.

PUBH 6571. Social Marketing: Theory and Practice. 3 Credits.
The use of marketing to change the behavior of people, populations, and policy makers in ways that are in their, and society's, best interests. Students in this skills-based course study and work in teams to apply a range of marketing strategies to a real-world situation. Prerequisites: PUBH 6503.

PUBH 6572. Marketing Research for Public Health. 3 Credits.
The use of marketing research techniques used to better understand customers of public health programs in order to improve program design, implementation, and effectiveness. A range of qualitative and quantitative techniques are studied for their relevance to program planning, development, and continuous improvement.

PUBH 6573. Media Advocacy for Public Hlth. 3 Credits.
Focuses on the use of communication to positively influence public policy and public opinion. In this skills-based course students will study and apply a range of theories and techniques germane to the policy advocacy process. Prereq: PubH 6503.

PUBH 6574. Pub Hlth Branding Theory&Pract. 2 Credits.
This course focuses on the use of branding in the public health and social sectors. Learning from the commercial sector, we will examine how to brand behaviors as well as products and services. We will review branding methods, examine research on branding and its effectiveness, and build skills in branding for public health objectives.

PUBH 6575. CommunSkills for PubHProfsnls. 1 Credit.
Helps students develop writing and oral presentation skills through intensive, interactive training, practice, and feedback. Provides participants with a solid foundation for all forms of public health and other scientific and technical written and oral communication.

PUBH 6590. Intro Social Entrepreneurship. 2 Credits.
Examine innovative organizations created to improve people's lives and contribute to improved social & economic conditions. Course emphasis on how such organizations are started, how they are sustained, and the various business models that are adopted to achieve an organizational mission.

PUBH 6591. P.A./M.P.H. Clinal Leadership Seminar. 1 Credit.
For first-year physician assistant and master of public health program students, an orientation to their roles as health professionals. Special emphasis on preventive and community medicine.

PUBH 6599. Topics in PCH. 1-3 Credits.
In-depth examination of a particular facet of prevention and community health. Topics and prerequisites vary.

PUBH 6610. Public Health Nutrition Practice and Leadership. 1 Credit.
This course provides an overview of public health nutrition practice. Students develop communication, management and leadership skills necessary for successful careers. Students will also explore potential practicum and culminating experience options, and how to use these experiences to achieve their career goals. This course is designed for first year students in the public health nutrition MPH program.

PUBH 6611. Nutrition Assessment. 2 Credits.
This course examines the anthropometric, biochemical, clinical and dietary methods for assessing nutritional status in individuals. The process of conducting a food and nutrition environment assessments will also be addressed.

PUBH 6612. Food Systems in Public Health. 2 Credits.
A systems approach to understanding food systems and associated public health issues. How the current food system evolved, and how issues such as climate change and population growth may affect food systems in the future. The role of public health practitioners in meeting the population's need for safe, sufficient, and nutritious food. Policies, programs, and proposals aimed at creating healthier, more sustainable food systems. Prerequisite: PUBH 6004.

PUBH 6613. US Food Policy and Politics. 2 Credits.
The programs, regulations and legislation that pertain to food production, food safety, nutrition assistance and dietary guidance in the United States at the federal, state and local levels.

PUBH 6619. Fundamentals of Nutrition Science. 3 Credits.
The fundamental scientific principles of human nutrition; improving diet and nutritional status in the broader context of public health; nutrition assessment, study designs in nutrition science research, the role of nutrition in chronic disease, and current topics in nutrition science.

PUBH 6699. Topics in Nutrition Sciences. 1-3 Credits.
Examination of a particular facet of nutrition sciences. Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details.

PUBH 6999. Master of Science in Epidemiology Thesis. 2 Credits.
Thesis research. Restricted to MS in Epidemiology candidates.

PUBH 8242. DPH Topics:ClinEpi&DecAnalysis. 1 Credit.
An evidence-based problem solving approach for doctoral level students utilizing methods taught in PubH 6242. Prerequis: PubH 6002, PubH 6003. Corequis: PubH 6242.

PUBH 8244. DPH Topics:Cancer Epidemiology. 1 Credit.
Course focuses on critical review and interpretation of cancer epidemiology literature as well as issues in research design in the field. Prerequ:PubH 6001 & PubH 6003. Corequis: PubH 6244.

PUBH 8245. DPH Topics:InfectDiseaseEpi. 1 Credit.
Provides doctoral level material on the content of infectious disease epidemiology. The course focuses on critical review and interpretation of infectious disease literature as well as issues preparing an analytic research paper on an emerging infectious disease and the application of tools used to describe the epidemiology of those diseases. Prerequ: PubH 6003. Corequis: PubH 6245. Spring.

PUBH 8250. DPH Topics: Epi of HIV/AIDS. 1 Credit.
Students select specific topic within area of HIV/AIDS epidemiology. Options include responding to a data analysis problem; responding to a methodological problem found within HIV/AIDS research; or another topic approved by instructor. Prerequ: PubH 6001 & PubH 6003. Corequis: PubH 6250.

PUBH 8259. DPH Topics:EpiSurveillanceinPH. 1 Credit.
Course provides doctoral level material on the content of surveillance offered in PubH 6259. Focus is on critical review and interpretation of surveillance literature as well as issues preparing an analytic research paper. Prerequ: PubH 6002 & PubH 6003. Corequis: PubH 6259.

PUBH 8364. Quantitative Methods. 3 Credits.
Introduces basic concepts in mathematical statistics. Topics will include probabilities (unconditional and conditional), density and distribution functions of continuous and discrete random variables, including expected values. Specific distribution functions discussed will be Binomial, Poisson, Hypergeometric, and Gaussian distributions. Additional topics include bivariable distributions, variance-covariance matrix, limiting theory, asymptotic results, and maximum likelihood estimation. Prerequisites: Math 1231, 1232 and PubH 6002, 6249.

PUBH 8365. Design of Medical Studies. 3 Credits.
Design of medical investigations, including the randomized clinical trial, observational cohort study, and the retrospective case-control study. Specific methods regarding sample size, power and precision and statistical procedures for randomization and sampling. Ethics of clinical trials and the intention-to-treat principle. Prerequisite: PubH 6002.

PUBH 8366. Biostatistical Methods. 3 Credits.
Biostatistical methods for asymptotically efficient tests and estimates of relative risks and odds ratios from prospective and retrospective matched and unmatched studies. Fixed and random effects models. Logistic regression, conditional logistic regression. Poisson regression. Maximum likelihood and efficient scores. Prerequisites: STAT 6202 or Instructor's permission.

PUBH 8401. Foundations in Public Health Leadership & Practice. 3 Credits.
Interactive seminar course provides students in the doctor of public health (DrPH) program with a fundamental understanding of the history of and current issues associated with the four principal DrPH program areas: health policy, health behavior, global health and environmental and occupational health.

PUBH 8402. Ldrshp/PublicHlthPractc&Policy. 2 Credits.
Principles of public health practice and policy with a focus on the interdisciplinary and strategic application of skills, knowledge and competencies necessary both to perform public health core functions and to enhance the capacity to perform these functions.

PUBH 8404. Advanced Topics: Health Systems and Health Policy Research. 3 Credits.
Examination and assessment of issues related to the intersection of healthcare systems and health policy, and how health policy and health services research can inform the development and evaluation of healthcare systems and health policy. Prerequisites: PUBH 6315. Restricted to doctoral candidates.

PUBH 8405. Advanced Topics: Health Economics Research. 3 Credits.
Critical financing issues for U.S. public health and health care services and systems. The role of health services research in understanding the effects of these issues and informing the deliberations and decisions of policymakers.

PUBH 8406. Advanced Topics: Health Research in the Global Arena. 3 Credits.
Alternative field methods adopted from sociology, anthropology, economics, and political sciences for social sciences and policy research. Builds data collection, instruments, measurements, indicators, and data analysis and interpretation skills in specific socio-cultural contexts. Ethical issues in international research.

PUBH 8407. Advanced Topics: Health Leadership in International Settings. 3 Credits.
Doctoral students develop the tools and experiences needed to build capacity for leadership in global health. Prerequisite: PUBH 8406.

PUBH 8408. Advanced Topics: Health Behavior Research & Practice Applications. 3 Credits.
Advanced topics relating theory to practice in areas of health education and behavioral change. Application of qualitative and quantitative research to health related behavior at individual and community levels.

PUBH 8409. Advanced Topics: Health Communication Research. 3 Credits.
Methods of communications research designed to alter health behavior. Emphasis on critical analysis of communications research aimed at the mass public, groups, and interpersonal level.

PUBH 8411. Advanced Topics - Principles of Human Health Risk Science. 3 Credits.
This course provides the doctoral student with a comprehensive orientation to the frameworks, principles and issues involved in assessing, managing and communicating environmental health risks. This fundamental, interdisciplinary course is designed to foster dialogue and insights about contemporary risk science and management issues, including ethical concerns and technical issues that influence policy making. Restricted to EOH DrPH program students only; other students by permission of instructor.

PUBH 8412. Advanced Topics - Environmental and Occupational Health Research and Practice. 3 Credits.
This course exposes students to the theory and reality of both research and practice in environmental and occupational health. There is an emphasis on the use of public health science in policy and regulatory decisions. Prerequisite: PUBH 8411 or permission of instructor.

PUBH 8413. Research Leadership. 1-10 Credits.
Students participate in a range of activities designed to develop and enhance their research methods and analytic skills. These activities include participating in the development and submission of sponsored research proposals; being formally affiliated with a research project, assuming responsibility for completing a real-world research project; engaging in empirical data collection and analysis efforts.

PUBH 8414. Policy and Management Leadership. 1-10 Credits.
Students develop and enhance their management, leadership, and policymaking skills for problem solving in real-world settings; public health departments, community health centers, legislative settings, and public or teaching hospitals.

PUBH 8415. Instructional Leadership. 1-10 Credits.
Students participate in a range of activities designed to develop and enhance their teaching skills. These activities include course development, teaching master's level courses, acting as TA for undergraduate courses, advising students about their class performance, evaluating student performance, and developing remedial programs for students.

PUBH 8416. Study Design & Evaluation Methods. 3 Credits.
Prepares doctoral students to design and conduct program and policy evaluation in public health. Intensive introduction to the principles of study program design and evaluation research emphasizing the ability to synthesize the population-based intervention literature, apply planning and management methods, describe and apply research methods from a range of disciplines, and prepare a program research proposal.

PUBH 8417. Qualitative Research Methods and Analysis. 3 Credits.
Techniques for designing and conducting qualitative research and for analyzing and reporting qualitative data relevant to program development and implementation, community assessment, and policy analysis. Prerequisite: PUBH 8416.

PUBH 8418. Applied Statistical Analysis. 3 Credits.
Intensive course in data management and data analysis using STATA® . Database management system techniques and data analytical strategies for the appropriate analysis of data sets obtained from a variety of studies will presented. The student will manipulate national data sets from epidemiological studies as well as Demographic and Health Survey (DHS) data. Prereq: PubH 8416.

PUBH 8419. Measrmnt/PublHlth&HlthSrvcsRes. 3 Credits.
In this course students review principles of measurement and assessment as they apply to public health and health services research constructs, review existing state-of –the-art measures of individual and population health status (e.g., morbidity, mortality, functioning and health-related quality of life) and of individual and community health behavior, and explores current measurement issues in health research. Prerequisite: PubH 8418.

PUBH 8420. Advanced Analysis & Dissemination. 3 Credits.
Advanced multivariate data analyses of complex datasets and programs, including advanced cross-sectional techniques, time-series analysis, and the use of panel data. Evaluation of results, and dissemination of findings to relevant stakeholders. Prereq: PubH 8417, 8418.

PUBH 8422. Advanced Health Care and Public Health Research Design. 2 Credits.
Design of protocol suitable for implementation as part of DrPH dissertation requirement. Enrollment only after completion of required coursework and successful completion of the comprehensive examination. Instructor's approval required.

PUBH 8423. Dissertation Research. 1-12 Credits.
Dissertation Research for DrPH. Prereq: PubH 8422.

PUBH 8999. Dissertation Research. 1-12 Credits.
Dissertation research.

MASTER OF PUBLIC HEALTH IN THE FIELD OF COMMUNITY ORIENTED PRIMARY CARE

Program Director F. Spielberg

Practicum Director K. Pomerantz

Mission Statement

The Community Oriented Primary Care (COPC) program at the Milken Institute School of Public Health offers master of public health (M.P.H.) and graduate certificate programs designed to train health professionals and public health practitioners to implement and evaluate evidence-based interventions to improve community health, clinical care outcomes, and patient experience, while lowering health care costs and decreasing health disparities.

COPC

The COPC program trains future health care innovators in the methods of COPC which provide skills to conceptualize, implement, evaluate, and disseminate interventions that bridge public health and clinical medicine. COPC begins by teaching practitioners methods to fully understand the needs of communities, health care providers and policy makers. Concurrently, skills are developed to read and interpret literature to inform future intervention design. With this in-depth understanding, COPC practitioners learn to work with stakeholders to prioritize interventions that will have a high likelihood of improving health outcomes and patient experience while lowering health care costs and decreasing health disparities. COPC practitioners learn to conduct in-depth assessments, which help to shape intervention design and serve as baseline data to evaluate intervention impact. Acquired Intervention skills include implementation of social marketing campaigns, advocacy campaigns, mobile health interventions, individual brief behavioral interventions, peer interventions, quality improvement projects using data from electronic health records, structural interventions to impact health behaviors, and health system innovations to improve the ability of community based organizations to educate, test, and link to care patients with preventable and chronic health conditions. Evaluation skills are acquired that include analysis of qualitative, quantitative, and cost data. Dissemination skills are acquired to take best practices to scale. Through

experiential learning COPC practitioners will develop the skills necessary to lead health improvement projects in community, health department, academic, and clinical settings.

Goals

The following are goals of this educational program:

- Provide the knowledge and skills necessary to implement a COPC program.
- Provide an analytical framework for evaluating community-based interventions using the principles and methods of COPC as a reference.
- Provide opportunities for COPC practice, especially within vulnerable communities.
- Create health and public health practitioners with skills necessary to excel in the following positions:
  - Clinic Quality Improvement Specialist (clinic setting)
  - Patient Centered Medical Home team leader (clinic setting)
  - Supervisor of patient care coordination (clinic or MCO setting)
  - Community health specialist (community, clinic or public health setting)
  - Health promotion specialist (community or clinic setting)
  - Supervisor of Community Health Worker program (community or clinic setting)
  - Community Health Research coordinator (academic, clinic or community setting)
  - Director of community clinic or community health organization (With dual health and MPH degree)

Background

COPC provides the bridge between clinical medicine and public health, in which the community is the focal point in the delivery of health care. It provides a conceptual and methodological framework to rationalize, organize, and adapt available resources to the delivery of health services. The methods are essential to the organized delivery of health care in community based practices, organizations engaged in managed care, and responsive governmental health systems.

The basic concepts of COPC were initially implemented in South Africa during the early 1940's by Sidney and Emily Kark with the creation of community health centers. These centers promoted a reorientation of health services at the community level through a unique linkage between individual clinical care and public health. They served as a laboratory for teaching and training health professionals.

Since that time, COPC has been taught and practiced in a number of settings around the world. Significantly, it has been an important element in the Community Health Center movement, the Indian Health Service, and a number of urban health departments in the United States as well as a variety of public health and primary care systems around the world. Developments in computer-based information management, mobile health, geographic information systems, and qualitative information gathering techniques have proved important assets to COPC practice.

The Concept of COPC

The essence of COPC is the planning and delivery of health care to a defined community in response to the defined needs of that community. To do this successfully requires the planned integration of the classical public health roles of health promotion and disease prevention at population levels with the delivery of primary health care, which focuses on the clinical treatment of disease and its sequelae. COPC recognizes that, in line with the World Health Organization definition of health as being far more than the absence of disease, a clinical practice should be responsive to the broad health needs of the community and should be flexible enough to respond to changes in those needs. COPC can be defined as a continuous process by which primary care is provided to a defined community on the basis of its assessed health needs through the planned integration of public health with clinical practice The COPC program curriculum will teach a six-step process as follows:

1. Community definition
2. Community characterization
3. Problem prioritization
4. Detailed assessment
5. Intervention
6. Evaluation

The overall curriculum is designed to give the learner the necessary public health tools to apply the principles of COPC in the context of community health practice and to be well educated in the disciplines of applied public health.

COMPETENCIES

All MPH students in the Prevention and Community Health Department should possess the following functional competencies:

- Identify the causes of social and behavioral factors that affect health of individuals and populations.

PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Program Evaluation

- Apply appropriate theories toward the development, implementation, and evaluation of health promoting programs, interventions, and policies.

PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Program Evaluation

- Develop interventions, programs, and policies to affect change at the individual, interpersonal, community, and population level.

PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Program Evaluation

- In collaboration with others, prioritize individual, organizational, and community concerns and resources for public health programs.

PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Program Evaluation

- Apply theory and strategy-based communication principles across different settings and audiences.

PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Program Evaluation

- Apply ethical principles to public health program planning, implementation, evaluation, communication, and dissemination.

PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Program Evaluation

Upon completion of the MPH in Community Oriented Primary Care students should possess the following functional competencies:

- Communicate and discuss the principles and methods of COPC.
  Students should have the knowledge and understanding to be able to discuss the principles of COPC and describe the 6 steps which are:

1. defining the community,
2. characterizing the community,
3. prioritizing community health issues and problems,
4. conducting a detailed assessment of the priority health issue,
5. planning and implementing COPC interventions, and
6. evaluating the interventions.

  Overarching principles include community participation and partnership. Students should be capable of communicating these to audiences with different educational levels and cultural backgrounds.

PUBH 6510	COPC Principles and Practice
PUBH 6512	Comm-OrientedPrimryCarePol&Iss
PUBH 6513	Community Health Management
PUBH 6514	Preventing Health Disparities
PUBH 6516	Community Health InfoResources

- Define, characterize communities and identify its health needs which will be the focus of a COPC practice.

Relevant Courses

PUBH 6504	Social and Behavioral Science Research Methods
PUBH 6510	COPC Principles and Practice
PUBH 6512	Comm-OrientedPrimryCarePol&Iss
PUBH 6530	Qualitative Methods in Health Promotion

- Prioritize community health issues using the principles of COPC.

Relevant Courses

PUBH 6510	COPC Principles and Practice
PUBH 6512	Comm-OrientedPrimryCarePol&Iss
PUBH 6513	Community Health Management
PUBH 6514	Preventing Health Disparities

- Gather best-practices models for community-based interventions and the necessary quantitative and qualitative information for implementation in the focus community.

Relevant Courses

PUBH 6504	Social and Behavioral Science Research Methods
PUBH 6510	COPC Principles and Practice
PUBH 6512	Comm-OrientedPrimryCarePol&Iss
PUBH 6514	Preventing Health Disparities
PUBH 6516	Community Health InfoResources

- Implement individual behavior change interventions in clinical settings

Relevant Courses

PUBH 6510	COPC Principles and Practice
PUBH 6512	Comm-OrientedPrimryCarePol&Iss

- Develop skills to manage community health organizations

Relevant Courses

PUBH 6513	Community Health Management

- Develop and implement interventions using COPC principles including community participation and partnership

Relevant Courses

PUBH 6510	COPC Principles and Practice
PUBH 6512	Comm-OrientedPrimryCarePol&Iss
PUBH 6513	Community Health Management

- Evaluate and analyze community-based interventions and COPC programs

Relevant Courses

PUBH 6504	Social and Behavioral Science Research Methods
PUBH 6510	COPC Principles and Practice
PUBH 6512	Comm-OrientedPrimryCarePol&Iss

- Identify, analyze, and discuss the role of COPC in underserved within vulnerable communities.

Relevant Courses

PUBH 6510	COPC Principles and Practice
PUBH 6512	Comm-OrientedPrimryCarePol&Iss
PUBH 6513	Community Health Management
PUBH 6514	Preventing Health Disparities

- Develop and Implement a COPC process in clinical health services and community-based organizations and settings.

Relevant Courses

PUBH 6510	COPC Principles and Practice
PUBH 6512	Comm-OrientedPrimryCarePol&Iss
PUBH 6513	Community Health Management

- Analyze policies, issues, and programs that impact COPC practice.

Relevant Courses

PUBH 6510	COPC Principles and Practice
PUBH 6512	Comm-OrientedPrimryCarePol&Iss
PUBH 6513	Community Health Management

- Develop skills to implement, evaluate and publish the results of a COPC intervention in a peer reviewed journal.

Relevant Courses

PUBH 6510	COPC Principles and Practice
PUBH 6512	Comm-OrientedPrimryCarePol&Iss
PUBH 6516	Community Health InfoResources
PUBH 6504	Social and Behavioral Science Research Methods

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 15 credits in core courses, 6 credits in courses in the department, 14 credits in courses in the field, 6 credits in elective courses, and 4 credits in practicum and culminating experience courses.

Program Requirements

Code	Title	Credits
Required core courses:		
PUBH 6001	Biological Concepts in Public Health	
or PUBH 6591	P.A./M.P.H. Clinal Leadership Seminar	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Courses in the department:		
PUBH 6500	Planning and Implementing Health Promotion Programs	
PUBH 6501	Program Evaluation	
Courses in the field:		
PUBH 6504	Social and Behavioral Science Research Methods	
PUBH 6510	COPC Principles and Practice	
PUBH 6512	Comm-OrientedPrimryCarePol&Iss	

PUBH 6514	Preventing Health Disparities
PUBH 6513	Community Health Management
PUBH 6516	Community Health InfoResources
Elective course recommendations:	
PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6534	Comm-Based Participatory Res
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6531	HlthPromotion/HlthCareSettings
PUBH 6262	Intro-Geog Information Systems
PUBH 6530	Qualitative Methods in Health Promotion
PUBH 6532	Commnty Org,Devlpmnt&Advocacy
HSML 6204	Quality&PerformanceImprovement
Other required courses:	
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits
2. Course requirements: Successful completion of core and program-specific courses
3. Grade point requirement: 3.0 (B average) overall grade point average
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF PUBLIC HEALTH IN THE FIELD OF HEALTH PROMOTION

Program Director C.Sparks

Practicum Director T. Henry

Mission Statement

The mission of the master of public health degree in health promotion degree program is to train students to enhance and protect the health of the public.The program is designed to assist individuals to become responsible and productive public health professionals who are capable of assessing, implementing, managing, and evaluating health promotion and health education programs for the public and for at-risk populations. The required courses as well as the suggested electives are intended to train students in social and behavioral approaches and applications for improving public health using interventions at the individual, group, organizational, and societal level.

Goals

The goals of this educational program are to provide and improve:

- Knowledge of and ability to use social and behavioral theory and behavior change models and strategies that have been shown to be successful in improving health behaviors and practices for a variety of populations.
- Knowledge and skills to assess needs for health interventions for the general public as well as at-risk populations.
- Ability to plan, design, implement, evaluate, and communicate programs and research targeted toward health promotion and/or disease prevention for the public.
- Ability to advocate for improvements in social practices, policy, and law that will provide supportive environments for the improvement of public health.
- Use of structures and resources of organizations and governments to create healthy environments that promote health.

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Visit the program website (http://publichealth.gwu.edu/programs/health-promotion-mph) for additional information.

COMPETENCIES

The competencies for the Health Promotion Program are based on the Association of Schools of Public Health (ASPH) competencies in social and behavioral health, as well as the National Health Educator Competencies that students need to qualify at the master's level as certified health education specialists (CHES) which are recognized by the Society for Public Health Education. Upon Completion of the Health Promotion Program should possess the following seven functional competencies:

- Assess the individual, community, organizational and societal health and mental health needs of the general public and at-risk populations.

PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6504	Social and Behavioral Science Research Methods
PUBH 6530	Qualitative Methods in Health Promotion
PUBH 6531	HlthPromotion/HlthCareSettings
PUBH 6532	Commnty Org,Devlpmnt&Advocacy

- Plan health promotion/education strategies, interventions and programs based on theory and evidence and cultural appropriateness for individuals, groups and communities.

PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6531	HlthPromotion/HlthCareSettings
PUBH 6532	Commnty Org,Devlpmnt&Advocacy

- Implement health promotion and health education strategies, interventions and programs to meet the health and mental health needs of the public.

PUBH 6531	HlthPromotion/HlthCareSettings
PUBH 6532	Commnty Org,Devlpmnt&Advocacy

- Conduct evaluation of health promotion program and conduct research related to health promotion and health education.

PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6504	Social and Behavioral Science Research Methods
PUBH 6530	Qualitative Methods in Health Promotion
PUBH 6531	HlthPromotion/HlthCareSettings
PUBH 6532	Commnty Org,Devlpmnt&Advocacy

- Administer and manage health promotion strategies, interventions and programs.

PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6504	Social and Behavioral Science Research Methods
PUBH 6531	HlthPromotion/HlthCareSettings
PUBH 6532	Commnty Org,Devlpmnt&Advocacy

- Develop communication campaigns and strategies to disseminate health promotion information through media channels.

PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6530	Qualitative Methods in Health Promotion
PUBH 6532	Commnty Org,Devlpmnt&Advocacy

- Develop and implement advocacy strategies to create interventions at the population level that improve or alter social norms, policy and law to support public health.

PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6532	Commnty Org,Devlpmnt&Advocacy

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 41 credits in required courses and 4 credits in practicum and culminating experience.

Program requirements

Code	Title	Credits
Required		
Core		
PUBH 6001	Biological Concepts in Public Health	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Departmental		
PUBH 6500	Planning and Implementing Health Promotion Programs	
PUBH 6501	Program Evaluation	
Program-specific		

PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6530	Qualitative Methods in Health Promotion
PUBH 6531	HlthPromotion/HlthCareSettings
PUBH 6532	Commnty Org,Devlpmnt&Advocacy
PUBH 6504	Social and Behavioral Science Research Methods
Electives	
7 credits from the following:	
PUBH 6514	Preventing Health Disparities
PUBH 6516	Community Health InfoResources
PUBH 6535	Promotion of Mental Health
PUBH 6536	Workplace Health Promotion
PUBH 6537	Health Promotion & Aging
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6556	Maternal & Child Nutrition
PUBH 6560	School Health and Safety
PUBH 6562	Physical Activity and Obesity Interventions: From the Individual to the Environment
PUBH 6573	Media Advocacy for Public Hlth
PUBH 6599	Topics in PCH
And/or any other SPH elective courses.	
Practicum and culminating experience	
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits
2. Course requirements: Successful completion of core and program-specific courses
3. Grade point requirement: 3.0 (B average) overall grade point average
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF PUBLIC HEALTH IN THE FIELD OF MATERNAL AND CHILD HEALTH

Program Director A. Vyas

Faculty Advisors M. Napolitano, K. McDonnell, K. Roche, M. Ruiz

Mission Statement

The maternal and child health program (MCH) at the Milken Institute School of Public Health (SPH) is a Master of Public Health (MPH) degree program designed to train individuals to become responsible and productive public health professionals with an emphasis on MCH populations. This program investigates maternal and child health from a multi-disciplinary perspective that integrates the life course, biological, demographic, epidemiological, developmental, environmental, behavioral, and social characteristics that are unique to the health and well-being of women, children, and families.

Goals

The goals of this educational program are to provide and improve:

- Knowledge and skills to assess the health care needs of women, children, and families; and
- Ability to plan, design, implement, evaluate, and communicate programs and research targeted toward health promotion and disease prevention among women, children, and families,

COMPETENCIES

Program-Specific Competencies

The Association of Teachers of Maternal and Child Health have outlined 5 basic competency areas in MCH that our program strives to attain:

1. Scientific Basis of MCH public health practice
2. Methodological/Analytical Skills
3. Management and Communication Skills
4. Policy and Advocacy Skills
5. Values and Ethics in MCH Public Health Practice

Upon Completion of the MPH, Maternal and Child Health Program students should possess the following functional competencies:

- Assess the individual, community, organizational and societal needs of women, children, and families.

Relevant courses:

PUBH 6550	Maternal & Child Health I
PUBH 6551	Maternal & Child Health II

- Develop and implement strategies and interventions to improve the health needs of women, children and families.
- **Relevant courses:**

PUBH 6550	Maternal & Child Health I
PUBH 6551	Maternal & Child Health II

- Conduct evaluation and research related to the health and well-being of women, children and families.

Relevant courses:

PUBH 6550	Maternal & Child Health I
PUBH 6551	Maternal & Child Health II

- Administer MCH strategies and policies to improve the heath and well-being of women, adolescents, children and families.

Relevant courses:

PUBH 6550	Maternal & Child Health I

- Communicate and advocate for health and well-being of women, children and families.

Relevant courses:

PUBH 6550	Maternal & Child Health I
PUBH 6551	Maternal & Child Health II

- Incorporate a life course perspective to the health and well-being of women, children and families.

Relevant courses:

PUBH 6550	Maternal & Child Health I
PUBH 6551	Maternal & Child Health II

REQUIREMENTS

MPH students who select the Maternal and Child Health Program enroll in Core Courses (15 credits), Department and Program-Specific Required Courses (12 credits), Program-Specific Electives (11 credits), and an additional 3 credits of any SPH elective(s). The 45 total credit requirements include a Practicum and Culminating experience (4 credits), where students apply their classroom education in a Maternal and Child Health organization and/or research endeavor.

Begin planning Practicum during Year 1; complete Culminating Experience in Year 2.

Program Requirements

Code	Title	Credits
Required core courses (15 credits)		
PUBH 6001	Biological Concepts in Public Health	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Required department courses (6 credits)		
PUBH 6500	Planning and Implementing Health Promotion Programs	
PUBH 6501	Program Evaluation	
Required program-specific courses (6 credits)		
PUBH 6550	Maternal & Child Health I	
PUBH 6551	Maternal & Child Health II	
Program-specific electives		
10 credits from the following: (see Advisor for modifications/additions)		
PUBH 6503	Introduction to Public Health Communication and Marketing	
PUBH 6552	Women's Health	
PUBH 6553	Adolescent Health	
PUBH 6555	ReprodctvHealth:US&GloblPerspc	
PUBH 6556	Maternal & Child Nutrition	
PUBH 6557	ChildDevelopment&PublicHealth	
PUBH 6560	School Health and Safety	
PUBH 6561	Maternal&ChildHlthPolAnalysis	
PUBH 6562	Physical Activity and Obesity Interventions: From the Individual to the Environment	

PUBH 6563	Global Child Health
HDEV 6109	Child Development
EXNS 6242	Nutrition Throughout the Life Cycle
Electives	
4 credits selected from any SPH graduate course(s)	
Practicum and culminating experience (4 credits)	
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits
2. Course requirements: Successful completion of core and program-specific courses
3. Grade point requirement: 3.0 (B average) overall grade point average
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF PUBLIC HEALTH IN THE FIELD OF PUBLIC HEALTH COMMUNICATION AND MARKETING

Program Director L. Abroms

Practicum Director K. Pomerantz

Mission

Based on an ecological model of health, the mission of this program is to educate public health professionals to use communication and marketing as strategic tools to influence people, places, and environmental conditions in ways that advance public health objectives.

Goals

Graduates will possess the skills necessary to become highly effective public health practitioners and leaders. Their specific expertise in the strategic use of communication and marketing tools will enable them to work collaboratively with a broad range of other public health experts to plan high-impact health enhancement initiatives, and to implement or supervise the implementation of the communication and marketing components of public health initiatives.

Specifically, students will become proficient at developing, implementing, and evaluating:

- Communication programs that help people make sound health decisions and effectively manage their health behaviors.
- Marketing programs that improve the health capacity of communities by enhancing the competitiveness of the healthful (versus unhealthful) products and services offered to community members.
- Communication programs that promote the adoption of policies--in the public and private sector--which enhance health.

COMPETENCIES

Program-Specific Competencies

Upon completion of the MPH Program in Public Health Communication and Marketing, students will be able to:

- Apply an ecological framework to assess and promote population health.

  Relevant courses:

PUBH 6502	Practical Data Analysis: PCH
or PUBH 6504	Social and Behavioral Science Research Methods
PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6570	AdvPublHlthComm: Theory & Prac
PUBH 6571	Social Marketing: Theory and Practice
PUBH 6573	Media Advocacy for Public Hlth
PUBH 6575	CommunSkills for PubHProfsnls

- Use marketing research to develop and improve public health programs.

  Relevant courses:

PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6570	AdvPublHlthComm: Theory & Prac
PUBH 6571	Social Marketing: Theory and Practice
PUBH 6572	Marketing Research for Public Health
PUBH 6574	Pub Hlth Branding Theory&Pract

- Develop and administer communication programs to promote individual- and population-level behavior change.

Relevant courses:

PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6570	AdvPublHlthComm: Theory & Prac
PUBH 6571	Social Marketing: Theory and Practice
PUBH 6572	Marketing Research for Public Health
PUBH 6573	Media Advocacy for Public Hlth
PUBH 6574	Pub Hlth Branding Theory&Pract
PUBH 6575	CommunSkills for PubHProfsnls

- Develop and administer marketing programs to promote individual- and population-level behavior change and improve the health capacity of communities.

Relevant courses:

PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6570	AdvPublHlthComm: Theory & Prac
PUBH 6571	Social Marketing: Theory and Practice
PUBH 6572	Marketing Research for Public Health
PUBH 6573	Media Advocacy for Public Hlth
PUBH 6574	Pub Hlth Branding Theory&Pract
PUBH 6575	CommunSkills for PubHProfsnls

- Develop and administer communication programs to promote the adoption of policies that enhance health.

Relevant courses:

PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6570	AdvPublHlthComm: Theory & Prac
PUBH 6571	Social Marketing: Theory and Practice
PUBH 6573	Media Advocacy for Public Hlth
PUBH 6574	Pub Hlth Branding Theory&Pract

- Evaluate public health communication and marketing initiatives.

Relevant courses:

PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6502	Practical Data Analysis: PCH
or PUBH 6504	Social and Behavioral Science Research Methods
PUBH 6570	AdvPublHlthComm: Theory & Prac
PUBH 6571	Social Marketing: Theory and Practice
PUBH 6572	Marketing Research for Public Health
PUBH 6574	Pub Hlth Branding Theory&Pract

REQUIREMENTS

Course Requirements

MPH students who select the Public Health Communication and Marketing (PHCM) Program enroll in MPH core courses (15 credits); department requirements (6 credits); program-specific required courses (10-12 credits); program-specific electives (6 credits), and other SPH electives (2-4 credits). The 45 credit requirement includes both practicum and the culminating experience (4 credits), where students apply their didactic education in real world settings.

Begin planning practicum during year 1; complete culminating experience in year 2.

Program Requirements

Code	Title	Credits
Required core courses:		
PUBH 6001	Biological Concepts in Public Health	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6004	Environmental and Occupational Health in a Sustainable World	
PUBH 6006	Management and Policy Approaches to Public Health	
PUBH 6007	Social and Behavioral Approaches to Public Health	
Required department courses:		
PUBH 6500	Planning and Implementing Health Promotion Programs	
PUBH 6501	Program Evaluation	
Required program courses:		
PUBH 6503	Introduction to Public Health Communication and Marketing	

PUBH 6570	AdvPublHlthComm: Theory & Prac
PUBH 6571	Social Marketing: Theory and Practice
PUBH 6502	Practical Data Analysis: PCH
or PUBH 6504	Social and Behavioral Science Research Methods
Program-specific electives (6 credits) from list:	
PUBH 6572	Marketing Research for Public Health
PUBH 6573	Media Advocacy for Public Hlth
or PUBH 6532	Commnty Org,Devlpmnt&Advocacy
PUBH 6574	Pub Hlth Branding Theory&Pract
PUBH 6575	CommunSkills for PubHProfsnls
Electives: Suggestions below (or any of program-specific electives not yet taken) (2-4 credits)	
PUBH 6133	Social Dimenensions in Climate Change and Health
PUBH 6134	Communicating Science for Public Health
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6431	Global Health Communication Strategies and Skills
PUBH 6516	Community Health InfoResources
PUBH 6530	Qualitative Methods in Health Promotion
PUBH 6531	HlthPromotion/HlthCareSettings
PUBH 6536	Workplace Health Promotion
PUBH 6537	Health Promotion & Aging
Or select other SPH course(s) with advisor's advanced approval	
Practicum and culminating experience:	
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits
2. Course requirements: Successful completion of core and program-specific courses
3. Grade point requirement: 3.0 (B average) overall grade point average
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

DOCTOR OF PUBLIC HEALTH IN THE FIELD OF HEALTH BEHAVIOR

Program Director M. Napolitano

Mission

The mission of the Department of Prevention and Community Health is to train professionals to provide leadership in the field of health behavior. The doctor of public health in the field of health behavior degree program is based on the ecological model of health and well-being and is aimed at understanding and having an impact on the health of populations and cultures, with special emphasis on underserved populations. Graduates are prepared to apply their research and analytic skills to a range of implementation, evaluation, and advocacy needs of various cultural and socioeconomic groups and communities.

Specific admission requirements are shown on the Graduate Program Finder (https://www.gwu.edu/all-graduate-programs).

For program policies and procedures, please refer to the Doctor of Public Health Handbook and other resources located on the Dr.PH. in the field of Health Behavior website (https://publichealth.gwu.edu/programs/health-behavior-drph).

REQUIREMENTS

The following requirements must be fulfilled: 48 credits, including 30 credits in required courses, 7-10 credits in elective courses, and 8-10 credits in dissertation.

Program requirements

Code	Title	Credits
Required		
Foundational and research methods (20 credits)		
PUBH 8401	Foundations in Public Health Leadership & Practice	
PUBH 8402	Leadership in Public Health Practice & Policy	
PUBH 8416	Study Design & Evaluation Methods	

PUBH 8417	Qualitative Research Methods and Analysis
PUBH 8418	Applied Statistical Analysis
PUBH 8419	Measurement in Public Health & Health Services
PUBH 8420	Advanced Analysis & Dissemination
Health behavior speciaty field (6 credits)	
PUBH 8408	Advanced Topics: Health Behavior Research & Practice Applications
PUBH 8409	Advanced Topics: Health Communication Research
Professional leadership (4 credits)	
PUBH 8413	Research Leadership
PUBH 8415	Instructional Leadership
Electives	
7-10 credits in specialty field elective courses. Sample courses include:	
PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6531	HlthPromotion/HlthCareSettings
PUBH 6532	Commnty Org,Devlpmnt&Advocacy
PUBH 6533	Design of Comm Health Surveys
PUBH 6534	Comm-Based Participatory Res
PUBH 6570	AdvPublHlthComm: Theory & Prac
PUBH 6571	Social Marketing: Theory and Practice
EDUC 8131	Case Study Research Methods
EDUC 8140	Ethnographic Research Methods
EDUC 8172	Multivariate Analysis
PSYC 8204	Experimental Foundations of Psychology: Biological Basis of Behavior
PSYC 8231	Development of Psychometric Instruments
PSYC 8277	Health Psychology
PSYC 8287	Current Topics in Clinical Psychology
Dissertation	
8-11 credits in preparation and dissertation	
PUBH 8422	Advanced Health Care and Public Health Research Design
PUBH 8423	Dissertation Research
Other	
Successful completion of a comprehensive examination.	

Graduation Requirements

1. Graduate credit requirement: 48 graduate credits are required.
2. Course requirements: successful completion of the foundational and research methods courses. The program-specific specialty field courses and the professional leadership credits are required.
3. Comprehensive exam: Once the course of study is completed, students are required to pass the comprehensive exam to be officially admitted to the candidacy phase.
4. Dissertation: PUBH 8422 Advanced Health Care and Public Health Research Design plus 6-9 dissertation research credits are required. Once the proposal has been successfully defended and dissertation research credits have been met, the oral defense may be scheduled.
5. Grade point requirement: A 3.0 (B average) overall grade-point average is required.
6. Time limit requirement: The degree must be completed within seven (7) years.
7. No transfer credits are accepted.

DOCTOR OF PHILOSOPHY IN THE FIELD OF SOCIAL AND BEHAVIORAL SCIENCES IN PUBLIC HEALTH

Program Director M. Napolitano

Mission

The Ph.D. in social and behavioral sciences in public health degree program is designed to develop public health scholars who are at the forefront of social and behavior change. The program trains students to conduct independent research that is theoretically sound and applicable across a variety of contexts in order to prevent diseases and promote health and well-being.

Goals

The goal of the Ph.D. degree program is to train students to conduct rigorous and state-of-the-art independent research to advance understanding of social and behavioral sciences in public health. The program is designed to be four years in duration, with comprehensive exams at the end of the second year, and full dissertation work during the remaining two years.

COMPETENCIES

PhD, Social and Behavioral Sciences in Public Health Competencies include:

- Synthesize the research literature in public health social and behavioral sciences as well as be able to compare and contrast prominent social and behavioral science theories.
- Critically examine and employ distinct theories, or combinations of theories, at multiple levels to study health outcomes.
- Demonstrate advanced knowledge in the principles of evaluation and study design and data analysis as well as develop evidence based questions and predictions, gather, synthesize, and interpret empirical evidence.
- Exhibit the ability to apply scientific knowledge to develop new conceptual models and/or research predictions, including, justifying new questions with existing literature, selecting appropriate research methods to study those questions, and indicate the potential contributions of the proposed research.
- Report research objectively, insightfully, and in the context of theory and prior research.
- Have an awareness of, and adhere to, the ethical standards of the discipline for the conduct of scientific research.
- Gain competency in classroom instruction and practices in substantive issues in public health social and behavioral sciences.

REQUIREMENTS

Program requirements

The following requirements must be fulfilled: 48 credits, including 12 credits in foundation courses, 9 credits in required courses, 6 credits in advanced research courses, 14 credits in elective courses, and 7 credits in dissertation courses.

Code	Title	Credits
Foundation		
PUBH 8416	Study Design & Evaluation Methods	
PUBH 8417	Qualitative Research Methods and Analysis	
PUBH 8418	Applied Statistical Analysis	
PUBH 8419	Measurement in Public Health & Health Services	
Required		
PUBH 8408	Advanced Topics: Health Behavior Research & Practice Applications	
PUBH 8409	Advanced Topics: Health Communication Research	
Behavioral Medicine: 3 credits (course pending)		
Advanced Research Methods and Statistics		
6 credits from the following:		
EDUC 8140	Ethnographic Research Methods	
EDUC 8172	Multivariate Analysis	
EDUC 8173	Structural Equation Modeling	
EDUC 8131	Case Study Research Methods	
PSYC 8231	Development of Psychometric Instruments	
PUBH 6263	Advanced GIS	
PUBH 6273	Ethnographic Methods	
PUBH 6310	Statistical Analysis in Health Policy	
PUBH 6533	Design of Comm Health Surveys	
PUBH 8364	Quantitative Methods	
PUBH 8366	Biostatistical Methods	
Electives		
14 credits in pre-approved elective courses selected from among any the following subject areas as well as the Advanced Research Methods and Statistics area, above.		
Social and Behavioral Sciences		
PSYC 8204	Experimental Foundations of Psychology: Biological Basis of Behavior	
PSYC 8211	Community Psychology I	
PSYC 8253	Social Cognition	
PSYC 8277	Health Psychology	
PSYC 8278	Behavioral Medicine	
PSYC 8287	Current Topics in Clinical Psychology	
Global Health		
PUBH 6262	Intro-Geog Information Systems	
PUBH 6400	Global Health Frameworks	
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs	
PUBH 6431	Global Health Communication Strategies and Skills	
PUBH 6442	Comparative Global Health Systems	

Current Issues in Public Health	
ECON 8375	Econometrics I
HCS 8369	Issues in Health Care
HDEV 8100	Issues and Special Topics in Human Development
PUBH 6274	Emerging ID for PH Pro's
PUBH 6368	Law, Medicine, and Ethics
PUBH 6532	Commnty Org,Devlpmnt&Advocacy
PUBH 6573	Media Advocacy for Public Hlth
PUBH 8405	Advanced Topics: Health Economics Research
PUBH 8422	Advanced Health Care and Public Health Research Design
Students may be permitted to take alternative elective course with the approval of the program director.	
Dissertation Preparation and Dissertation	
7 credits taken as follows:	
1 credit in Advanced Theorizing in Social and Behavioral Sciences in Public Health (course pending)	
and 6 credits in:	
PUBH 8999	Dissertation Research

ACADEMIC CALENDAR

Summer Session 2016

Session I begins (6-, 8,-10-, and 14-week sessions)	Monday, May 16
Memorial Day (no classes)	Monday, May 30
6-week Session I ends	Saturday, June 25
Independence Day observed (no classes)	Monday, July 4
Session II begins (6-week session)	Tuesday, July 5
8-week Session I ends	Saturday, July 9
10-week Session I ends	Saturday, July 23
6-week Session II ends	Saturday, August 13
14-week session I ends	Saturday, August 20

Fall Semester 2016

Classes begin	Monday, August 29
Labor Day (no classes)	Monday, September 5
Fall break (no classes)	Monday, October 24 - Tuesday, October 25
Thanksgiving break (no classes)	Wednesday, November 23 – Saturday, November 26
Last day of classes	Monday, December 12
Make up/ Reading day	Tuesday, December 13
Final examinations	Wednesday, December 14 – Thursday, December 22

Spring Semester 2017

Classes begin	Tuesday, Jan 17
Inauguration Day (no classes)	Friday, January 20
Presidents' Day (no classes)	Monday, February 20
Spring break (no classes)	Monday, March 13 – Saturday, March 18
Last day of classes	Monday, May 1
Designated Friday	Tuesday, May 2
Designated Monday	Wednesday, May 3
Make up/ Reading days	Thursday, May 4 – Friday, May 5
Final examinations	Monday, May 8 – Tuesday, May 16
Commencemer weekend	Friday, May 18 – Sunday, May 21
Spring degree conferral	Sunday, May 21

Please note that these dates are subject to change. Updates can be found online (http://www.gwu.edu/academic-calendar).

ACADEMY FOR CLASSICAL ACTING (ACA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ACA 6201. Acting I. 3 Credits.
The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobeans, and master classes.

ACA 6202. Acting II. 2,3 Credits.
The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobeans, and master classes.

ACA 6203. Acting: Classical Comedy. 2,3 Credits.
The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobeans, and master classes.

ACA 6204. Acting: Master Class. 2,3 Credits.
The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobeans, and master classes.

ACA 6205. Topics in Classical Drama and Culture. 2 Credits.
Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the 18th century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6206. Topics in Classical Drama and Culture. 2 Credits.
Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the 18th century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6207. Topics in Classical Drama and Culture. 2 Credits.
Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the 18th century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6208. Topics in Classical Drama and Culture. 1 Credit.
Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the 18th century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6209. Text I. 2 Credits.
Textual analysis emphasizing development of aesthetic expression. The forms and rules of verse: its meter, scansion, and overall structure in the early, middle, and late Shakespeare plays, as well as the intricacies of the prose.

ACA 6210. Text II. 2 Credits.
Textual analysis emphasizing development of aesthetic expression. The forms and rules of verse: its meter, scansion, and overall structure in the early, middle, and late Shakespeare plays, as well as the intricacies of the prose.

ACA 6211. Voice and Speech I. 3 Credits.
The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6212. Voice and Speech II. 2,3 Credits.
The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6213. Voice and Speech III. 3 Credits.
The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6214. Voice and Speech IV. 2 Credits.
The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6215. Movement I. 1,2 Credit.
The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6216. Movement II. 1,2 Credit.
The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6217. Movement III. 1,2 Credit.
The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6218. Movement IV. 1,2 Credit.
The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6219. Alexander Technique I. 1,2 Credit.
Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6220. Alexander Technique II. 1,2 Credit.
Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6221. Alexander Technique III. 1,2 Credit.
Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6222. Alexander Technique IV. 1,2 Credit.
Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6223. Stage Combat I. 2 Credits.
Skills in stage combat techniques, including unarmed combat and broadsword, buckler, rapier, dagger, and other lighter weapons, toward development of greater physical strength and an awareness of safety issues. The course is designed to lead to certification as an actor/combatant through the Society of American Fight Directors.

ACA 6224. Stage Combat II. 2 Credits.
Skills in stage combat techniques, including unarmed combat and broadsword, buckler, rapier, dagger, and other lighter weapons, toward development of greater physical strength and an awareness of safety issues. The course is designed to lead to certification as an actor/combatant through the Society of American Fight Directors.

ACA 6225. Practicum I. 2 Credits.
This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6226. Practicum II. 1-6 Credits.
This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6227. Practicum III. 1-6 Credits.
This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6228. Practicum IV. 1-6 Credits.
This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6229. Audition Techniques. 3 Credits.
A set of workshops to help students develop strong audition skills. Business aspects of acting, such as selection of agents, Equity status, and taxation issues. The workshop concludes with a showcase performance for casting directors, agents, and theatre directors.

ACA 6595. Selected Topics. 1 Credit.

ACCOUNTANCY (ACCY)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ACCY 2001. Intro Financial Accounting. 3 Credits.
The fundamental concepts underlying financial statements and the informed use of accounting information. Analysis and recording of business transactions; preparation and understanding of financial statements. Measurement of the profitability and financial position of a business. Restricted to sophomore standing.

ACCY 2002. Introductory Managerial Accounting. 3 Credits.
The use of accounting information to plan and control the activities of a business. Several widely used methods of determining the cost of business activities for use in making business decisions. Prerequisite: ACCY 2001.

ACCY 3101. Intermediate Accounting I. 3 Credits.
Financial accounting concepts underlying the preparation and interpretation of financial statements. Topics include revenue and expense recognition; accounting for receivables, inventories, fixed assets, intangible assets, and liabilities. Prerequisite: ACCY 2001.

ACCY 3102. Intermediate Accounting II. 3 Credits.
Financial accounting concepts underlying the preparation and interpretation of financial statements; accounting for stockholders' equity, earnings per share, debt and equity investments, income taxes, pensions and other postretirement benefits, accounting changes, statements of cash flows, financial statement analysis, and disclosure. Prerequisite: ACCY 3101.

ACCY 3106. Financial Statement Analysis. 3 Credits.
Introduction to the analysis and interpretation of corporate financial statements within the context of a company's industry and economic environment. Cash flow analysis, profitability and risk analysis, accounting policy analysis, forecasting and performance analysis, elements of equity valuation, and decision perspectives of creditors. Students cannot earn credit for both this course and ACCY 4801. Prerequisite: ACCY 2002.

ACCY 3401. Federal Income Tax:Individuals. 3 Credits.
A study of federal income tax concepts, including what shall be taxed, and when, and at what rate. Taxable entities, income measurement, the use of different tax rates for different types of income, and the use of the tax laws to motivate taxpayer behavior to achieve economic goals.

ACCY 3403. Advanced Tax. 3 Credits.
Taxation of partnerships, corporations, and their owners. Formation, operation, and liquidation of each type of entity. Financial and tax accounting for each type of transaction, with the goal of gaining a better understanding of each system by comparing and contrasting it with the other one. Prerequisites: ACCY 2001 & ACCY 3401.

ACCY 3601. Business Law: Contracts, Torts, and Property. 3 Credits.
Essential legal principles of contracts, torts, and property, including trusts and estates, leases, professional liability, and the Uniform Commercial Code.

ACCY 4107. Advanced Accounting. 3 Credits.
Accounting for corporate combinations, foreign currency financial statements, and derivative financial instruments. Governmental and not-for-profit accounting. Prerequisites: ACCY 3101 and ACCY 3102.

ACCY 4301. Auditing. 3 Credits.
A study of generally accepted auditing standards and accepted professional auditing practices and procedures, including reviewing and evaluating financial controls, auditing financial statements, and testing financial data of manual and automated accounting systems. Prerequisite: ACCY 3102.

ACCY 4501. Accounting Systems. 3 Credits.
Introduction to the design and operation of accounting systems and data management controls. Principles and applications of internal control applicable to manual and automated accounting systems. Prerequisite: ACCY 3102.

ACCY 4601. Business Law: Enterprise Organization. 3 Credits.
The legal aspects of organizing, financing, and operating an enterprise: agency, partnerships, corporations, securities regulation, insurance, secured credit financing, and commercial paper. Prerequisite: ACCY 2001.

ACCY 4801. Financial Accounting Capstone. 3 Credits.
Synthesis and application of knowledge of financial accounting to specific contexts, using the perspectives of the preparer and user of financial statements. Students cannot earn credit for both this course and ACCY 3106. Restricted to seniors only.

ACCY 4900. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods. Restricted to department approval.

ACCY 4995. Independent Study. 3 Credits.
Assigned topics. Admission by permission of the department chair.

ACCY 6101. Financial Accounting. 3 Credits.
The basic concepts and methods used in financial reports for understanding their content and context. The income statement, balance sheet, and statement of cash flows. Detailed accounting procedures and choices. How the most important accounting procedures are calculated and how different choices impact financial statements. Same as MBAD 6211.

ACCY 6104. Intermediate Accounting I. 3 Credits.
Accounting principles and concepts for financial accounting and reporting; emphasis on the preparation of general-purpose financial statements. Restricted to School of Business graduate degree students. Prerequisite: ACCY 6101 and MBAD 6211.

ACCY 6105. Intermediate Accounting II. 3 Credits.
Revenue recognition, employee compensation and pension plans, income tax expense, and earnings per share. Prerequisites: ACCY 6104.

ACCY 6106. Financial Statement Analysis. 3 Credits.
Analysis and interpretation of financial statements for managers, stockholders, creditors, and financial analysts; ratio-driven financial analysis; earnings-based and cash-flow-based equity valuation; sales and EPS forecasting; preparation of projected financial statements. Prerequisites: ACCY 6101/ MBAD 6211.

ACCY 6110. International Reporting and Control. 1.5 Credit.
International comparisons of forces that shape financial management, such as corporate governance mechanisms, tax policies, economic development, and privatization. Same as IBUS 6308.

ACCY 6112. International Financial Reporting Standards. 1.5 Credit.
Financial reporting standards that are used throughout most of the world other than the United States. Comparisons of these standards with those of the United States. Prerequisite: ACCY 6101/MBAD 6211. Same as IBUS 6310.

ACCY 6201. Managerial Accounting I. 1.5 Credit.
Effective use of accounting information in decision making and control of organizations. Same as MBAD 6213. Prerequisite: ACCY 6101/MBAD 6211.

ACCY 6202. Managerial Accounting II. 1.5 Credit.
Further topics in applying concepts of control and decision analysis to optimize the financial management of organizations. Prerequisite: ACCY 6201/MBAD 6213.

ACCY 6203. Controls, Alignment & the Org.. 1.5 Credit.

ACCY 6301. Contemporary Auditing Theory. 3 Credits.
A comprehensive survey of contemporary auditing as practiced by external auditors (primarily certified public accountants) and internal auditors (those employed within government and corporate entities). Generally accepted auditing standards; government auditing standards. Planning, directing, and reporting on various audits. Prerequisite: ACCY 6101/MBAD 6211; corequisite: ACCY 6104.

ACCY 6302. Fraud Examination and Forensic Accounting. 3 Credits.
Financial statement fraud, misappropriation of assets, and methods of deterrence, prevention, detection, and investigation. Prerequisite: ACCY 6101/MBAD 6211; a course in auditing preferred but not required.

ACCY 6401. Federal Income Taxation. 3 Credits.
A study of federal income taxation, covering gross income, deductions and credits, sales and other disposition of property, capital gains and losses, and timing of income and deductions.

ACCY 6402. Federal Income Taxation of Partnerships. 3 Credits.
Financial and tax accounting for partnerships; formation and operation, distribution to partners, liquidation, and transfer of partnership interests. S corporations are also considered. Prerequisite: ACCY 6401.

ACCY 6403. Federal Income Taxation of Corporations. 3 Credits.
Federal income taxation of C corporations, covering formation, capital structure, nonliquidating distributions, complete liquidations, corporate accumulations, and the alternative minimum tax.

ACCY 6501. Accounting Information Systems and EDP. 3 Credits.
Development and application of accounting system theory, including analysis, design, control concepts, and implementation. Integration of electronic data processing, accounting systems, and management information systems. Prerequisite: ACCY 6101/MBAD 6211.

ACCY 6601. Business Law: Contracts, Torts, and Property. 3 Credits.
Essential legal principles of contracts, torts, and property, including trusts and estates, leases, professional liability, and the Uniform Commercial Code.

ACCY 6602. Business Law: Enterprise Organization. 3 Credits.
The legal aspects of organizing, financing, and operating an enterprise: agency, partnerships, corporations, securities regulation, insurance, suretyship, secured credit financing, and commercial paper.

ACCY 6701. Government and Nonprofit Accounting and Auditing. 3 Credits.
The budgeting, accounting, financial reporting, and auditing required of federal, state, and local governments, nonprofit organizations, and colleges and universities. The financial practices and requirements applicable to organizations receiving governmental financial assistance and those subject to governmental audits. Prerequisite: ACCY 6101/MBAD 6211.

ACCY 6801. Corporate Governance and Ethics. 3 Credits.
The theory, practice, and public policy environment of corporate governance. Purpose, functioning, and responsibilities of boards of directors. Power, control, and compensation of corporate management. Shareholders and stakeholders. Corporate governance in comparative national settings. Same as SMPP 6215.

ACCY 6900. Special Topics. 1-3 Credits.
Experimental offering; new course topics and teaching methods.

ACCY 6998. Directed Readings and Research. 1-3 Credits.

ACCY 8001. Doctoral Seminar. 1-12 Credits.
Reasoning and research in technical areas of accounting; theoretical issues and their application to practice; conceptual themes in professional literature; comparative accounting research analyses.

ACCY 8009. Dissertation Research. 1-12 Credits.
Limited to doctoral candidates. May be repeated for credit.

ACCY 8999. Advanced Reading and Research. 1-12 Credits.
Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

AFRICANA STUDIES (AFST)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

AFST 1001. Introduction to Africana Studies. 3 Credits.
An interdisciplinary introduction to the study of people of Africa and the African diaspora in historical context. Links in the cultural, political, and intellectual experiences of people of African descent in the Americas, Caribbean, Europe, and Africa.

AFST 3001. Research in Africana Studies. 3 Credits.

AMERICAN STUDIES (AMST)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

AMST 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details. Restricted to CCAS freshmen only.

AMST 1050. Explorations in American Culture. 0-3 Credits.
Exploration of different aspects of American culture depending on the topic. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AMST 1070. The American Cinema. 3 Credits.
History and criticism of American films. The course enables the student to recognize and evaluate cinema techniques, to express the evaluation clearly in writing, and to understand the role of films in the context of American culture. Laboratory fee. Same as AH 1070.

AMST 1100. Politics and Film. 0-3 Credits.
How American films interpret and challenge political power in America.

AMST 1160. Race, Gender and Law. 0-3 Credits.
Significant civil rights cases, critical race theory, feminist theory, and current public policy debates on domestic violence, mass imprisonment, sexual assault, and racial profiling.

AMST 1200. The Sixties in America. 3 Credits.
A survey of American society, culture, and politics during the decade of the 1960s. Topics include the civil rights movement, the student movement, the Vietnam War, and the counterculture.

AMST 2000. Sophomore Colloquium. 3 Credits.
The Sophomore Colloquia are small seminar-style courses limited to second-year students in Columbian College. These courses engage students deeply in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects of the students. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to Permission of the instructor.

AMST 2010. Early American Cultural History. 3 Credits.
How culture was important in the creation of the United States —in its origins as a colonial outpost and its expansion across the continent; in its hierarchies and expressions of power, especially as organized by race, class, ethnicity, or gender; in the creation of democracy and the valuing of free expression; and in the development of cities and the varied uses of the countryside. Same as HIST 2010.

AMST 2011. Modern American Cultural History. 3 Credits.
The effects of culture in the shaping of the United States since 1876. The role of the mass media; effects of cultural conceptions on the physical landscape; changing ideas of race, ethnicity, gender, and sexuality; and the political meanings of cultural conflict. Transnational influences on U.S. culture and effects of U.S. culture abroad. Same as HIST 2011.

AMST 2020. Washington, D.C.: History, Culture, and Politics. 0-3 Credits.
Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Same as HIST 2020.

AMST 2020W. Washington, D.C.: History, Culture, and Politics. 0-3 Credits.
Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Same as HIST 2020.

AMST 2071. Introduction to the Arts in America. 3 Credits.
A survey of American art from the period of colonial exploration and settlement to the postmodern present. Political and social meanings of painting, sculpture, architecture, prints, and photographs. The relationship of art to religion and nationalism; issues of class, race, and gender. Same as AH 2071.

AMST 2120W. Freedom in American Thought and Popular Culture. 0-3 Credits.
America was founded on the premise of providing freedom to its people. But what, exactly, is freedom? The question has been debated in America since its founding and continues today; this course examines varied answers provided by American political thought and popular culture. Same as PSC 2120.

AMST 2125. Varieties of Feminist Theory. 3 Credits.
Classical and contemporary texts on feminist explanations of women's status. Relationships within the sex/gender system and arrangements based on class and race. Evaluation, through the lens of feminist theory, of several academic disciplines in the sciences, social sciences, and humanities. Same as WSTU 2125. Prerequisite: WSTU 1020 or WSTU 2120 or permission of instructor.

AMST 2144. Explorations in Historical Geography. 3 Credits.
Examination of selected themes in the cultural geography of the United States over the course of its history, in relation to an overview of the historical geography of the country. Same as GEOG 2144.

AMST 2210. The African American Experience. 3 Credits.
This course will provide a survey of the historical, political, and cultural dimensions of the African American experience in the U.S. The course will be organized chronologically and thematically and will cover topics such as American slavery, medical experimentation, Hurricane Katrina, aesthetics, hip-hop, and Afro-futurism.

AMST 2320. U.S. Media and Cultural History. 3 Credits.
History and analysis of 20th-century U.S. media and culture, including the rise of consumer culture, film, and television. Racial, gendered, and national identities in the context of modernism, mass culture, and globalization. Same as HIST 2320.

AMST 2350. U.S. Religion and Politics. 3 Credits.
How religion and politics have influenced each other in the United States and how Americans have understood those influences. Religious violence; conflicts between faith and science; religious factors in racial and gender politics; and the separation of church and state. Same as HIST 2350.

AMST 2380. Sexuality in US History. 3 Credits.
Examination of the changing social organization and meaning of sexual practices and desires in American culture, with particular attention to the relationship between sexuality and gendered racial and class identities and politics. Same as HIST 2380/ WSTU 2380.

AMST 2410. 20th-Century U.S. Immigration. 3 Credits.
Survey of immigration policy and immigrants' lives. How immigrants have changed the United States and how the United States has changed immigrants. Same as HIST 2410.

AMST 2440. The American City. 3 Credits.
An interdisciplinary introduction to the ethnic, cultural, political, and architectural landscape of the American city. Urban theory, race and ethnicity, urban history, planning and architecture, city politics, and cultural representations of the city. Same as HIST 2440.

AMST 2490. Themes in U.S. Cultural History. 3 Credits.
Topical examination of the ideas, values, and modes of expression that have made American life distinctive, as revealed through a cross-cultural or global perspective. Topic vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. (Same as HIST 2490).

AMST 2490W. Themes in U.S. Cultural History. 3 Credits.
Topical examination of the ideas, values, and modes of expression that have made American life distinctive, as revealed through a cross-cultural or global perspective. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. (Same as HIST 2490W).

AMST 2495. Special Topics in African American History. 3 Credits.
Concentration on specific issues central to the African American experience. Consult the Schedule of Classes for issues to be addressed.

AMST 2520. American Architecture I. 3 Credits.
Stylistic properties, form and type characteristics, technological developments, and urbanistic patterns are introduced as a means of interpretation of historic meaning. Buildings are analyzed both as artifacts and as signifiers of social, cultural, and economic tendencies. 1600–1860. Same as AH 2154.

AMST 2521. American Architecture II. 3 Credits.
Continuation of AMST 2520. Stylistic properties, form and type characteristics, technological developments, and urbanistic patterns are introduced as a means of interpretation of historic meaning. Buildings are analyzed both as artifacts and as signifiers of social, cultural, and economic tendencies. 1860–present. Same as AH 2155.

AMST 2533. Material Culture in America. 3 Credits.
Review and analysis of the cultural messages embedded in our material surroundings. Consideration of a range of humanly created artifacts, ranging from specific objects to vast landscapes. Same as ANTH 2533.

AMST 2710. The United States in Global Context, 1898–Present. 0-3 Credits.
How the 20th- and 21st-century U.S. has been engaged globally, both politically and culturally, with attention to global culture, transnational ideas and social movements, foreign policy, and economic transformations. Same as HIST 2710.

AMST 2730. World War II in History and Memory. 0-3 Credits.
Examination of Americans' histories and memories of World War II. Same as HIST 2730.

AMST 2730W. World War II in History and Memory. 0-3 Credits.
Examination of Americans' histories and memories of World War II. Same as HIST 2730.

AMST 2750W. Latinos in the United States. 3 Credits.
Exploration of the term Latino and its impact on discussions of race, identity, and citizenship expectations throughout U.S. history. How geographic, linguistic, aesthetic, political, and economic factors construct Latino identity and influence policymaking and international relations. (Same as ANTH 2750W).

AMST 3151. American Art in the Age of Revolution. 3 Credits.
Same as AH 3151.

AMST 3152. American Art in the Era of National Expansion. 3 Credits.
American art from the opening of the Erie Canal in 1825 to the Spanish-American War in 1898. Emphasis on the role of art in the expansion of the United States, exploring issues of race, class, and gender; art, and religion. (Same as AH 3152).

AMST 3324. US Urban History. 3 Credits.
History of American urban life and culture from the colonial era to the present, focusing on transitions from pre-industrial to industrial and post-industrial forms. The social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as HIST 3324.

AMST 3351. U.S. Social History. 3 Credits.
Survey of American society and social change from the Civil War to the present. Gender, sexuality, race, ethnicity, and class perspectives. (Same as HIST 3351).

AMST 3352. Women in the United States to 1865. 3 Credits.
Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. (Same as HIST 3352, WSTU 3352).

AMST 3352W. Women in the United States to 1865. 3 Credits.
Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. (Same as HIST 3352W, WSTU 3352W).

AMST 3353. Women in the United States II. 3 Credits.
Continuation of AMST 3352. Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. Same as HIST 3353/ WSTU 3353.

AMST 3360. African American History to 1865. 3 Credits.
Major themes and concepts emerging from the early history of the African presence in the Americas and black experiences in the new nation of the United States. Focus on the emergence and evolution of the concept of race, the ways race evolved in concert with Atlantic slavery, and how race intersected with gender, economics, religion, and nationality. (Same as HIST 3360).

AMST 3361. African American History II. 3 Credits.
Continuation of AMST 3360. Survey of the African American experience, emphasizing the contributions of black Americans to and their impact upon American history. Same as HIST 3361.

AMST 3362. African American Women's History. 3 Credits.
Addresses the history of African American women's labor, cultural expression, institution-building, activism and strategies to combat oppression from the antebellum period through the late 20th century. Investigates the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement and African American women's experiences. (Same as HIST 3362, WSTU 3362).

AMST 3362W. Black Women in U.S. History. 3 Credits.
Black women from the Middle Passage to contemporary times. Same as HIST 3362/WSTU 3362.

AMST 3367. The American Jewish Experience. 3 Credits.
The study of the Jewish minority in America from colonial times to the present. Emphasis on the interaction between a powerful majority culture and that of protean minority people. (Same as HIST 3367).

AMST 3810. Planning Cities. 3 Credits.
An examination of historical and contemporary trends and dynamics in urban planning in the United States and abroad. Same as GEOG 3810. Prerequisite: GEOG 1001.

AMST 3811. Historical Archaeology. 3 Credits.
Survey of the basic data and methods of research in the material culture of recent history. Same as ANTH 3811.

AMST 3835. Historical Archaeology Field Program. 3 Credits.
Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as ANTH 3835.

AMST 3900. Critiquing Culture. 3 Credits.
Modes of analysis, including ethnography and other cultural studies methods, applied to examination of the interaction of cultural texts and practices with structures of power. Theories and themes central to American studies; scholarly debate about mass culture, ideology, visuality, discourse, and affect. For departmental majors; minors admitted with permission of instructor.

AMST 3901. Examining America. 3 Credits.
Modes of power and forms of identification within and across U.S. national borders. Social constructions of the nation; forms of diversity and identity, such as race, gender, and sexuality; and the transnational flow of people, ideas, culture, and religion. Restricted to American Studies majors.

AMST 3950. Special Topics. 3 Credits.
May be repeated for credit provided the topic differs. Topics announced in the Schedule of Classes.

AMST 3950W. Special Topics. 3 Credits.
May be repeated for credit provided the topic differs. Topic announced in the Schedule of Classes.

AMST 4400. Independent Study. 1-3 Credits.
Open to a limited number of American studies majors as directed research or as an internship with a Washington museum or historical society. Approval of advisor required.

AMST 4450. Internship. 1-3 Credits.
Open to a limited number of American studies majors pursuing an internship directly related to the study of American culture. Students must make the case for a scholarly project that emerges from the internship and must write a significant final paper. Approval of a supervising faculty member required for registration. P/NP grading only.

AMST 4500. Proseminar in American Studies. 3 Credits.
For American studies majors. Directed research and writing on special topics. Prerequisite: at least two of the required courses for the major (AMST 2010, AMST 2011, AMST 3900, AMST 3901). May be repeated for credit provided the topic differs.

AMST 4500W. Proseminar in American Studies. 3 Credits.
For American studies majors. Directed research and writing on special topics. Prerequisite: at least two of the required courses for the major (AMST 2010, AMST 2011, AMST 3900, AMST 3901). May be repeated for credit provided the topic differs.

AMST 4701W. Epidemics in American History. 3 Credits.
The history of epidemics in the United States from the late nineteenth to the early twentieth century. The development of medical and public health responses to epidemics, and their social, political, cultural, and economic impacts. Sources include primary documents, historical accounts, memoirs, fiction, and films.

AMST 4702W. Race, Medicine, and Public Health. 3 Credits.
The experiences of African Americans as patients and health care providers; the history of the relationship between race, American medicine, and public health. Emphasis on the importance of understanding the historical roots of contemporary policy dilemmas such as racial and ethnic disparities in health and health care.

AMST 6100. Scope and Methods in American Studies. 3 Credits.
Consideration of American studies as an area for research and teaching; introduction to bibliography. Required of candidates for the degree of Master of Arts in the field of American studies.

AMST 6110. Cultural Theory and American Studies. 3 Credits.
Major issues in critical and cultural theory as they relate to American culture. Various interpretive approaches including discourse analysis, cultural studies, new historicism, anthropological theory, etc. Prerequisite: AMST 6100 or permission of instructor.

AMST 6120. Theories and Practices in the Study of Media. 3 Credits.
Examination of theories and methods in the study of media and popular culture; case studies explore specific issues related to cultural products such as film, television, music, and the Internet.

AMST 6190. Topics in American Studies. 1-4 Credits.
Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

AMST 6195. Research Seminar in American Studies. 3 Credits.
May be repeated for credit provided the topic differs.

AMST 6210. The United States in a Global Context. 3 Credits.
Analysis of the cultural constructions of the nation and international power, comparing the context of the 18th and 19th century, European colonialism, and U.S. expansion in the 20th century. The role of literature and mass media in furthering the logic of globalization. Readings are both theoretical and historical.

AMST 6220. Theory and Emotions. 3 Credits.
Interdisciplinary exploration of politics of emotion, with an emphasis on the emotions that attach to race, gender, and sexuality.

AMST 6230. The Politics of Freedom. 3 Credits.
This seminar examines critical interventions into the theories, rhetorics, and practices of freedom. It will focus on the politics of freedom in relation to an array of themes that may include liberalism, slavery, imperialism, political economy, individualism, and neoliberalism.

AMST 6240. Borders and Boundaries. 3 Credits.
Exploration of borders (the literal edge or limit of a territory) and boundaries (intra-societal differences). Readings from cultural anthropology, political science, and social history examine classic tensions between state formation and nation building. The U.S.–Mexico border and other border zones across the globe are used to assess and challenge what is local and particular about border space.

AMST 6410. Readings in American Cultural History. 3 Credits.
Studies in the cultural history of the United States.

AMST 6420. Religion & American Culture. 3 Credits.
Interdisciplinary analysis of religious beliefs, practices, and representations in the United States, as well as intersections of the religious and the secular. Relationships of religion to race, gender, capitalism, science, mass media, and material culture. Same as HIST 6420.

AMST 6430. Gender, Sexuality, and American Culture I. 3 Credits.
The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. Pre-colonial to 1877. (Same as HIST 6430, WSTU 6430).

AMST 6431. Gender, Sexuality, and American Culture II. 3 Credits.
Continuation of AMST 6430. The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. 1877 to present. Same as HIST 6431/ WSTU 6431.

AMST 6435. Readings on Women in American History. 3 Credits.
Important works in American women's history; evolution of the field in historiographical context. Same as HIST 6435/ WSTU 6435.

AMST 6450. Race in America. 3 Credits.
Interdisciplinary analysis of the history of race and its changing political, social, and cultural meanings in the United States. Transnational racial formations, struggles for and against civil rights, multiracialism, and interracialism. Same as HIST 6450.

AMST 6455. American Social Movements. 3 Credits.
The history of social movements in the United States, with emphasis on civil rights, feminism, conservatism, and labor in local, national, and transnational contexts; the historical rise and fall of these movements and their larger impact on American life. Same as HIST 6455.

AMST 6460. Popular Music Studies. 3 Credits.
Readings in popular music studies; varying methodologies for American studies work on sound and popular music; cultural histories of popular music; American music transnationally. Restricted to Registration restricted to graduate students.

AMST 6470. Cityscapes. 3 Credits.
Interdisciplinary examination of the American city, including urban theory, history, planning, architecture, urban politics, and cultural representations of the city. Same as HIST 6470.

AMST 6475. US Urban History. 3 Credits.
History of American urban life and culture from the Colonial era to the present, focusing on the transitions from pre-industrial to industrial and post-industrial forms, the social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as HIST 6475.

AMST 6480. Theory and Practice of Public History. 3 Credits.
Theoretical and practical dimensions of public history, as illustrated by recent controversies surrounding public exhibitions and debates on revisionist history as well as more traditional means of presenting the past in public forums. Same as HIST 6480.

AMST 6495. Historic Preservation: Principles and Methods. 3 Credits.
The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as HIST 6495.

AMST 6496. Historic Preservation: Principles and Methods. 3 Credits.
Continuation of AMST 6495. The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as HIST 6496.

AMST 6520. Economics of Preservation. 3 Credits.
Analysis of economic techniques and benefits used to encourage the retention and reuse of historic buildings and districts in the United States. Emphasis on revitalization of older commercial centers and the Mainstreet program. Prerequisite: Permission of instructor.

AMST 6525. The Politics of Historic Preservation. 3 Credits.
Overview of the political issues, forces, events, and players that have shaped contemporary preservation practice, with an emphasis on public policy issues that have not been resolved and continue to confront preservation objectives. Prerequisite: Permission of instructor.

AMST 6530. Field Methods in Architectural Documentation. 3 Credits.
In-depth thematic examination of cultural landscape, focusing on field techniques for recording, analysis, and interpretation of historic properties. Work at field sites is supplemented by lectures, discussion, and readings.

AMST 6550. Seminar in American Architecture. 3 Credits.
Advanced research problems addressing artistic, cultural, social, technical, and urbanistic aspects of American architecture in the 19th and 20th centuries. Topics vary. Prerequisite: AMST 2520 or AMST 2521 , or permission of instructor.

AMST 6560. Vernacular Architecture. 3 Credits.

AMST 6650. Advanced Workshop in American Studies. 1-4 Credits.
Required for first- and second-year PhD students; open to other graduate students. Provides instruction and guidance in the process of writing, revising, and submitting journal articles, conference papers, and dissertations. Faculty and peer review of written work. Students are expected to enroll for the full academic year. Restricted to American studies graduate students.

AMST 6709. Interpretation in the Historic House Museum. 3 Credits.
Seminar integrating advanced practices of museum education with current scholarship in architectural history, material culture, and social history. Extensive use of Washington museum resources. Admission by permission of instructor. Same as EDUC 6709.

AMST 6710. American Material Culture. 3 Credits.
Opportunities for research and publication based on historical objects in the collections of the Smithsonian Institution.

AMST 6720. American Decorative Arts I. 3 Credits.
Recognition and evaluation of domestic artifacts from the 17th, 18th, and 19th centuries.

AMST 6721. American Decorative Arts II. 3 Credits.
Continuation of AMST 6720. Recognition and evaluation of domestic artifacts from the 17th, 18th, and 19th centuries.

AMST 6730. Studies in American Art and History. 3 Credits.
Selected problems and themes in American cultural history involving the use of artistic materials in different media; emphasis on methodology and analytic techniques. May be repeated for credit. Same as AH 6255.

AMST 6835. Historical Archaeology Field Program. 3 Credits.
Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as ANTH 6835.

AMST 6930. Independent Study. 3 Credits.
Limited to master's and doctoral candidates. Written permission of instructor required.

AMST 6998. Thesis Research. 3 Credits.

AMST 6999. Thesis Research. 3 Credits.

AMST 8998. Advanced Reading and Research. 3-9 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

AMST 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

ANATOMY & REGENERATIVE BIOLOGY (ANAT)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ANAT 2130. Human Embryology. 3 Credits.
Development of the basic organ systems; molecular control of development, congenital birth defects, and assisted reproductive technologies.

ANAT 2150. Human Microscopic Anatomy. 3 Credits.
Normal histological structure of cells, tissues, and organs. Structural–functional correlates; the relationship between histological structure–function and the etiology of disease states.

ANAT 2160. Human Functional Neuroanatomy. 3 Credits.
The central and peripheral nervous systems; diseases and injuries with impact on the normal structural-functional relationship.

ANAT 2181. Human Gross Anatomy. 3 Credits.
Structure and function of the musculoskeletal system; regional organization, structure, and function of the major organ systems; structural organization of the head and neck. Same as BISC 2581.

ANAT 6130. Clinically Oriented Human Embryology. 3 Credits.
The mechanisms of human embryology with clinical correlations of embryological development. Developmental control mechanisms and development of basic organ systems. Molecular control of development. Assisted reproductive technologies. Congenital birth defects. Demonstration labs and online animations for clinical correlates. Restricted to students enrolled in the Graduate Certificate in Anatomical and Translational Sciences program. Recommended background: introductory course in biology or its equivalent. Same as ANAT 2130.

ANAT 6150. Clinically Oriented Human Microscopic Anatomy. 3 Credits.
The normal histological structure of cells, tissues, and organs of the human body with emphasis on clinical relevance; structural/functional correlates at both the light and electron microscopic levels; alterations in normal histology through disease or injury and the etiology of various disease states; integration of histological concepts with clinical correlates. Restricted to students in either the Graduate Certificate in Anatomical and Translational Sciences (GCATS) or Special Master's in Anatomical and Translational Sciences (M-ATS) program. Prerequisites: BISC 1111 and BISC 2202.

ANAT 6160. Clinically Oriented Human Functional Neuroanatomy. 3 Credits.
Structure/function relationships of the human central and peripheral nervous systems and clinical correlations of diseases or injuries whose occurrence or expression has an abnormal impact on the normal structure/function relationship. Integration of neuroanatomy concepts with contemporary clinical neuroscience. Demonstrations of human brain material in the anatomy lab. Prerequisites: Introductory Biology for Science or non-Science Majors. Restricted to students enrolled in the Graduate Certificate in Anatomical and Translational Sciences program.

ANAT 6181. Clinically Oriented Human Gross Anatomy. 3 Credits.
Structural organization of the human body and the relationship of the organization to regional and systems-related functions. Clinical implications and how disease or injury affects normal anatomical structure/function relationships. Clinical cases match the topic of each lecture. Online manual uses content from the department's NetAnatomy website. Demonstrations in the gross anatomy laboratory. Restricted to Graduate Certificate in Anatomical and Translational Sciences. Prerequisites: Introductory Biology for Science or non-Science Majors.

ANAT 6182. Fundamentals of Regenerative Biology and Systems Physiology. 4 Credits.
This course is similar to BMSC 8212 but with additional time to introduce techniques of confocal laser scanning microscopy and laser-based quantitative and functional cell analyses. Topics include genetic control mechanisms, cell signaling pathways, and tissue regeneration and repair. Introduction of concepts on the functions and regulation of organ systems complement the learning objectives of human gross anatomy and microscopic anatomy. Restricted to Graduate Certificate in Anatomical and Translational Sciences. Prerequisites: Introductory Biology for Science or non-Science Majors.

ANAT 6203. Human Developmental Anatomy. 1 Credit.

ANAT 6204. Neuroanatomy. 2 Credits.

ANAT 6212. Neurobiology. 3 Credits.
Same as Idis 212.

ANAT 6213. Microscopic Anatomy. 4 Credits.
Required for medical students.

ANAT 6215. Anatomy for Health Sciences Students. 3 Credits.
A gross anatomy course that includes examination of prosected cadavers. Sessions on how to conduct a physical examination of a particular body region are preceded immediately by lectures on the same region.

ANAT 6216. Cellular Anatomy & Histology. 2 Credits.

ANAT 6221. Spec Topics-Stem Cell Biology. 1-3 Credits.

ANAT 6222. Spec Topics-Stem Cell Biology. 1-3 Credits.

ANAT 6223. Special Topics in Regenerative Medicine. 2 Credits.
Students attend seminars given by invited lecturers to present their research findings and breakthroughs on topics of regenerative medicine. Seminars can be sponsored by the Department of Anatomy and Regenerative Biology, the Stem Cell Interest Group Journal and Data Club, the Molecular Medicine Graduate Program (MMED 8214), and the GW Institute for Neuroscience. Restricted to Graduate Certificate in Anatomical and Translational Sciences only. Prerequisites: Introductory Biology for Science or non-Science Majors.

ANAT 6249. Intro to Anatomical Research. 1 Credit.

ANAT 6252. Human Variation. 1 Credit.

ANAT 6253. Developmental Neurobiology. 3 Credits.

ANAT 6260. Developmental Genetics. 2 Credits.

ANAT 6262. Gross Anat-Upper/Lower Extrem. 2 Credits.

ANAT 6264. Gross Anatomy of Head & Neck. 2 Credits.

ANAT 6266. Gross Anatomy-Thorax & Abdomen. 2 Credits.

ANAT 6268. Gr Anat-Pelvis/Perineum/Low Ex. 2 Credits.

ANAT 6275. Advanced Studies in Translational Sciences. 3 Credits.
Student research opportunities in laboratories conducting translational research. Application of fundamental concepts learned in didactic courses. Development of versatility with new technologies. Students spend the equivalent of three full days per week in a research laboratory during the semester. The course director must approve all laboratory assignments prior to initiating research studies in a laboratory. Restricted to students in the Graduate Certificate in Anatomical and Translational Sciences. Prerequisites: Introductory Biology for Science or non-Science Majors.

ANAT 6276. Advanced Studies in Anatomy. 1 Credit.
Detailed study of an anatomic topic tailored to the needs of the individual student. Restricted to graduate students who are in the Graduate Certificate in Anatomical and Translational Sciences program or who have permission of the program director and medical students.

ANAT 6277. Special Topics in Neurobiology. 1-3 Credits.

ANAT 6279. Applied Regional Anatomy. 1-5 Credits.
Regional dissection, guided readings.

ANAT 6284. Appl Surface Anat & Radiology. 5 Credits.

ANAT 6288. Surface Anatomy and Radiology. 1 Credit.

ANAT 6291. Special Projects in Anatomy. 1-12 Credits.
Independent study on any aspect of gross anatomy.

ANAT 6292. Projects in Anatomical Sciences. 2 Credits.
Various imaging techniques and approaches to visualize normal anatomy toward development and application of skills in teamwork, presentation, and discussion. Literature searches. The course is taken in conjunction with ANAT 6181. Restricted to Graduate Certificate in Anatomical and Translational Sciences. Prerequisites: ANAT 6181. Recommended background: Human clinically-oriented gross anatomy (previously or simultaneously).

ANAT 6295. Research. 1-12 Credits.

ANAT 8120. Graduate Human Gross Anatomy. 4 Credits.
An in-depth introduction to human gross anatomy with cadaveric dissection. The structural organization of the human body, including its regional and systems-related functions. The relationship between normal human anatomical variation in structure and function and how disease and/or injury affect these relationships. Prerequisites: Permission of the instructor. Recommended background: Graduate students with prior coursework in the biological sciences or anthropology.

ANAT 8501. Didactic Anatomy. 3 Credits.
Development of a didactic program to include human developmental anatomy, microscopic anatomy, gross anatomy, and/or neuroanatomy. May also include interdepartmental study.

ANAT 8800. Summer Remedial: Gross Anatomy. 6 Credits.

ANAT 8802. Summer Remedial:Human Dev Anat. 1 Credit.

ANTHROPOLOGY (ANTH)

Explanation of Course Numbers

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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ANTH 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details.

ANTH 1001. Biological Anthropology. 0-4 Credits.
Survey of human evolution, genetics and physical variation, and primatology. Regular laboratory exercises. Laboratory fee.

ANTH 1002. Sociocultural Anthropology. 3 Credits.
Survey of the world's cultures, illustrating the principles of cultural behavior.

ANTH 1002W. Sociocultural Anthropology. 3 Credits.
Survey of the world's cultures, illustrating the principles of cultural behavior.

ANTH 1003. Archaeology. 0-3 Credits.
Introduction to archaeological survey and excavation techniques and laboratory methods of dating and analysis. Brief history of archaeology and survey of world prehistory. Films and laboratory exercises. (Fall and spring).

ANTH 1004. Language in Culture and Society. 3 Credits.
Comparison and analysis of how cultures use language to communicate. The relationship of language to issues of human nature, gender, race, class, artistic expression, and power. Laboratory fee.

ANTH 1005. The Biological Bases of Human Behavior. 4 Credits.
Human behavior from an evolutionary perspective, including issues such as communication, intelligence, reproductive behavior, parental behavior, aggression, and cooperation, and drawing on an understanding of the behavior and biology of the nonhuman primates. Laboratory fee.

ANTH 2008. Foundations of Anthropological Thought. 3 Credits.
The development of anthropological thought in historical context. Exploration of selected basic concepts and theories of contemporary anthropology. To be taken in the junior or senior year. Prerequisite: ANTH 1002.

ANTH 2008W. Foundations of Anthropology. 3 Credits.
The development of anthropological thought in historical context. Exploration of selected basic concepts and theories of contemporary anthropology. To be taken in the junior or senior year. Prerequisites: ANTH 1002 or ANTH 1002W.

ANTH 2406. Human Evolutionary Genetics. 3 Credits.
Introduction to the patterns and processes of human genetic variation. Topics include human origins and migration; molecular adaptations to environment, lifestyle, and disease; ancient and forensic DNA analyses; and genealogical reconstructions.

ANTH 2501. The Anthropology of Gender: Cross-Cultural Perspectives. 3 Credits.
Anthropological representations of gender relations in "other" cultures have provided important case material for feminist theorizing of sex differences and gender roles and statuses. How a cross-cultural approach can inform our understanding of gender. Same as WSTU 2121.

ANTH 2502. Anthropology of Science and Technology: 21st-Century Brave New Worlds. 3 Credits.
The relationship between science and society, with consideration of how scientific knowledge and emergent technologies affect our lives, identities, social relations, and material conditions. The sociopolitical context in which scientific knowledge is produced and the ethnographic study of biotechnology, especially genetics and its various applications.

ANTH 2505. Introduction to Ethnomusicology. 3 Credits.
Models of understanding music as a cultural endeavor. Application and critique of models in the design and execution of student independent field research. Same as MUS 2105. Prerequisite: MUS 1101 or ANTH 1002 or ANTH 1004 or permission of instructor.

ANTH 2506. Religion, Myth, and Magic. 3 Credits.
Theories of religion developed by anthropologists; survey of world religions with emphasis on non-Western societies; religious process and change. (Same as REL 3506).

ANTH 2533. Material Culture in America. 3 Credits.
Review and analysis of the cultural messages embedded in our material surroundings. Consideration of a range of humanly created artifacts, ranging from specific objects to vast landscapes. Same as AMST 2533.

ANTH 2750. Latinos in the United States. 3 Credits.
Exploration of the term Latino and its impact on discussions of race, identity, and citizenship expectations throughout U.S. history. How geographic, linguistic, aesthetic, political, and economic factors construct Latino identity and influence policymaking and international relations.

ANTH 2750W. Latinos in the United States. 3 Credits.
Exploration of the term Latino and its impact on discussions of race, identity, and citizenship expectations throughout U.S. history. How geographic, linguistic, aesthetic, political, and economic factors construct Latino identity and influence policymaking and international relations. Same as AMST 2750.

ANTH 3401. Human Functional Anatomy. 3 Credits.
The anatomy of the human body, how it works, and how it differs from other animals, especially other primates. Principles and approaches of functional morphology and biomechanics and how function can be reconstructed from fossils, with special focus on the musculoskeletal system. No prior knowledge of anatomy is required. Laboratory fee. Prerequisite: ANTH 1001.

ANTH 3402. Human Evolutionary Anatomy. 3 Credits.
The structure and function of human anatomy, as compared to our closest relatives, the great apes. Using this comparative approach, the course investigates the fossil record of human evolution, with an emphasis on reconstructing relationships, function, behavior, and adaptation in fossil hominins. Prerequisite: ANTH 1001.

ANTH 3403. Forensic Anthropology Laboratory. 2 Credits.
Identification of human skeletal remains by body part, age, sex, race, and individual disease or trauma history; study of skeletal variation in modern and recent populations. Taught at the Smithsonian. Corequisite: Anth 3404.

ANTH 3404. Human Variation. 1 Credit.
An overview of human variation, with special emphasis on the skeleton. Includes history of physical anthropology, individual and population variations, archaeological recovery of human remains, paleodemography, growth, paleopathology, and forensic anthropology. Prerequisite: Anth 1001; corequisite for undergraduates: ANTH 3403.

ANTH 3406. Advanced Human Osteology. 3 Credits.
Advanced techniques in determination of age, sex, ancestry, and pathological conditions using the skeleton. Taught at the Smithsonian. Prerequisite: ANTH 3403, ANTH 3404.

ANTH 3407. Conservation in a Changing World: Human and Animal Behavior. 3 Credits.
How humans and animals interact in a wide variety of settings, how human and animal welfare can be ensured, and how we can create a scientifically sound, yet socially and economically acceptable, conservation of the planet's biodiversity. Prerequisites: ANTH 1001.

ANTH 3408. The Evolution of Human Families. 3 Credits.
Human parental behavior considered from an evolutionary perspective, including parental care among mammals, concepts of parental investment, and parent-offspring conflict. Focus on parenting in the human lineage from early hominins to hunter-gatherers to the modern context. Prerequisites: ANTH 1001.

ANTH 3411. Primatology. 3 Credits.
Physical and behavioral characteristics of the various primate groups and their relationship to human physical and cultural evolution. Prerequisite: ANTH 1001.

ANTH 3412. Hominin Evolution. 3 Credits.
The fossil record of human evolution, including its context. Review of the fossil evidence that concentrates on the distinctive features of each taxon. Pleistocene remains. Laboratory fee. Prerequisite: ANTH 1001.

ANTH 3412W. Hominin Evolution. 3 Credits.
The fossil record of human evolution, including its context. Review of the fossil evidence that concentrates on the distinctive features of each taxon. Pleistocene remains. Laboratory fee. Prerequisite: ANTH 1001.

ANTH 3413. Evolution of the Human Brain. 3 Credits.
Examination of how the human brain is unique in comparison to other animals, with an emphasis on understanding our species' distinctive neurobiology in terms of the evolution of cognitive abilities such as language, social comprehension, tool making, and abstract thinking.

ANTH 3491. Topics in Biological Anthropology. 3 Credits.
Topic announced in the Schedule of Classes. Instructors will be drawn from GW faculty and Smithsonian Institution staff. May be repeated for credit if topic varies. Prerequisite: ANTH 1001.

ANTH 3501. Anthropology of Development. 3 Credits.
The impact of the world economy on nonindustrial societies. Analysis of the role of anthropology in international development programs aimed at alleviating problems in the Third World. Prerequisites: ANTH 1002 or ANTH 1002W.

ANTH 3502. Cultural Ecology. 3 Credits.
Basic principles of cultural ecology. Human interaction with the ecosystem both past and present; emphasis on the application of anthropological precepts to current environmental problems. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004 or ANTH 1004W or permission of instructor.

ANTH 3503. Psychological Anthropology. 3 Credits.
The cross-cultural study of the relationship between culture and personality. Topics include emotion, conceptions of the self, mental health and illness, sexuality, marriage and parenting, and cognition. Psychobiological, cultural, ecological, and psychoanalytical theories are examined. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3504. Illness, Healing, and Culture. 3 Credits.
Introduction to medical anthropology. What the record of human evolution and prehistory tells about human health; the epidemiology of health and illness; how different cultures define disease; understanding illness and healing systems cross-culturally; and the role of medical anthropology in health care and international development. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3506. Politics, Ethnicity, and Nationalism. 3 Credits.
Comparative analysis of political systems; political processes, such as factionalism, styles of leadership, political ritual. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3507. Kinship, Family, and Community. 3 Credits.
Cross-cultural analysis of how people form, maintain, and transform social groups and boundaries. Focus on how communities such as family, ethnic group, and nation are defined in moral terms. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3508. Art and Culture. 3 Credits.
The role of art in culture, with emphasis on small-scale societies; influences upon the artist, and beliefs and practices associated with art production. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3513. Anthropology of Human Rights. 3 Credits.
Issues of basic human rights and their violation by different cultures, states, and organizations. Genocide, ecocide, abuses on the basis of ethnicity, religion, or similar factors, and the treatment of those seeking asylum. Rights of informants and groups studied in anthropological research. Prerequisites: ANTH 1002 or ANTH 1002W.

ANTH 3513W. Anthropology of Human Rights. 3 Credits.
Issues of basic human rights and their violation by different cultures, states, and organizations. Genocide, ecocide, abuses on the basis of ethnicity, religion, or similar factors, and the treatment of those seeking asylum. Rights of informants and groups studied in anthropological research. Prerequisites: ANTH 1002 or ANTH 1002W.

ANTH 3521. Ethnographic Film. 3 Credits.
Still and motion-picture photography as an integral aspect of anthropological research. A study of recent and historic ethnographic films and an introduction to the forms and methods of making visual ethnographic records. Material fee. Prerequisites: ANTH 1002 or ANTH 1002W or permission of instructor.

ANTH 3531. Methods in Sociocultural Anthropology. 3 Credits.
Approaches to field research. Conceptual bases and biases in the delineation of problems and in the selection, analysis, and organization of data. Students design and carry out their own field projects in the Washington area. Prerequisite: ANTH 1002.

ANTH 3601. Language, Culture, and Cognition. 3 Credits.
The role of language and culture in the organization of human experience. Beginning with debates about linguistic relativity, the course explores the way language use shapes cognition and practice in a variety of cultures and social contexts. Same as LING 3601. Prerequisite: ANTH 1004. Laboratory fee.

ANTH 3602. Ethnographic Analysis of Speech. 3 Credits.
Linguistic variation and change in discourse practices; social and political correlates of linguistic interaction; recording, transcription, and analysis of verbal interaction. Prerequisites: ANTH 1004. (Same as LING 3602).

ANTH 3602W. Ethnographic Analysis of Speech. 3 Credits.
Linguistic variation and change in discourse practices; social and political correlates of linguistic interaction; recording, transcription, and analysis of verbal interaction. Prerequisites: ANTH 1004.

ANTH 3603. Psycholinguistics. 3 Credits.
Language as species-specific property of the human mind. Psychological processes involved in the encoding and decoding of language; first and second language acquisition and bilingualism. Same as LING 3603.

ANTH 3691. Special Topics in Linguistic Anthropology. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Same as LING 3691. Prerequisite: ANTH 1004 or permission of instructor.

ANTH 3701. Native Peoples - North America. 3 Credits.
Comparative study of Indian groups representative of the different culture areas of the United States and Canada. Contemporary issues involving indigenous groups, the wider society, and the state. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3702. Anthropology of Latin America. 3 Credits.
Culture history and ways of life in a selected region of Central or South America. Regional focus to be announced in the Schedule of Classes. Prerequisites: Anth 1002 or Anth 1002W or ANTH 1004.

ANTH 3703. Cultures of the Pacific. 3 Credits.
Culture history and ways of life among native peoples of Melanesia, Micronesia, and Polynesia. Prerequisites: ANTH 1002 or 1002W or 1004 or 1004W.

ANTH 3704. Cultures of Southeast Asia. 3 Credits.
Introduction to the history, art, ecology, and politics of Southeast Asia. Comparison and interpretation of recent ethnographic case studies, archaeological evidence, and current political events in order to understand the diversity of Southeast Asian traditions. Prerequisite: ANTH 1002 or ANTH 1002W or ANTH 1004.

ANTH 3705. Anthropology of East Asia. 3 Credits.
Intensive study of the culture and history of selected peoples of East or Central Asia. Specific area to be announced in the Schedule of Classes. May be repeated for credit. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004 or ANTH 1004W.

ANTH 3707. Anthropology of the Middle East. 3 Credits.
Geographic environment, language, religion, and social structure of settled and nomadic peoples of the Middle East; emphasis on the Arab world. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004 or ANTH 1004W.

ANTH 3708. Anthropology of Africa. 3 Credits.
Comparative examination of the history, cultural development, and contemporary problems of sub-Saharan African cultures. New World African cultures are also considered. Prerequisites: ANTH 1002 or 1002W or 1004 or 1004W.

ANTH 3709. Japanese Culture Through Film. 3 Credits.
Survey of the Japanese cultural heritage presented through films. Topics include literature, philosophy, art, religion, and social history from premodern times to the modern era. Lectures and discussion in English. Same as JAPN 3162.

ANTH 3791. Topics in Regional Anthropology. 3-4 Credits.
Culture, history, and ways of life in a selected region of the world. Topics vary. Consult the Schedule of Classes for more details. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004.

ANTH 3801. African Roots from Australopithecus to Zimbabwe. 3 Credits.
The development and contributions of Africa from human beginnings through medieval states. Topics include human evolution, origins of art, technology, trade, and animal/plant domestication, rise of African states, early relations with Europe and Asia, antecedents of contemporary African diversity. Prerequisite: ANTH 1003 or permission of instructor.

ANTH 3801W. African Roots from Australopithecus to Zimbabwe. 3 Credits.
The development and contributions of Africa from human beginnings through medieval states. Topics include human evolution, origins of art, technology, trade, animal/plant domestication, rise of African states, early relations with Europe and Asia, antecedents of contemporary African diversity. Prerequisites: ANTH 1003.

ANTH 3802. Human Cultural Beginnings. 3 Credits.
Survey of prehistory in Europe, Africa, and Asia from the earliest hominid cultures to the beginnings of agriculture. Prerequisite: ANTH 1003.

ANTH 3802W. Human Cultural Beginnings. 3 Credits.
Survey of prehistory in Europe, Africa, and Asia from the earliest hominid cultures to the beginnings of agriculture. Prerequisite: ANTH 1003.

ANTH 3803. Old World Prehistory: First Farmers to First Cities. 3 Credits.
Archaeology of the Near East, Egypt, Europe, and other areas, from the beginnings of agriculture to the rise of Babylon. Prerequisites: ANTH 1003.

ANTH 3803W. Old World Prehistory: First Farmers to First Cities. 3 Credits.
Archaeology of the Near East, Egypt, Europe, and other areas, from the beginnings of agriculture to the rise of Babylon. Prerequisites: ANTH 1003.

ANTH 3804. Origins of the State and Urban Society. 3 Credits.
Emergence of urbanism and the state in the prehistory of various world regions. Regions covered might include India, China, Mexico, and the Pacific, among others. Prerequisites: ANTH 1003.

ANTH 3805. Archaeology of Israel and Neighboring Lands. 3 Credits.
The archaeology of Israel and adjacent areas (Syria, Jordan, Lebanon). Examination of many major sites and monuments. Significant problems and current debates. Same as AH 3106.

ANTH 3806. Art and Archaeology of the Aegean Bronze Age. 3 Credits.
Excavational and multidisciplinary aspects of classical archaeology. Minoan and Mycenaean civilizations (1700–1200 B.C.) Same as AH 3104.

ANTH 3808. Archaeology and the Celts. 3 Credits.
Historical and archaeological study of the Celtic people.

ANTH 3811. Historical Archaeology. 3 Credits.
Survey of the basic data and methods of research in the material culture of recent history. Same as AmSt 3811.

ANTH 3812. The Aztec Empire. 3 Credits.
The Aztecs (or Mexica) of Mexico created a large empire, and while frequently the focus is on warfare and human sacrifice, they produced some of the most naturalistic art and reflective poetry that have survived the Spanish Conquest. Using archaeology, art, and ethnohistoric documents, this course focuses the importance of power in Aztec society and how the normalization of violence created a form of social cohesion central to the state. Prerequisites: ANTH 1003. (Same as AH 3116).

ANTH 3813. Archaeology of North America. 3 Credits.
History of American archaeology; survey of North American culture history from human entry into the Americas during the Pleistocene period until the time of the first European contacts. Focus on peoples north of Mexico. Prerequisite: ANTH 1003.

ANTH 3814. Ancient Mexican Civilizations. 3 Credits.
Cultural history of pre-Columbian societies in Middle America; the emergence of Mesoamerican civilization from the earliest hunter–gatherers and first farmers to the Aztec Empire. Prerequisites: ANTH 1003. Same as AH 3107.

ANTH 3821. Myths and Mysteries in Archaeology. 3 Credits.
Topics ranging from King Arthur to Atlantis are used to illustrate how archaeological methods and techniques can falsify-or support-exotic beliefs about the past.

ANTH 3822. Archaeology in Film and Television. 3 Credits.
As visual media increase public awareness of archaeology, misrepresentations and distortions abound. This course examines the relationships among archaeology, the media, and popular culture. Issues considered include nationalism, descendant communities, gender, race, and colonialism.

ANTH 3823. Archaeology of Ritual and Religion. 3 Credits.
Archaeological and ethnographic examples from around the world are used to critically evaluate how archaeologists make inferences about ritual practices and the religious lives of past peoples. Issues include the origins of symbolic behavior, sacred landscapes, shamanism, ancestor veneration, and sorcery/witchcraft.

ANTH 3832. Paleoanthropological Field Program. 0-4 Credits.
Field research in paleoanthropology, including excavation methods, identification and analysis of materials, paleoecology, archaeology, and human anatomy. Conducted at selected sites in Eurasia, Africa, or Australia. Visits to comparative sites and collections in the region.

ANTH 3833. Field Research: New World. 1-6 Credits.
Survey, excavation, and/or laboratory analysis at localities in North or South America. See Schedule of Classes for details.

ANTH 3834. Field Research: Old World. 1-6 Credits.
Survey, excavation, and/or laboratory analysis at Neolithic or later localities in Eurasia, Africa, or Oceania. See Schedule of Classes for details.

ANTH 3835. Historical Archaeology Field Program. 3 Credits.
Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as AMST 3835.

ANTH 3838. Theory and Practice in Archaeology. 3 Credits.
The primary literature in archaeology theory since the 1960s. Ethics, topical issues, and archaeological practice. Prerequisite: Anth 1003.

ANTH 3838W. Theory and Practice in Archaeology. 3 Credits.
The primary literature in archaeology theory since the 1960s. Ethics, topical issues, and archaeological practice. Prerequisite: ANTH 1003.

ANTH 3839. Lab Research Methods in Archaeology. 3 Credits.
Research methods and techniques used by archaeologists. Emphasis on hands-on experience in one or more techniques. Prerequisite: Anth 1003.

ANTH 3891. Special Topics in Archaeology. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Prerequisite: ANTH 1003 or permission of instructor.

ANTH 3991. Special Topics. 0-3 Credits.
Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 3991W. Special Topics. 3 Credits.
Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 3995. Undergraduate Research. 1-12 Credits.
Individual research problems to be arranged with a member of the faculty. May be repeated for credit. Prerequisite: permission of instructor.

ANTH 4008. Seminar: Contemporary Anthropological Theory. 3 Credits.
The development of major trends in anthropological theory. How anthropologists from the four fields—sociocultural, linguistic, biological, and archaeology—have deployed and developed the ideas of theorists in their own empiricalresearch and theorizing about specific processes. Prerequisite: ANTH 2008.

ANTH 6101. Proseminar in Biological Anthropology. 3 Credits.
Comprehensive overview of theory and practice in biological anthropology.

ANTH 6102. Proseminar in Sociocultural Anthropology. 3 Credits.
Comprehensive overview of theory and practice in sociocultural anthropology.

ANTH 6103. Proseminar in Archaeology. 3 Credits.
Survey of the most recent archaeological techniques and theoretical approaches to reconstructing and interpreting the cultures of the past.

ANTH 6104. Proseminar in Linguistic Anthropology. 3 Credits.
Contemporary anthropological studies of language in biological, social, and historical perspectives.

ANTH 6200. Museum Anthropology. 3 Credits.
How anthropological collections take shape in the past and carry meaning in the present. Critical examination of artifacts and forms of documentation. Application of material culture theory to museum records, collected objects, the changing meaning given to objects, and the context of collecting.

ANTH 6201. Methods in Museum Anthropology. 3 Credits.
How anthropological collections take shape in the past and carry meaning in the present. Research and analysis of existing collections; issues in museum anthropology.

ANTH 6202. Museums and the Public: Exhibiting Culture. 3 Credits.
Study of the issues and problems involved in "exhibiting culture," past and present, including issues of representation, message and interpretation, audience, ownership of objects and symbols, and ways of reconstructing the past. Critical examination of museum exhibits.

ANTH 6203. Preventive Conservation Concepts. 3 Credits.
Historical development of preventive conservation in museums, conservation ethics, team approaches to conservation, interactions of various materials with agents of deterioration. Basics of materials testing, preparation of condition reports, choosing museum storage and exhibition materials, and risk assessment. Same as MSTD 6203/ AH 6286.

ANTH 6204. Preventive Conservation Techniques. 3 Credits.
Practical applications of preventive conservation of materials, monitoring environmental conditions, conducting risk assessments, evaluation of exhibit and storage areas; developing plans, policies, and procedures for collections care; grant proposal preparation for collections care initiatives. Same as MSTD 6204/ AH 6287.

ANTH 6205. Problems in Conservation. 3 Credits.
Individual conservation projects to determine composition, construction, decomposition of materials, and possible stabilization techniques. Conservation laboratory experience. Prerequisite or concurrent registration: Anth 6203/AH 6286.

ANTH 6230. Internship in Museum Anthropology. 1-6 Credits.
Supervised individual research and/or field work at the Smithsonian Institution or other area museums, arranged in consultation with the museum and the Anthropology Department. Admission by arrangement with the department chair or museum training advisor. May be repeated for credit up to a maximum of 6 credits.

ANTH 6301. The Anthropology of Development. 3 Credits.
Theoretical perspectives that distinguish the contribution of anthropology to understanding processes of change in the Third World. Focus on health, population, environment, gender, and tourism issues. The role of anthropology in planning and implementing projects and policy.

ANTH 6302. Issues in Development. 3 Credits.
Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 6330. Internship in Development Anthropology. 3 Credits.
Supervised participation in a selected development agency or other relevant organization. Opportunity to observe agency procedures and gain practical experience. Admission by permission of instructor or department chair.

ANTH 6331. Research Methods in Development Anthropology. 3 Credits.
Anthropologists' roles in research-related activities, such as feasibility studies, social soundness analysis, and evaluations. Innovative research techniques, such as interactive data gathering, team survey methods, and rapid rural appraisal. Admission by permission of instructor.

ANTH 6391. Anthropology and Contemporary Problems. 3 Credits.
Exploration of anthropological perspectives on a current issue, such as refugees, ethnic violence, national mythologies, and women's health in developing countries. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 6401. Human Functional Anatomy. 3 Credits.
Growth and function of the musculoskeletal system, including the development, anatomy, and histology of bone, biomechanics of muscle and skeletal tissue, craniofacial and dental growth and morphology, and locomotion. No prior knowledge of anatomy required. Laboratory fee.

ANTH 6404. The Evolution of Primate Life Histories. 3 Credits.
Recent developments in the study of human and non-human life histories. Life history theory. Life history traits compared among primate groups in order to determine how selective pressures have shaped extant primate life history patterns. Laboratory fee.

ANTH 6406. Human Genetic Variation. 3 Credits.
The genetic variation in human populations as a framework for measurement and analysis of genetic diversity and evolutionary process. Consideration of the possible roles of cultural change leading to adaptive/selective events. Same as FORS 6246.

ANTH 6412. Paleoanthropology. 1-3 Credits.
Survey of current research in hominid and hominoid evolution, focusing on the integrated nature of the field. Contributions from the geological and biological sciences will be stressed, together with innovative geochemical techniques for establishing chronological sequences. Prerequisite: ANTH 3412 or BISC 2450 .

ANTH 6413. Analytical Methods in Human Evolutionary Studies. 3 Credits.
A survey of methods and approaches for data collection and analysis in human evolutionary biology research. Topics include comparative methods and basic and multivariate statistics.

ANTH 6491. Topics in Biological Anthropology. 3 Credits.
Topic announced in the Schedule of Classes. Instructors will be drawn from GW faculty and Smithsonian Institution staff. May be repeated for credit if topic varies.

ANTH 6501. Gender and Sexuality. 3 Credits.
Study of new theoretical and methodological approaches developed in the anthropology of gender. Topics include postcolonialism, sexuality, and literary representations of gender. Same as WSTU 6257.

ANTH 6505. Medical Anthropology. 3 Credits.
Concepts and theories in contemporary medical anthropology, including "critical" versus "conventional" medical anthropology, changes in approaches since the mid-twentieth century; structural and cultural construction of illness and suffering; ethnographic and epidemiological perspectives.

ANTH 6506. Topics in Medical Anthropology. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit if the topic varies.

ANTH 6507. Nationalism and Ethnicity. 3 Credits.
Major theoretical and ethnographic issues in the study of nationalism worldwide. Explores how ethnic groups emerge in colonial and contemporary plural societies and how states attempt to integrate ethnic groups into nations.

ANTH 6508. Ethics and Cultural Property. 3 Credits.
Survey of ethical issues in anthropology, focusing on cultural property and repatriation; the epistemological, ethical, and political dilemmas of excavating, collecting, and owning cultural artifacts.

ANTH 6509. Anthropology of Art, Aesthetics, and Symbolism. 3 Credits.
Anthropological approaches to aesthetic problems and theories of symbolism in the context of ethnographic materials.

ANTH 6531. Methods in Sociocultural Anthropology. 3 Credits.
Epistemology; the definition of research problems; selection of research subjects and sites; techniques of data collection (e.g., surveys, interviews); data management and organization; ethical protocols; issues of safety; grant writing and funding.

ANTH 6561. American Folklife. 3 Credits.
The materials of American folk culture, concentrating on folk architecture, crafts, and art. Major organizing themes are regionalism and the use of objects as indicators of cultural intention. Same as AMST 6561.

ANTH 6562. Folklore Theory. 3 Credits.
An intellectual history of American folklore research; analysis of particular theories and methods. Same as AMST 6562.

ANTH 6591. Topics in Sociocultural Anthropology. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit if the topic varies.

ANTH 6691. Topics in Linguistic Anthropology. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit if the topic varies.

ANTH 6702. Issues in Latin American Anthropology. 3 Credits.
Intensive study of a selected topic in the anthropology of Central and/or South America. Topic to be announced.

ANTH 6707. Issues in Middle East Anthropology. 3 Credits.
Selected topics in the anthropology of the Middle East. Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 6801. Paleolithic Archaeology. 3 Credits.
Current problems relating to materials from the Old World.

ANTH 6802. Problems in Eurasian and African Archaeology. 3 Credits.
Topic announced in the Schedule of Classes. Topics may include Bronze Age conflict, the Celts, etc. May be repeated for credit.

ANTH 6803. Problems in New World Archaeology. 3 Credits.
Current archaeological problems relating to the origin and development of aboriginal cultures. Specific topic to be announced in the Schedule of Classes. May be repeated for credit.

ANTH 6804. Problems in Mesoamerican Archaeology. 3 Credits.
Topics range from specific civilizations, such as the Olmec, to pan-Mesoamerican topics, such as religion and exchange. May be repeated for credit.

ANTH 6806. Technology. 3 Credits.
Cross-cultural examination of the form, function, meaning, and use of material culture (such as ceramics or stone tools) and the behavior patterns involved in its production. Topic vary by semester. Consult the Schedule of Classes for more details.

ANTH 6807. Public Archaeology. 3 Credits.
The use and creation of the past and the relationship between archaeologists and different publics.

ANTH 6832. Paleoanthropological Field Program. 0-4 Credits.
Intensive course on field research in paleoanthropology, including excavation methods, identification and analysis of materials, paleoecology, archaeology, and human anatomy. Conducted at selected sites in Eurasia, Africa, or Australia. Visits to comparative sites and collections in the region.

ANTH 6835. Historical Archaeology Field Program. 3-6 Credits.
Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as AMST 6835.

ANTH 6838. Archaeological Theory. 3 Credits.
Overview of major theories and positions in American archaeology; examination of new issues and directions in which the field appears to be moving.

ANTH 6839. Lab Research Methods in Archaeology. 3,4 Credits.
Research methods and techniques used by archaeologists. Emphasis on hands-on experience in one or more techniques. Laboratory fee.

ANTH 6891. Topics in Archaeology. 3 Credits.
Major issues related to the theory and practice of archaeology. Topic announced in the Schedule of Classes.

ANTH 6995. Research. 1-12 Credits.
May be repeated for credit.

ANTH 6998. Thesis Research. 3 Credits.

ANTH 6999. Thesis Research. 3 Credits.

ANTH 8695. Linguistic Field Methods. 3 Credits.
The relationship between language and thought in dialogue with the study of a particular foreign language. Ethnographic study of language and cognition and the application of linguistic theory and method to anthropological research. Methods of elicitation and textual analysis, and technologies used for storing and analyzing linguistic data. Restricted to graduate students.

ANTH 8998. Advanced Reading & Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

ANTH 8999. Dissertation Research. 1-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

APPLIED SCIENCE (APSC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

The below listed departments manage the following APSC courses:

- SEAS Dean's Office - 1001, 3098, 6215, 6216
- Civil and Environmental Engineering - 2057, 2113, 6211, 6214
- Mechanical and Aerospace Engineering - 2058, 6212, 6213
- Electrical and Computer Engineering - 2114

APSC 1001. Introduction to Engineering for Undeclared Majors. 0-1 Credits.
As an introduction to disciplines within SEAS, potential solutions to problems are presented by practitioners of civil and environmental engineering; computer science; electrical, computer, and biomedical engineering; mechanical and aerospace engineering; and systems engineering.

APSC 2057. Analytical Mechanics I. 3 Credits.
First half of a one-year sequence. Concepts of statics: force systems, conditions of force and moment equilibrium, simple structures, distributed forces, centroids, internal forces, friction, moments of inertia. Prerequisites: PHYS 1021. (Fall and spring).

APSC 2058. Analytical Mechanics II. 3 Credits.
Second half of a one-year sequence. Concepts of dynamics: kinematics of particles, velocity and acceleration, translating and rotating reference frames, particle dynamics, motion under central and electromagnetic force, effect of Earth's rotation, vibrations, work, kinetic and potential energy, dynamics of systems of particles. Prerequisite: APSC 2057.

APSC 2113. Engineering Analysis I. 3 Credits.
Analytical methods for the solution of problems in engineering, the physical sciences, and applied mathematics: applications of ordinary differential equations, matrices and determinants, eigenvalues and eigenvectors, systems of ordinary linear differential equations, Bessel and Legendre functions. Prerequisite or concurrent registration: MATH 2233.

APSC 2114. Engineering Analysis II. 3 Credits.
Analytical methods for the solution of problems in engineering, the physical sciences, and applied mathematics: complex variables, Fourier series and integral, frequency filters, Laplace transforms, inversion and Duhamel integrals; partial differential equations. Prerequisite: MATH 2233.

APSC 3098. Variable Topics. 1-36 Credits.

APSC 3115. Engineering Analysis III. 3 Credits.
Analytical methods for the solution of problems in engineering using concepts from probability and statistics: probability modeling, random variables and their distributions, mathematical expectation, sampling, point and confidence interval estimation, hypothesis testing, correlation, regression, and engineering applications. (Fall, spring, and summer).

APSC 3116. Engineering Analysis IV. 3 Credits.
Analytical methods using advanced concepts from probability and statistics: multivariate distributions, expectation, generating functions, parametric families of distributions, sampling and sufficient statistics, estimation, hypothesis testing, and engineering applications. Prerequisite: ApSc 3115, Math 2233. May be taken for graduate credit. (Fall).

APSC 6211. Analytical Methods in Engineering I. 3 Credits.
Engineering applications of the theory of complex variables: contour integration, conformal mapping, inversion integral, and boundary–value problems. Prerequisite: approval of department.

APSC 6212. Analytical Methods in Engineering II. 3 Credits.
Algebraic methods appropriate to the solution of engineering computational problems: linear vector spaces, matrices, systems of linear equations, eigenvalues and eigenvectors, quadratic forms. Prerequisite: approval of department.

APSC 6213. Analytical Methods in Engineering III. 3 Credits.
Analytical techniques for solution of boundary–initial-value problems in engineering: wave propagation, diffusion processes, and potential distributions. Prerequisite: approval of department.

APSC 6214. Analytical Methods in Engineering IV. 3 Credits.
Introduction to variational methods in engineering: Ritz and Galerkin approximation methods of boundary–value problems, aspects of linear integral equations arising from engineering analysis. Prerequisite: approval of department.

APSC 6215. Analytical Methods in Engineering V. 3 Credits.
Advanced methods of solution of boundary–initial-value problems in engineering: characteristics, wave propagation, and Green's functions. Prerequisite: APSC 6213.

APSC 6216. Special Topics in Engineering Analysis. 3 Credits.
Selected topics, such as perturbation techniques applied to approximate solution of nonlinear boundary and initial-value problems in engineering; application of singular integral equations in problems of mechanics. Prerequisite: approval of department.

ARABIC (ARAB)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ARAB 1001. Beginning Arabic I. 4 Credits.
Fundamentals of grammar and pronunciation and development of speaking, listening, reading, and writing skills in culturally appropriate contexts.

ARAB 1002. Beginning Arabic II. 4 Credits.
Continuation of ARAB 1001. Fundamentals of speaking, listening, reading, and writing in culturally appropriate and proficiency-oriented contexts. Prerequisite: ARAB 1001.

ARAB 1201. Intensive Elementary Arabic I. 6 Credits.
Accelerated learning of fundamentals of speaking, listening, reading, and writing Arabic in culturally appropriate contexts for proficiency.

ARAB 1202. Intensive Elementary Arabic II. 6 Credits.
Continuation of ARAB 1201. Fundamentals of speaking, listening, reading, and writing of Arabic in culturally and linguistically appropriate contexts. Prerequisites: ARAB 1201.

ARAB 2001. Intermediate Arabic I. 4 Credits.
Continuation of ARAB 1002. Further development of speaking, listening, reading, and writing skills of Arabic in culturally appropriate, proficiency-oriented contexts. Prerequisites: ARAB 1002.

ARAB 2002. Intermediate Arabic II. 4 Credits.
Continuation of ARAB 2001. Further development of speaking, listening, reading, and writing skills of Arabic in culturally appropriate and proficiency-oriented contexts. Prerequisites: ARAB 2001 or ARAB 1202.

ARAB 2201. Intensive Intermediate Arabic I. 6 Credits.
Continuation of ARAB 1202. Prerequisite: ARAB 1202. Laboratory fee.

ARAB 3001. Advanced Arabic. 4 Credits.
Emphasis on development of speaking, listening, reading, and writing skills at the advanced level of proficiency in culturally appropriate contexts. Discussion of cultural and social issues based on a selection of contemporary written and audiovisual materials from Arab literary and media sources. Prerequisites: ARAB 2002.

ARAB 3105. Special Topics. 3 Credits.
Topic announced in the Schedule of Classes may be repeated for credit provided the topic differs.

ARAB 3201. Intensive Intermediate Arabic II. 6 Credits.
Continuation of ARAB 2201. Accelerated learning of Arabic skills in speaking, listening, reading, and writing at the intermediate/advanced level of proficiency in culturally appropriate contexts. Prerequisites: ARAB 2201.

ARAB 3301. Modern Arabic Literature. 3 Credits.
Short stories, short plays, poems, literary essays in Modern Standard Arabic, with attention to linguistic and literary stylistic aspects. Prerequisites: ARAB 3001 or ARAB 3201.

ARAB 3302. Media Arabic. 3 Credits.
Authentic scripted and audiovisual materials from various contemporary Arab media outlets including television and radio newscast and cultural programs, newspaper and magazine articles, and the Internet. Prerequisites: ARAB 3001 or ARAB 3301 or permission of instructor.

ARAB 3311. Business Arabic. 3 Credits.
General and specific business language skills used in a variety of business operations and settings, such as making presentations, researching opportunities, conducting interviews, and negotiating. Prerequisite: ARAB 3001.

ARAB 3501. Arabic and Arab Identity. 3 Credits.
History of the Arabic language from pre-Islamic times and its subsequent spread into contiguous regions. The role of the Arabic language in formulating the ideology of Arab nationalism and identity. Course is conducted in English.

ARAB 3502. Arab Film & Culture in English. 3 Credits.
Historical survey of Arab cinema and its expression of Arab culture. Course is conducted in English.

ARAB 3503. Fundamentals of Arabic Linguistics. 3 Credits.
Introduction to the structures, functions, and varieties of Arabic from a descriptive linguistics perspective. The history of the language, including contributions of major medieval Arabic grammarians. Analysis of standard and dialectal varieties of Arabic. Course is conducted in English.

ARAB 3901. Directed Projects. 1-3 Credits.
Individual advanced reading or research, to be arranged with a member of the faculty. May be repeated for credit. Enrollment by permission of the instructor and department.

ARAB 4001. Genres in Modern Arabic Literature. 3 Credits.
Historical development of short Arabic stories or short Arabic plays throughout the twentieth century. Prerequisite: ARAB 3301 or permission of instructor.

ARAB 4002. Arabic Narratives Through the Ages. 3 Credits.
Reading and discussion of narratives, such as those found in stories of The Thousand and One Nights, or travel adventures, such as those of Ibn Battuta and his successors. Prerequisite: ARAB 3301 or permission of instructor.

ARAB 4501. Arabic-English Translation. 3 Credits.
Theoretical background and practical applications of translation strategies from Arabic to English that are necessary for professional translation tasks. Prerequisite: ARAB 3301 or ARAB 3302.

ARAB 4502. Arabic-English Advanced Translation and Editing. 1-3 Credits.
The professional translation and editing of various types of material. Prerequisite: ARAB 4501.

ART HISTORY (AH)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

AH 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

AH 1001. Summer Art History. 2 Credits.

AH 1031. Survey of Art and Architecture I. 3 Credits.
An introduction to the history of art through the study of major monuments, movements, and concepts. From the prehistoric period, through the Ancient Mediterranean cultures, including Greece and Rome, to the end of the Middle Ages.

AH 1032. Survey of Art and Architecture II. 3 Credits.
Continuation of AH 1031. An introduction to the history of art through the study of major monuments, movements, and concepts. From the early Renaissance through the Baroque and modern eras.

AH 1070. The American Cinema. 3 Credits.
History and criticism of American films. The course enables the student to recognize and evaluate cinema techniques, to express the evaluation clearly in writing, and to understand the role of films in the context of American culture. Laboratory fee. Same as AMST 1070.

AH 1135. Spanish Art: Prado/Thyssen Museums. 3 Credits.

AH 1136. Spanish Art:From Goya to Picasso. 3 Credits.

AH 2001. Special Topics. 3 Credits.

AH 2071. Introduction to the Arts in America. 3 Credits.
A survey of American art from the period of colonial exploration and settlement to the postmodern present. Political and social meanings of painting, sculpture, architecture, prints, and photographs. The relationship of art to religion and nationalism; issues of class, race, and gender. Same as AMST 2071.

AH 2109. Sem:Ancient Art & Architecture. 3 Credits.
For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

AH 2145. History of Decorative Arts: European Heritage. 3 Credits.
Changing styles of European furniture, textiles, ceramics, and glass in the context of general trends in art history and changing patterns in economic, technological, social, and cultural history. From antiquity to the modern age.

AH 2154. American Architecture I. 3 Credits.
Stylistic properties, form and type characteristics, technological developments, and urbanistic patterns are introduced as a means of interpretation of historic meaning. Buildings are analyzed both as artifacts and as signifiers of social, cultural, and economic tendencies. 1600–1860. Same as AMST 2520.

AH 2155. American Architecture II. 3 Credits.
Continuation of AH 2154. Stylistic properties, form and type characteristics, technological developments, and urbanistic patterns are introduced as a means of interpretation of historic meaning. Buildings are analyzed both as artifacts and as signifiers of social, cultural, and economic tendencies. 1860–present. Same as AMST 2521.

AH 2161. History of Decorative Arts: American Heritage. 3 Credits.
The decorative arts in America from the 17th century to the modern period. Consideration of changing visual characteristics in relation to the changing American experience.

AH 2162. History of Photography. 3 Credits.
The historical, social, aesthetic and technological developments of the photographic medium, including its relationship to modern art and modes of visual representation and the properties that inform our understanding of photographic meaning.

AH 2162W. History of Photography. 3 Credits.
The historical, social, aesthetic and technological developments of the photographic medium, including its relationship to modern art and modes of visual representation and the properties that inform our understanding of photographic meaning.

AH 2190. East Asian Art. 3 Credits.
Survey of the arts of China, Japan, and Korea.

AH 2191. South Asian Art. 3 Credits.
Survey of the arts of India, Pakistan, Sri Lanka, Nepal, and Tibet, from prehistoric times to circa 18th century.

AH 2192. The Art of Southeast Asia. 3 Credits.
The arts of Southeast Asia—Vietnam, Laos, Cambodia, Myanmar (former Burma), Thailand, and Indonesia, especially Java and Bali. The fusion of Indian and Chinese concepts with indigenous cultural traits.

AH 3101. Ancient Art of the Bronze Age and Greece. 3 Credits.
A survey of Greek art from the Minoans and Mycenaeans (c. 2000 B.C.) to the age of Alexander (c. 300 B.C.). Relationships among the arts of the different groups in the Aegean area and their impact on Western culture. The Theran volcanic eruption, the "Dorian Invasion," the portrayal of women, "heroic nudity," and the assumption of a stylistic chronology.

AH 3102. Ancient Art of the Roman Empire. 3 Credits.
A survey of Roman art from the successors of Alexander the Great (c. 300 B.C.) to the fall of the Roman Empire in the West (c. 300 A.D.). The impact of the Greek world on Roman art and culture; innovations and achievements of the Romans in architecture, portraiture, and historical narrative. Focus on the city of Rome and other areas of the Roman world such as North Africa and Asia.

AH 3103. Art and Archaeology of Egypt and the Near East. 3 Credits.
The great artistic tradition of the Nile Valley and the contemporary civilizations (c. 3000 B.C. to after 1000 B.C.) between the rivers Tigris and Euphrates (present day Iraq). The Pyramid Age, the temples at Karnak and Luxor, the tombs of the Valley of the Kings, and the artistic traditions of the Sumerians, Akkadians, Babylonians, Assyrians, and Persians.

AH 3104. Art and Archaeology of the Aegean Bronze Age. 3 Credits.
Excavational and multidisciplinary aspects of classical archaeology. Minoan and Mycenaean civilizations (1700–1200 B.C.). Same as ANTH 3806.

AH 3105. Topics in Ancient Art and Archaeology. 3 Credits.
May be repeated for credit provided the topic differs. Same as CLAS 3115.

AH 3106. Art and Archaeology of Israel and Neighboring Lands. 3 Credits.
The archaeology of Israel and adjacent areas (Syria, Jordan, Lebanon). Examination of many major sites and monuments. Significant problems and current debates. Same as ANTH 3805.

AH 3107. Ancient Mexican Civilizations. 3 Credits.
Culture history of pre-Columbian societies in Middle America; the emergence of Mesoamerican civilization from the earliest hunter–gatherers and first farmers to the Aztec Empire. Prerequisites: ANTH 1003. (Same as ANTH 3814).

AH 3111. Early Christian and Byzantine Art and Architecture. 3 Credits.
Art of the Mediterranean world following the collapse of Roman administration. Growth of the basilica and its decoration; the significance of small objects in medieval study. The rise and fall of the East Roman (Byzantine) Empire from Justinian to 1453.

AH 3112. Romanesque and Gothic Art and Architecture. 3 Credits.
The origin of Western art in the Hiberno-Saxon and Carolingian worlds, their relationship to the Ancient heritage and to the contemporary Byzantine art. Romanesque and Gothic architecture and its sculptural decoration as art historical and social phenomena.

AH 3113. Islamic Art and Architecture. 3 Credits.
Introduction to the visual culture of the Muslim world, from Spain to India, from the 7th century to the present. Examination of artworks in their historical, religious, and cultural contexts; key points in the field's historiography. (Same as AH 6213).

AH 3114. Art of the Book in the Medieval Muslim World. 3 Credits.
An advanced-level introduction to the visual culture of the Muslim world, from Spain to India, from the 7th century to the 17th century. Examination of artworks in their historical, religious, and cultural contexts; key points in the field's historiography. (Same as AH 6214).

AH 3116. The Aztec Empire. 3 Credits.
The Aztecs (or Mexica) of Mexico created a large empire, and while frequently the focus is on warfare and human sacrifice, they produced some of the most naturalistic art and reflective poetry that have survived the Spanish Conquest. Using archaeology, art, and ethnohistoric documents, this course focuses the importance of power in Aztec society and how the normalization of violence created a form of social cohesion central to the state. Prerequisites: ANTH 1003. (Same as ANTH 3812).

AH 3117. Special Topics in Precolumbian Art and Archaeology. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 3120. Italian Art and Architecture of the 13th through 15th Centuries. 3 Credits.
Origins, development, and theoretical foundations of Renaissance painting, sculpture, and architecture (Giotto, Duccio, Masaccio, Donatello, Ghiberti, Brunelleschi, Mantegna, Bellini, Botticelli).

AH 3121. Italian Art and Architecture of the 16th Century. 3 Credits.
The development of the universal genius within the circle of Florence and Rome (Leonardo, Raphael, Michelangelo) and their counterparts in Venice (Giorgione, Titian, Tintoretto, Sansovino, Palladio).

AH 3122. Topics in Early Northern Renaissance Art and Architecture. 3 Credits.
Royal and ducal patronage and the Flemish and French masters of the 15th century, including van Eyck, Campin, van der Weyden, Fouquet, van der Goes, Memling, and Gerard David. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 3122W. Topics in Early Northern Renaissance Art and Architecture. 3 Credits.

AH 3123. Topics in Northern Renaissance Art and Architecture. 3 Credits.
Francis I and Fontainebleau Palace, Henry VIII and Hampton Court, Johann Friedrich of Saxony, and the Holy Roman Emperors Maximilian I and Charles V. François Clouet, Hans Holbein, Lucas Cranach, Albrecht Dürer, Pieter Brueghel, Bernard van Orley, and others. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 3123W. Topics in Northern Renaissance Art and Architecture. 3 Credits.

AH 3131. Italian Art and Architecture of the 17th Century. 3 Credits.
The Counter-Reformation and creation of the Baroque in painting, sculpture, and architecture in Rome (Carracci, Caravaggio, Bernini, Borromini, Pietro da Cortona), Turin (Guarini, Juvarra), and Venice (Longhena).

AH 3132. Topics in Northern European Art and Architecture of the 17th Century. 3 Credits.
Hapsburg Flanders and Brussels under the Spanish archdukes and their patronage of Rubens and his circle. The role of Dutch merchants commissioning secular themes in Utrecht, Haarlem, Delft, Leyden, and Amsterdam from Golden Age artists such as Rembrandt, Vermeer, and Hals. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 3134. Topics in Spanish and Portuguese Art through the 16th Century. 3 Credits.
The Kingdoms of the Iberian Peninsula from the Reconquest of Granada to the Renaissance Age of Exploration. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 3134W. Topics in Spanish and Portuguese Art through the 16th Century. 3 Credits.
The Kingdoms of the Iberian Peninsula from the Reconquest of Granada to the Renaissance Age of Exploration. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. (Same as AH 3134).

AH 3135. Topics in 17th/18th Century Spanish and Portuguese Art. 3 Credits.
Secular and sacred art of the Baroque Golden Century or the Rococo Enlightenment. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 3140. European Art of the 18th Century. 3 Credits.
Painting, sculpture, and architecture in France, Great Britain, and Italy. Emphasis on Watteau, Chardin, David, Hogarth, Gainsborough, Reynolds, Canaletto, and Tiepolo.Painting, sculpture, and architecture in France, Great Britain, and Italy.

AH 3141. European Art of the Early 19th Century. 3 Credits.
Neoclassicism and Romanticism in the context of Western European political, social, and cultural developments. Emphasis on France, England, and Germany and the representative styles of David, Ingres, Delacroix, Turner, Constable, and Friedrich.

AH 3141W. European Art of the Early 19th Century. 3 Credits.
Neoclassicism and Romanticism in the context of Western European political, social, and cultural developments. Emphasis on France, England, and Germany and the representative styles of David, Ingres, Delacroix, Turner, Constable, and Friedrich.

AH 3142. European Art of the Late 19th Century. 3 Credits.
The revolution in style of Realism, Impressionism, and Post-Impressionism in the context of Western European political, social, and cultural developments. Emphasis on representative styles of Courbet, Manet, Monet, Morisot, Repin, Seurat, Cezanne, Van Gogh, and Gauguin.

AH 3142W. European Art of the Late 19th Century. 3 Credits.

AH 3143. Early Twentieth-Century Art. 3 Credits.
History and theory of early twentieth-century modernism in the visual arts, from origins in the late 19th century through Surrealism. The work of artists such as Matisse, Picasso, Kandinsky, Duchamp, and Mondrian. (Same as AH 3143W).

AH 3143W. Early Twentieth-Century Art. 3 Credits.
History and theory of early twentieth-century modernism in the visual arts, from origins in the late 19th century through Surrealism. The work of artists such as Matisse, Picasso, Kandinsky, Duchamp, and Mondrian. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as AH 3143).

AH 3146. Modern Architecture in Europe and America. 3 Credits.
Major developments in architecture and urbanism from the Industrial Revolution to the end of the 20th century.

AH 3146W. Modern Architecture in Europe and America. 3 Credits.

AH 3151. American Art in the Age of Revolution. 3 Credits.
American art during the 18th-century "consumer revolution," the American War for Independence, and the early republic. Emphasis on the socioeconomic and political purposes of art, with focus on Enlightenment symbolism and the visualization of national identity. (Same as AMST 3151).

AH 3152. American Art in the Era of National Expansion. 3 Credits.
American art from the opening of the Erie Canal in 1825 to the Spanish-American War in 1898. Emphasis on the role of art in the expansion of the United States, exploring issues of race, class, and gender; art, and religion.

AH 3153. American Art of the 20th Century. 3 Credits.
20th-century American painting and sculpture from the turn of the century to the beginnings of postmodernism, with focus on the avant garde. Artists of the Stieglitz circle and later modernist movements such as Abstract Expressionism, Pop, Op, Minimal, and Conceptual art. Theory and criticism.

AH 3160. Latin American Art and Architecture. 3 Credits.

AH 3165. Later Twentieth-Century Art. 3 Credits.
Artists, art, and critical concepts from the later twentieth century, focusing on key movements and issues, including Abstract Expressionism, Minimalism, Conceptual Art, feminism, identity politics, and the rise of globalization. Same as AH 3165W.

AH 3165W. Later Twentieth-Century Art. 3 Credits.
Artists, art, and critical concepts from the later twentieth century, focusing on key movements and issues, including Abstract Expressionism, Minimalism, Conceptual Art, feminism, identity politics, and the rise of globalization. Same as AH 3165.

AH 3170. Materials, Methods, and Techniques in Art History. 3 Credits.
Working hands-on in a workshop studio, students create panels, canvases, vehicles, mediums, pigments, drawings, and paintings from raw materials and are introduced to the materials, methods, and techniques of the fine arts through traditional practices and processes of manufacture in western cultures.

AH 3181. Special Topics in Asian Art. 3 Credits.
Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

AH 3182. Special Topics in South Asian Art. 3 Credits.
South Asian art, architecture, and visual and material culture from ancient to contemporary periods. Topics may include urban settlements of the Indus Valley Civilization; monumental and sculptural forms of early Buddhism, Jainism, and Hinduism; artistic production and patronage under Sultanate, Mughal, and Rajput rulers; and cross-cultural dimensions of art and architecture on the subcontinent.

AH 4109. Topics in Ancient Art and Archaeology. 3 Credits.
May be repeated for credit provided the topic differs. (Same as CLAS 3115).

AH 4119. Seminar in Medieval Art and Architecture. 3 Credits.
For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

AH 4129. Seminar in Renaissance Art and Architecture. 3 Credits.
For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

AH 4139. Seminar in Baroque Art and Architecture. 3 Credits.
For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

AH 4149. Seminar in Modern European Art and Architecture. 3 Credits.
For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

AH 4159. Seminar in American Art and Architecture. 3 Credits.
For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

AH 4159W. Seminar in American Art and Architecture. 3 Credits.
For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

AH 4169. Seminar in Contemporary Art. 3 Credits.
Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit if topic differs. Restricted to limited to juniors and seniors.

AH 4182. Special Topics in South Asian Art. 3 Credits.
Advanced undergraduate study of South Asian art, architecture, and visual and material culture. Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Restricted to art history majors or with permission of the instructor.

AH 4189. Seminar: Special Topics in Art History. 3 Credits.
For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

AH 4198. Independent Study. 1-3 Credits.
Directed research and study in a specific area of art history to be approved by a faculty member. May be repeated for credit.

AH 4199. Internship in Art History. 3 Credits.
Open to candidates for the B.A. in art history only and with the approval of advisor in art history. May not be repeated for credit toward the degree. May be taken P/NP only.

AH 6201. Proseminar in Ancient Art of the Bronze Age and Greece. 3 Credits.
Greek art from the Minoans and Mycenaeans (c. 2000 B.C.) to the age of Alexander (c. 300 B.C.). Relationships among the arts of the different groups in the Aegean area and their impact on Western culture. The Theran volcanic eruption, the "Dorian Invasion," the portrayal of women, "heroic nudity," and the assumption of a stylistic chronology.

AH 6202. Proseminar in Ancient Art of the Roman Empire. 3 Credits.
Roman art from the successors of Alexander the Great (c. 300 B.C.) to the fall of the Roman Empire in the West (c. 300 A.D.). The impact of the Greek world on Roman art and culture; innovations and achievements of the Romans in architecture, portraiture, and historical narrative. Focus on the city of Rome and other areas of the Roman world such as North Africa and Asia.

AH 6205. Ancient Art Seminar. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6211. Proseminar in Early Christian and Byzantine Art and Architecture. 3 Credits.
Art of the Mediterranean world following the collapse of Roman administration. Growth of the basilica and its decoration; the significance of small objects in medieval study. The rise and fall of the East Roman (Byzantine) Empire from Justinian to 1453.

AH 6212. Proseminar in Romanesque and Gothic Art and Architecture. 3 Credits.
The origin of Western art from the Hiberno-Saxon and Carolingian worlds and their relationship to the Ancient heritage. Romanesque and Gothic architecture and its sculptural decoration as social phenomena.

AH 6213. Islamic Art and Architecture. 3 Credits.
Introduction to the visual culture of the Muslim world, from Spain to India, from the 7th century to the present. Examination of artworks in their historical, religious, and cultural contexts; key points in the field's historiography. (Same as AH 3113).

AH 6214. The Art of the Book in the Medieval Muslim World. 3 Credits.
An advanced-level introduction to the visual culture of the Muslim world, from Spain to India, from the 7th century to the 17th century. Examination of artworks in their historical, religious, and cultural contexts; key points in the field's historiography. (Same as AH 3114).

AH 6215. Seminar in Medieval Art and Architecture. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6220. Proseminar in Italian Art and Architecture of the 13th through 15th Centuries. 3 Credits.
Origins, development, and theoretical foundations of Renaissance painting, sculpture, and architecture (Giotto, Duccio, Masaccio, Donatello, Ghiberti, Brunelleschi, Mantegna, Bellini, Botticelli).

AH 6221. Prosem:Ital Art&Arch 16th Cent. 3 Credits.
The development of the universal genius within the circle of Florence and Rome (Leonardo, Raphael, Michelangelo) and their counterparts in Venice (Giorgione, Titian, Tintoretto, Sansovino, Palladio).

AH 6222. Proseminar in Early Northern Renaissance Art and Architecture. 3 Credits.
Royal and ducal patronage and the Flemish and French masters of the 15th century, including van Eyck, Campin, van der Weyden, Fouquet, van der Goes, Memling, and Gerard David. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6223. Proseminar in Northern Renaissance Art and Architecture. 3 Credits.
Francis I and Fontainebleau Palace, Henry VIII and Hampton Court, Johann Friedrich of Saxony, and the Holy Roman Emperors Maximilian I and Charles V. François Clouet, Hans Holbein, Lucas Cranach, Albrecht Dürer, Pieter Brueghel, Bernard van Orley, and others.

AH 6225. Seminar in Renaissance Art. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6231. Proseminar in Italian Art and Architecture of the 17th Century. 3 Credits.
The Counter-Reformation and creation of the Baroque in painting, sculpture, and architecture in Rome (Carracci, Caravaggio, Bernini, Borromini, Pietro da Cortona), Turin (Guarini, Juvarra), and Venice (Longhena).

AH 6232. Proseminar in Northern European Art and Architecture of the 17th Century. 3 Credits.
Hapsburg Flanders and Brussels under the Spanish archdukes and their patronage of Rubens and his circle. The role of Dutch merchants commissioning diverse secular themes in Utrecht, Haarlem, Delft, Leyden, and Amsterdam from "Golden Age" artists such as Rembrandt, Vermeer, and Hals. Specific topic announced in the Schedule of Classes.

AH 6234. Proseminar in Spanish and Portuguese Art through the 16th Century. 3 Credits.
The Kingdoms of the Iberian Peninsula from the Reconquest of Granada to the Renaissance Age of Exploration. Specific topic announced in the Schedule of Classes.

AH 6235. Seminar in Baroque Art. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6240. Proseminar in European Art of the 18th Century. 3 Credits.
Painting, sculpture, and architecture in France, Great Britain, and Italy. Emphasis on Watteau, Chardin, David, Hogarth, Gainsborough, Reynolds, Canaletto, and Tiepolo.

AH 6245. Seminar in European Art of the 19th Century. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6246. Proseminar in Modern Architecture in Europe and America. 3 Credits.
Major developments in architecture and urbanism from the Industrial Revolution to the end of the 20th century.

AH 6250. Seminar: Modern Art. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6251. Proseminar in American Art in the Age of Revolution. 3 Credits.
American art during the 18th-century "consumer revolution," the American War for Independence, and the early republic. Emphasis on the socioeconomic and political purposes of art, with focus on Enlightenment symbolism and the visualization of national identity.

AH 6252. Proseminar in American Art in the Era of National Expansion. 3 Credits.
American art from the opening of the Erie Canal in 1825 to the Spanish-American War in 1898. Emphasis on the role of art in the expansion of the United States, exploring issues of race, class, and gender; art and religion.

AH 6254. Seminar in American Art before 1900. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Same as AMST 6254.

AH 6255. Seminar: Studies in American Art and History. 3 Credits.
Selected problems and themes in American cultural history involving the use of artistic materials in different media; emphasis on methodology and analytic techniques. May be repeated for credit. Same as AMST 6730.

AH 6256. Seminar in American Art of the 20th Century. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6257. Seminar in Photography. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6258. Art Historiography. 3 Credits.
The development of art history as a discipline from the eighteenth century to the present. An investigation of different art historical methodologies, including formal analysis, iconological, feminist, Marxist, semiotic and deconstructivist approaches.

AH 6260. Seminar in African Art. 3 Credits.
Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

AH 6261. Seminar in Asian Art. 3 Credits.
Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

AH 6265. Seminar in Islamic Art and Architecture. 3 Credits.
Topic announced in Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6269. Seminar in Contemporary Art. 3 Credits.
Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

AH 6270. Special Topics in Art History. 3 Credits.

AH 6286. Preventive Conservation Concepts. 3 Credits.
Historical development of preventive conservation in museums, conservation ethics, team approaches to conservation, interactions of various materials with agents of deterioration. Basics of materials testing, preparation of condition reports, choosing museum storage and exhibition materials, and risk assessment. Same as ANTH 6203/ MSTD 6203.

AH 6287. Preventive Conservation Techniques. 3 Credits.
Practical applications of preventive conservation of materials, monitoring environmental conditions, conducting risk assessments, evaluation of exhibit and storage areas; developing plans, policies, and procedures for collections care; grant proposal preparation for collections care initiatives. Same as ANTH 6204/ MSTD 6204.

AH 6298. Independent Research in Art History. 3 Credits.

AH 6299. Museum Internship. 3-12 Credits.

ART THERAPY (ARTH)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ARTH 6201. Survey of Art Therapy. 3 Credits.
The use of the visual arts to enhance personal development and growth; illustrated lectures, readings, discussion, and studio work presented by experts in the field. Instruction is delivered online via Blackboard. No previous art experience is necessary.

ARTH 6205. History and Theory of Art Therapy. 2 Credits.
Art therapy history and theory, milestones and practitioners. The development of art therapy as a distinct therapeutic practice. Overview of psychotherapy theories relevant to art therapy. Open only to art therapy students.

ARTH 6206. Human Development and Art Therapy. 3 Credits.
Psychological and artistic development across the life span. Theories of personality development; cultural and environmental influences; and human behavior, including developmental crises, disability, exceptional behavior, and addictive behavior. Restricted to art therapy students.

ARTH 6210. Counseling/Art Therapy Process. 3 Credits.
Theoretical and clinical dimensions of counseling and art therapy explored through study of current research concerning the diverse elements affecting the therapeutic process. The goals of each phase of treatment; development of the therapeutic alliance; assessment of client readiness; therapeutic techniques and interventions as practiced in short- and long-term treatment.

ARTH 6211. Process of Counseling and Art Therapy: Theory. 3 Credits.
Major theories in counseling and art psychotherapy through the lens of the creative process and other aspects of clinical practice; the influence of multicultural issues, contemporary and evidence-based practices, and various settings on art-making and the therapeutic encounter. Restricted to students in an art therapy program; permission of the instructor may be substituted. Prerequisite: ARTH 6210.

ARTH 6221. Studio/Technique of Art Therapy. 3 Credits.
Direct experience of the therapeutic utility and psychological influence of art processes and materials. Identifying the effect of art-making leading to assessment and intervention strategies. Open only to art therapy students.

ARTH 6231. Child Art Therapy. 2 Credits.
Practical, theoretical, and ethical considerations involved in treating children in clinical and educational settings. Application of art therapy and counseling principles and practice for diverse child populations. Development of interventions for varied DSM–IV diagnoses.

ARTH 6232. Art Therapy with Adolescents. 2 Credits.
Practical, theoretical, and ethical considerations in treating adolescents in clinical and educational settings. Assessment and treatment issues integrating the use of art techniques specifically designed for this population. Application of art therapy and counseling principles and practice for diverse adolescent populations. Development of interventions for varied DSM–V diagnoses. Restricted to students in an art therapy program.

ARTH 6233. Marital and Family Art Therapy/Counseling. 3 Credits.
Principles of working with families and couples, including an overview of systems theories and stages of family life cycle development; art techniques for evaluating of family dynamics; intervention strategies and cultural and ethical considerations. Restricted to students in an art therapy program.

ARTH 6234. Group Process. 3 Credits.
Theoretical and experiential understanding of group art therapy and counseling methods and skills. Principles of group dynamics, therapeutic factors, member roles and behaviors, leadership styles and approaches, selection criteria, and short- and long-term group process.

ARTH 6235. Social and Cultural Diversity. 3 Credits.
Exploration of the therapist's heritage, expectations, worldview and values; racial/cultural identity development; skills for multicultural counseling. Stereotypes and biases that interfere with effective treatment of culturally different clients. The role of the art therapist or counselor in conflict resolution, advocacy, and social justice. May be repeated for credit if taken through the study abroad course option. Restricted to art therapy students.

ARTH 6241. Assessment Procedures. 3 Credits.
Instruments and procedures used in assessment of psychological health and psychopathology; diagnostic and developmental criteria as manifested in artwork and art-making; statistical concepts, including reliability and validity; selection and administration of assessment tools; treatment planning; report writing. Restricted to students in an art therapy program.

ARTH 6242. Psychopathology: Art and Diagnosis. 3 Credits.
Criteria of psychiatric diagnoses, such as the Diagnostic and Statistical Manual multiaxial system, theories of psychopathology, and relevant literature evaluation of potential indicators of functional and organic disorders in behavior and artwork of clients; ethical issues; cultural and environmental influences on diagnostic categorization; basic introduction to psychopharmacology. Restricted to students in an art therapy program; permission of the instructor may be substituted.

ARTH 6243. Substance Abuse and Addictions. 3 Credits.
Overview of substance abuse and addictions for art therapy and counseling, including theory and treatment applications. Screening and assessment tools; treatment models specific to the field of addictions. Art therapy techniques in the treatment of substance abuse for adolescents and adults in a variety of treatment settings. Restricted to ARTH majors only.

ARTH 6251. Research Methods. 3 Credits.
Planning, conducting, and evaluating relevant methodologies, including qualitative and quantitative approaches and basic statistics. The importance of research in the psychotherapy professions; ethical and legal considerations; and the use of research to assess effectiveness of mental health and art therapy services.

ARTH 6261. Ethics and Professionalism. 3 Credits.
Professional identity and the role of the therapist; the ethical practice of counseling and art therapy, including familiarity with ethical standards of various professional organizations; credentialing and licensure; public policy and advocacy for patients and for the profession.

ARTH 6262. Career Counseling and Art Therapy. 3 Credits.
The theoretical foundation and practical experience necessary to understand and support career development needs for diverse individual clients and groups. Career development over the lifespan; assessments, tools, and resources; occupational and labor market trends and resources. Specific art therapy techniques applicable to career counseling in educational and work settings. Restricted to ARTH majors only.

ARTH 6265. Advanced Issues in Psychotherapy and Art Therapy. 1-3 Credits.
Overview and application of one or more treatment models or theories to various mental and emotional disorders. Connections between the practice of art therapy and the techniques of other disciplines.

ARTH 6271. Art Psychotherapy and Trauma I: Theory and Approaches to Treatment. 0-3 Credits.
Introduction and overview of theory, practice, and treatment related to complex, trauma-related problems; psychobiology of traumatic stress, impact of traumatic stress on individuals, and specific treatment modalities in clinical setting; somatic (body-based) and nonverbal (art and image-based) treatment modalities. Supervised treatment or observation of treatment of clients with trauma histories. Restricted to students in an art therapy program.

ARTH 6272. Art Psychotherapy and Trauma II: Loss, Countertransference, and Resiliency. 3 Credits.
Multi-modal treatment of acute, serial, or complex trauma; theoretical, practical, moral, cross cultural, and personal aspects as seen through an art therapy and counseling lens. Supervised treatment or observation of treatment of clients with trauma histories. Restricted to students in an art therapy program. Prerequisite: ARTH 6271.

ARTH 6281. Practicum in Art Therapy. 1-2 Credits.
A total of 900 hours of clinical fieldwork in a professional setting. Supervised clinical experience with clients or patients in psychiatric, rehabilitation, and education settings with children, adolescents, and adults. On-site individual supervision by clinical instructors; on-campus group supervision by faculty. Open only to art therapy students.

ARTH 6292. Special Projects in Art Therapy. 1-12 Credits.
Individual work based on research. Empirical, clinical, and library research may be undertaken, as well as the development of new procedures. Details to be worked out with each student. May be repeated for credit with advisor's approval. Open only to art therapy students.

ARTH 6998. Thesis Research. 3 Credits.

ARTH 6999. Thesis Research. 3 Credits.

ASTRONOMY (ASTR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ASTR 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details. Restricted to first-year students in CCAS.

ASTR 1001. Stars, Planets, and Life in the Universe. 4 Credits.
Primarily for non-science majors. An introduction to how our Universe is structured, including the basic principles underlying astronomical systems and observations. Topics include the known laws of nature, stars, and planetary systems and the conditions for extraterrestrial life and exploration. Prerequisite: high school algebra. Laboratory fee.

ASTR 1002. Origins of the Cosmos. 4 Credits.
Primarily for non-science majors. A description of the Universe, its origins and its evolution, based on known physical principles. Topics include galactic and stellar structure, black holes, origin of the elements, and big bang cosmology. Prerequisite: high school algebra. Laboratory fee.

ASTR 1003. Introduction to Astronomy. 2 Credits.

ASTR 1004. Introduction to Astronomy. 2 Credits.

ASTR 2121. Introduction to Modern Astrophysics. 3 Credits.
Introduction to the concepts and methods of modern astrophysics. Physical processes behind the origin, structure and evolution of stars and galaxies, based on physical principles and modern astronomical observations. Topics include the energy source of the Sun, the stellar life cycle, galaxies, and the structure and fate of the Universe. Prerequisites: PHYS 1012 or PHYS 1022.

ASTR 2131. Astrophysics Seminar. 3 Credits.
Course led each week by a different expert in the research on various astrophysical sources and phenomena. Topics may include the life and death of stars; most violent explosions in the universe; evolution of galaxies; and evolution of the universe on the largest scales. Prerequisite: PHYS 1012 or PHYS 1022.

ASTR 2141. Data Analysis in Astrophysics. 3 Credits.
Principles of data analysis in astrophysics; basic analysis of astronomical data from NASA satellites and ground-based telescopes; linking measurements from the data to physics concepts; observing programs and proposals; study of cosmic phenomena through practical experience with data. Students should have completed a programming course before enrolling. Prerequisites: PHYS 1012 or PHYS 1022. Recommended background: prior study in physics or astrophysics.

ASTR 3161. Space Astrophysics. 3 Credits.
Physical processes of celestial phenomena as determined from space-based instrumentation. While the entire electromagnetic spectrum is covered, the high-energy (X-ray and gamma ray) region is emphasized. Results from ground-based instrumentation (e.g., radio and optical) may be introduced. Prerequisites: PHYS 1022.

ASTR 3183. General Relativity. 3 Credits.
Einstein's general theory of relativity; special theory of relativity, the nature of space and time, the equivalence principle, Riemannian geometry, Einstein's proposal, tests of the theory, Schwarzschild and Kerr solutions, Hawking radiation, and cosmological models. Prerequisites: MATH 3342 and PHYS 2023.

ASTR 4195. Undergraduate Research in Astrophysics. 3 Credits.
Research on problems in astrophysics approved by the faculty. May be repeated once for credit.

BIOCHEMISTRY (BIOC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BIOC 3261. Introductory Medical Biochemistry. 4 Credits.
Introduction to structures of biological macromolecules, enzyme catalysis, cellular bioenergetics, and metabolism. Same as BISC 3261. Prerequisite CHEM 2151– CHEM 21 52. Credit toward the degree cannot be earned for this course and for CHEM 3165.

BIOC 3262. Biochemistry Laboratory. 2 Credits.
Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Same as BISC 3262/ CHEM 3262. Prerequisite: BIOC 3261/ BISC 3261 . Laboratory fee.

BIOC 3263. Special Topics in Biochemistry. 2 Credits.
In-depth discussion of current biochemically relevant topics, including cancer and HIV chemotherapy, immune response, photosynthesis, signal transduction, hormone regulation and nutrition. Same as BISC 3263. Prerequisite: BIOC 3261/ BISC 3261 . Credit toward the degree cannot be earned for this course and for CHEM 3166.

BIOC 3263W. Special Topics in Biochemistry. 2 Credits.

BIOC 3560. Diet, Health, and Longevity. 3 Credits.
Biochemical and molecular explanations of how calorie intake affects health; scientific principles of dieting. Prerequisite: BIOC 3261 or BISC 1005 or EXSC 2114 or EXSC 2119.

BIOC 3564. Lipid Biotechnology. 0-2 Credits.
Same as BISC 3564/ CHEM 3564. Prerequisite: BIOC 3261/ BISC 3261 . Laboratory fee.

BIOC 3820. Bioinformatics and Computational Biochemistry. 2 Credits.
How biomedical researchers integrate information from molecular biology resources for analysis and testing of hypotheses. Prerequisite: BISC 1111; STAT 1127.

BIOC 3821. Projects in Biomed Informatics. 1-2 Credits.

BIOC 4195. Undergraduate Research. 1 Credit.
Research conducted under a mentor who is a member of the department. May be repeated for credit (only 1 credit may count toward the minor). Prerequisites: permission of the faculty member concerned.

BIOC 4701. Science and Medicine. 0-4 Credits.
A broad overview of several biomedical discoveries made in the 20th century and the often profound influence they have had on medical technology and on new directions in science and medicine, science administration, politics, ethics, and philosophy. (Same as HONR 2175).

BIOC 6201. Medical Biochemistry. 7 Credits.
Required for medical students. Lecture and laboratory; emphasis on basic principles and their relation to medicine.

BIOC 6209. Resch Elective in Medical BioC. 1-12 Credits.

BIOC 6211. Biochem-Health Sci Students. 3,4 Credits.
Basic concepts of biochemistry and their relation to health sciences.

BIOC 6221. Proteins, Pathways, and Human Health. 4 Credits.
A comprehensive course in general biochemistry for graduate students in biomedical sciences. Prerequisite: CHEM 2152, CHEM 2154.

BIOC 6222. Biochemical Genetics and Medicine. 3 Credits.
Continuation of BIOC 6221. A comprehensive course in general biochemistry for graduate students in biomedical sciences. Prerequisite: CHEM 2152, CHEM 2154.

BIOC 6223. Bioinformatics. 2 Credits.
The application of bioinformatics concepts and methods through the use of molecular biology databases and tools, covering molecular evolution, and protein sequence, structural, functional analysis. Recommended background: One undergraduate biochemistry course.

BIOC 6224. Molec biol and protein methods. 3 Credits.
Common laboratory techniques used in life science laboratories to separate and characterize proteins, including chromatography, gel electrophoresis, immunoassays, spectroscopy, and centrifugation. Corequisite: BIOC 6221. Laboratory fee.

BIOC 6227. Biochemistry Seminar. 1 Credit.
Current literature in biochemistry. Limited to graduate students in the department. May be repeated for credit.

BIOC 6234. Biochemical and Bioinformatic Approaches to Protein Structure and Function. 3 Credits.
Molecular biological, biophysical, chemical, and bioinformatic approaches to understanding protein structure and function. Protein folding, interactions, and ligand binding.

BIOC 6235. Seminar in Genomics, Proteomics, and Bioinformatics. 1 Credit.

BIOC 6236. Medical Genomics. 2 Credits.
The structure and function of genes and genomes. Genomic theories, methods, and data analysis including bioinformatics and database mining. Prerequisite or corequisite: BIOC 6221–BIOC 6222.

BIOC 6237. Proteomics and biomarkers. 2 Credits.
Experimental proteomics, protein/proteome analysis, bioinformatics of proteomics, systems biology and structural genomics. Prerequisite: BIOC 6236.

BIOC 6238. Experimental Genomics Lab. 3 Credits.
Research applications of knowledge in genomics and proteomics. Prerequisite: BIOC 6236. Laboratory fee.

BIOC 6240. Next Generation Sequencing. 2 Credits.

BIOC 6250. Molecular Biology. 3 Credits.
Content includes the organization and replication of genetic material, transcriptional and translational machinery, regulation of eukaryotic gene expression, and other special topics. Prerequisite: BIOC 6221–BIOC 6222.

BIOC 6252. Current Laboratory Methods in Molecular Biology. 3 Credits.
Corequisite: BIOC 6221. Laboratory fee.

BIOC 6254. Fundamentals of Molecular Biology. 3 Credits.
An intermediate-level molecular biology survey course. Prerequisite: BIOC 6221.

BIOC 6260. Analytic Methods for Lipids and Carbohydrates. 3 Credits.
Basic techniques in the biotechnology of lipids and carbohydrates. Prerequisite: BIOC 6221.

BIOC 6262. Genes, diets and aging. 3 Credits.

BIOC 6264. Membrane-Assoc Complex Lipids. 1 Credit.

BIOC 6281. Topics. 1,2 Credit.
Directed readings in biochemistry, molecular biology, and genetics. May be repeated for credit. Enrollment limited to graduate students in the department.

BIOC 6290. Extramural BioChem Elective. 1-12 Credits.

BIOC 6291. Extramural BioChem Elective. 1-12 Credits.

BIOC 6295. Research. 1-12 Credits.
Participation in a project under investigation or in a field suggested by the student and approved by the staff. May be repeated for credit. Laboratory fee.

BIOC 6298. Advanced Reading. 1-6 Credits.
Limited to master's degree candidates. May be repeated for credit to a maximum of 6 hours.

BIOC 6998. Thesis Research. 3 Credits.

BIOC 6999. Thesis Research. 3 Credits.

BIOC 8225. Metabolism. 4 Credits.
Metabolic pathways and integration of metabolic processes. Limited to Ph.D. students in the Institute for Biomedical Sciences.

BIOC 8231. Bioc Basis of Human Diseases. 3 Credits.
Biochemical perspectives on disorders involving metabolic alterations, immunological dysregulation, problems of environmental/toxicological etiology, genetic/epigenetic dysfunction, neglected tropical diseases. Prerequisite: BmSc 8210, 8212.

BIOC 8232. Mol Cell Signaling. 3 Credits.

BIOC 8501. Issues in Clinical Nutrition. 3 Credits.

BIOC 8502. Molecular Biology of Oncogenes. 1-12 Credits.

BIOC 8503. Readings in Immunology. 3 Credits.

BIOC 8800. Summer Remedial Biochemistry. 8 Credits.

BIOLOGICAL SCIENCES (BISC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BISC 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details. Restricted to First-year students in CCAS.

BISC 1001. Departmental Seminar. 0 Credits.

BISC 1005. The Biology of Nutrition and Health. 3 Credits.
A study of the human body and its disorders and diseases through examination of the essential molecules of life, nutrition, digestion, genetics, and reproduction. For non-majors. Same as BISC 1007.

BISC 1006. The Ecology and Evolution of Organisms. 3 Credits.
Introduction to ecology and evolution, including man's impact on other plants and animals, and an overview of Earth's biodiversity. For non-majors.

BISC 1007. Food, Nutrition, and Service. 3 Credits.
A study of biology and nutrition that uses service learning to reinforce course concepts. Topics include the need for humans to consume other organisms, processing of consumed nutrients, unexpected effects of nutritional consumption, and measures to improve nutrition.

BISC 1008. Understanding Organisms through Service Learning. 3 Credits.
The evolution of life on earth; the value of other organisms, their role in our world, and how humans can cause harm to this infrastructure. Students work with a community partner to perform activities that assist the partner while reinforcing course concepts.

BISC 1111. Introductory Biology: Cells and Molecules. 4 Credits.
Nutrition and metabolism, cellular and developmental biology, genetics, and molecular biology of plants and animals. Laboratory fee.

BISC 1112. Introductory Biology: The Biology of Organisms. 4 Credits.
Concepts and methods in the study of whole organisms. Evolutionary theory; population biology; diversity of plants, animals, fungi, and microorganisms; ecology and behavior; and animal structure and function. Laboratory fee.

BISC 1116. Introductory Biology: The Biology of Organisms. 3 Credits.
Concepts and methods in the study of whole organisms; evolutionary theory; population biology; diversity of plants, animals, fungi, and microorganisms; ecology and behavior; and animal structure and function.

BISC 1120. Laboratory Introduction to Biomolecular Research. 2 Credits.
Research methods in the study of proteins and DNA; focus on preparation for working with faculty members on their research. Faculty approval is required prior to registration. Laboratory fee. Prerequisites: BISC1111 or BISC 1115. (Same as BISC 1125, HONR 1120).

BISC 1125. Introduction to Cells and Molecules Laboratory. 1 Credit.
Laboratory associated with BISC 1115. Experimental methods in the study of cells and molecules, proteins, enzymes, DNA, and molecular genetics. Prerequisites: BISC1115.

BISC 1126. Introduction to Organisms Laboratory. 1 Credit.
Laboratory associated with BISC 1116. Experimental methods in the study of whole organisms; population biology; diversity of plants, animals, fungi, and microorganisms; ecology and behavior; and animal structure and function. Laboratory fee. Prerequisites: BISC 1116.

BISC 2000. Sophomore Colloquium. 3 Credits.
Topics on biological diversity from the perspective of species and within the conceptual framework of evolutionary biology. The explanatory power, simplicity, and grandeur of evolution and its products. Consideration of how questions and hypotheses are empirically addressed. Restricted to sophomores, registration by department approval. Prerequisites: Bisc 1111 and Bisc 1112.

BISC 2202. Cell Biology. 3 Credits.
Structure and function of biological molecules and cellular organelles; cellular interactions. Prerequisite: BISC 1111– BISC 1112 except by permission of the instructor and one semester of organic chemistry.

BISC 2207. Genetics. 3 Credits.
Introduction to genetics, with emphasis on the integration of transmission of genetic traits and the molecular basis of gene action. Also includes cytogenetics, gene regulation, and examples of current applications of genetic technology. Prerequisites: BISC 1111, BISC 1112 or permission of the instructor.

BISC 2208. Genetics Laboratory. 1 Credit.
Study of genetic principles and genetic and molecular techniques in Drosophila and E. coli. Benchwork and comparative genomics using bioinformatics. Prerequisites: BISC 1111, BISC 1112, prior or concurrent enrollment in GEN 2207, or permission of instructor.

BISC 2213. Biology of Cancer. 3 Credits.

BISC 2214. Developmental Biology. 3 Credits.
The molecular processes and cellular phenomena that result in the formation of organized tissues and functional organisms; formation of early body plan, cell type determination, organogenesis, morphogenesis, stem cells, cloning, and issues in human development. Prerequisites: BISC 1111 and BISC 1112.

BISC 2215. Genome Editing Laboratory. 1 Credit.
Genome Editing Laboratory. Practical training in genome editing in, from sequence design to molecular biology, generation of edited animals, and phenotypic analysis. Each student is assigned a personal research project involving CRISPR, a technique that is changing the landscape of biological research and medicine. Meets once a week for 3-4hours. Requires BISC 1111, BISC 1112, prior or concurrent enrollment in BISC 2214, or permission of instructor. Prerequisites: BISC 1111 and BISC 1112.

BISC 2220. Developmental Neurobiology. 3 Credits.
The molecular mechanisms that guide neural development: events surrounding the birth of neurons, how specific neurons are determined, how neurons find the correct targets, how cell death guides proper neural development, and how synapses are formed and maintained. Prerequisites: BISC 1111, BISC 1112 or permission of the instructor.

BISC 2305. Plant Biology. 3 Credits.
Plant metabolism and molecular biology: photosynthesis, nitrogen metabolism, membrane transport, mechanisms of hormone action, protein targeting, biotechnology, and current research topics. Prerequisites: BISC 1111, BISC 1112, CHEM 1111 and CHEM 1112; or permission of the instructor.

BISC 2318. Histology. 4 Credits.
Lecture (2 hours), laboratory (4 hours). Introduction to microscopical anatomy of normal tissues and organs with emphasis on the interrelationship of structure and function. Prerequisite: BISC 1111, BISC 1112 or permission of the instructor.

BISC 2320. Neural Circuits and Behavior. 3 Credits.
The cellular and molecular properties of neural circuits that form the basis of behavior. Circuit properties and behaviors across a variety of invertebrate and vertebrate taxa. Individual neuronal units, the organizational principles and emergent properties of neural circuits, and how these neuronal ensembles influence behavior.

BISC 2322. Human Physiology. 3 Credits.
Introduction to the function of organ systems of the human body. Prerequisites: CHEM 1111, CHEM 1112, BISC 1111, BISC 1112 or permission of the instructor.

BISC 2330. Invertebrate Zoology. 4 Credits.
Lecture (2 hours), laboratory (4 hours). General survey of invertebrate animals, including classification, morphology, physiology, embryology, and evolutionary relationships among phyla. Prerequisites: BISC 1111, BISC 1112 or permission of the instructor.

BISC 2331. Insect Biology. 3 Credits.
Overview of the class Insecta, focusing on insect external and internal morphology, classification, ecology/behavior, collection, and specimen preparation. Prerequisites: BISC 1111 and BISC 1112.

BISC 2332. Comparative Vertebrate Anatomy. 4 Credits.
Evolution and comparative morphology of phylum Chordata, stressing recent forms. Laboratory fee. Prerequisites: BISC 1111 and BISC 1112 or permission of the instructor.

BISC 2333. Evolution and Extinction of Dinosaurs. 3 Credits.
The 165-million-year history of dinosaurs; different groups and their evolution, end-Cretaceous extinction event, the origin of birds, and the biology of the group. Prerequisites: BISC 1111 and BISC 1112; or GEOL 1001 and GEOL 1002 or GEOL 1002 and GEOL 1005. Same as GEOL 2333.

BISC 2334W. Integrative Biology of Fishes. 3 Credits.
An introduction to concepts in anatomy, biomechanics, physiology, developmental biology, biomechanics and hydrodynamics, adaptive radiation, evolutionary biology, and ecology using fish as model organisms. Significant fish groups are covered, but emphasis is on exploring broader topics in which fish have figured prominently in research.

BISC 2335. Insect Biology Lab. 1 Credit.
An overview of insects, with an emphasis on ecology, behavior, economic importance, and the key adaptations that characterize the evolution of this diverse group. This lab will teach basic internal and external anatomy, field collection methods, insect identification, and discussion of the primary literature. Laboratory fee. Prerequisite: BISC 2331.

BISC 2337. Introductory Microbiology. 4 Credits.
Lecture (2 hours), laboratory (4 hours). Survey of the major groups of microorganisms with emphasis on structure, physiology, ecology, pathogenesis, and biotechnology. Antibiotic resistance and emerging diseases. Prerequisites: CHEM 1111, CHEM 1112, BISC 1111, BISC 1112, or permission of instructor.

BISC 2337W. Introductory Microbiology. 4 Credits.
Lecture (2 hours), laboratory (4 hours). Survey of the major groups of microorganisms with emphasis on structure, physiology, ecology, pathogenesis, and biotechnology. Antibiotic resistance and emerging diseases. Prerequisites: BISC 1111 and BISC 1112 and CHEM 1111 and CHEM 1112 or permission of the instructor.

BISC 2339. Parasitology. 4 Credits.
Introduction to animal parasitology; survey of parasitic types from protozoa through arthropods. Laboratory fee. Prerequisite: BISC 1111 and BISC 1112 or permission of the instructor.

BISC 2450. Organic Evolution. 3 Credits.
Synthetic theory of organic evolution, including population biology, speciation, adaptation, macroevolution, systematics, biogeography, and the geologic record. Prerequisites: BISC 1111, BISC 1112, or permission of instructor.

BISC 2451. History of Life. 3 Credits.
Overview of life through time; the origin of life, evolution of major groups of organisms, and important methodologies used in paleontology. Prerequisites: BISC 1111 and BISC 1112 or permission of the instructor. Same as GEOL 2151.

BISC 2452. Animal Behavior. 4 Credits.
An evolutionary approach to the study of animal behavior, emphasizing behavioral ecology and sociobiology. Prerequisite: BISC 1111 and BISC 1112 or permission of the instructor.

BISC 2453. Animal Behavior Lab. 1 Credit.
Methods used in the study of animal behavior; observation, basic statistical analysis, and experimental design; review and evaluation research materials. Prerequisites: BISC 1111 and BISC 1112. Recommended background: Prior or concurrent enrollment in BISC 2452.

BISC 2454. General Ecology. 4 Credits.
The core concepts of the field of ecology across different hierarchical scales of ecological systems. Prerequisites: BISC 1111 and BISC 1112 or permission of the instructor.

BISC 2456. General Ecology Laboratory. 1 Credit.
Practical exercises and field-trips are used to explore the core concepts of the field of ecology across different hierarchical scales of ecological systems. Laboratory fee. Prerequisites: BISC 1111 and BISC 1112.

BISC 2467. Marine Biology. 3 Credits.
Study of relationships between organisms and physical, chemical, and biological factors of the marine environment. Consideration of the open ocean and coastal ecosystems and human influences on them. Prerequisite: BISC 1111 and BISC 1112 or permission of the instructor.

BISC 2580. Biotechnology. 3 Credits.
Genetic engineering of bacteria, plants, and animals, including humans. Applications of modern biotechnology, especially in the field of medical biotechnology, such as gene therapy, xenotransplantation, and the Human Genome Project. Regulation, prospects, and social impact of biotechnology. Prerequisites: CHEM 2151, CHEM 2152, CHEM 2153, CHEM 2154, BISC 1111 and BISC 1112. Recommended background: BISC 2202 or BISC 2207.

BISC 2580W. Biotechnology. 3 Credits.
Genetic engineering of bacteria, plants, and animals, including humans. Applications of modern biotechnology, especially in the field of medical biotechnology, such as gene therapy, xenotransplantation, and the Human Genome Project. Regulation, prospects, and social impact of biotechnology. Prerequisites: BISC 1111, BISC 1112, CHEM 2151, CHEM 2152, CHEM 2153, and CHEM 2154. Recommended background: BISC 2202 or BISC 2207. Same as BISC 2580.

BISC 2581. Human Gross Anatomy. 3 Credits.
The structural organization of the human body and how it relates to regional and systems-based functions. Emphasis on the macroscopic structure of the body. Prerequisite: BISC 1111– BISC 1112 except by permission of the instructor. Same as ANAT 2181.

BISC 2583. Biology of Proteins. 3 Credits.
About half of the proteins in the human genome have unknown functions. Are some related to cancers, muscle degeneration, infectious disease? How can evolutionary relationships among proteins from other organisms help us discover functions of unknown proteins? Laboratory fee. Prerequisite: AP or IB Biology or Chemistry.

BISC 2584. Introduction to Bioinformatics. 3 Credits.
The use of computational techniques in molecular biology, genetics, and evolution; techniques and software for database searching, sequence alignment, gene finding, phylogenetics, genomics, and proteomics. Prerequisites: BISC 1111 and BISC 1112. (Same as CSCI 3571).

BISC 3122. Human Physiology. 3 Credits.
Introduction to the function of organ systems of the body. Prerequisites: BISC 1111, BISC 1112, CHEM 1111, CHEM 1112, and BISC 2207 or BISC 2202 or permission of instructor.

BISC 3123. Human Physiology Lab. 1 Credit.
Basic physiology laboratory techniques; emphasis on the experimental study of homeostatic mechanisms in humans. Laboratory fee. Prerequisites: BISC 1111, BISC 1112 and BISC 2322.

BISC 3165. Biochemistry I. 3 Credits.
Introduction to the chemistry of living cells; structure and function of proteins, lipids, carbohydrates, and nucleic acids; enzyme structure, mechanism, and regulation. Prerequisites: BISC 1111, BISC 1112, CHEM 2151 and CHEM 2152; course equivalents may be substituted for BISC 1111 and BISC 1112 at the discretion of the instructor. Same as CHEM 3165.

BISC 3166. Biochemistry II. 3 Credits.

BISC 3209. Molecular Biology. 4 Credits.
Overview of theories, techniques, and procedures associated with molecular biology. The biosynthesis of DNA, RNA, and proteins; relationships among structure, function, and expression; and traditional and modern methods of gene and protein characterization and monitoring. Prerequisites: BISC 1111, BISC 1112, CHEM 1111, and CHEM 1112.

BISC 3210. Nanobiotechnology. 3 Credits.
Theory and application of nanotechnologies in biology and medicine. Strategies for studying the organization, function, and complexity of biological systems at nanometer scale. Several areas of research are covered, including high-resolution cellular and molecular imaging, spectroscopy, and optical tweezers. Prerequisites: BISC 2202 or BISC 3261 or permission of instructor and BISC 1111 and BISC 1112 or permission of the instructor.

BISC 3211. Nanobiotechnology Laboratory. 1 Credit.
Modern instrumental techniques for analyzing biological structures and processes at the nanometer level; combining nano- and conventional techniques to answer scientific questions. Students formulate, design, and implement a research project. Prerequisites: BISC 1111, BISC 1112 and BISC 3210.

BISC 3212. Immunology. 3 Credits.
Introduction to mammalian immunology covering the progression of immune responses from initial pathogen contact to immune memory. Applied topics include autoimmunity, transplantation, and the effects of HIV on the immune system. Prerequisites: BISC 1111, BISC 1112, BISC 2202, CHEM 2151, CHEM 2153. Recommended background: BISC 2207 or BISC 2322.

BISC 3261. Introductory Medical Biochemistry. 4 Credits.
Introduction to structures of biological macromolecules, enzyme catalysis, cellular bioenergetics, and metabolism. Same as BIOC 3261. Prerequisite: CHEM 2151–CHEM 2152. Credit toward the degree cannot be earned for this course and for CHEM 3165.

BISC 3262. Biochemistry Laboratory. 2 Credits.
Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Laboratory fee. Prerequisites: BISC 3261, BISC 1111 and BISC 1112.

BISC 3263. Special Topics in Biochemistry. 2 Credits.
In-depth discussion of current biochemically relevant topics, including cancer and HIV chemotherapy, immune response, photosynthesis, signal transduction, hormone regulation, and nutrition. Topics vary by semester. May be repeated for credits provided topic differs. Consult the Schedule of Classes for more details. Prerequisites: BISC 1111, BISC 1112 and BISC 3261 or permission of the instructor. Same as BIOC 3263.

BISC 3320. Human Neurobiology. 3 Credits.
Introduction to the function of the human nervous system, gross and microscopic structure, and neurophysiology of the brain, spinal cord, and nerves; alterations caused by disease or injury. Prerequisite: BISC 1111 and BISC 1112; and BISC 2202 or BISC 3261.

BISC 3450. Evolutionary Medicine. 3 Credits.
The application of evolutionary principles, including natural selection, adaptation, phylogenetics, and evolutionary constraints, to understanding health, disease, and the biology of disease-causing organisms (viruses, bacteria, and parasites). How natural selection and phylogeny influence pathogen-host interactions, human genetics, immunology, development, cancer, and diseases of senescence. Prerequisites: BISC 1111 and BISC 1112. Recommended background: BISC 2207 and BISC 2450.

BISC 3450W. Evolutionary Medicine. 3 Credits.
The application of evolutionary principles, including natural selection, adaptation, phylogenetics, and evolutionary constraints, to understanding health, disease, and the biology of disease-causing organisms (viruses, bacteria, and parasites). How natural selection and phylogeny influence pathogen-host interactions, human genetics, immunology, development, cancer, and diseases of senescence. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: BISC 1111 and BISC 1112. Recommended background: BISC 2207 and BISC 2450. Same as BISC 3450.

BISC 3458. Plant Comparative Structure and Function. 3 Credits.
Fundamental principles of how organisms are built, investigating trade-offs and coordination in design, how variation in structure influences physiological function in different ecological settings, and how relations among plants shape structure and function and responses to ecological gradients. Prerequisite: BISC 1111 and BISC 1112 or permission of instructor.

BISC 3459. Field Biology. 4 Credits.
Overview of the approaches and techniques used by contemporary field biologists for cataloging, quantifying, and comparing patterns of biodiversity across plants, animals, and fungi at multiple spatial and temporal scales. Prerequisites: BISC 1111 and BISC 1112. Recommended background: BISC 2454.

BISC 3460. Conservation Biology. 3 Credits.
Theory and practice of conserving biological diversity. Ecological patterns of biodiversity, biology of small populations, and conservation case studies. Use of ecological modeling software to explore various topics. Prerequisites: BISC 1111, BISC 1112 and BISC 2454; or permission of the instructor.

BISC 3461. Plant-Animal Interactions. 3 Credits.
Review of the major ecological and evolutionary interactions that occur between plants and animals in natural and managed ecosystems. Prerequisites: BISC 1111 and BISC 1112 or permission of the instructor. Recommended background: BISC 2450 or BISC 2454.

BISC 3462. Plant¾Animal Interactions Laboratory. 1 Credit.
Field and laboratory study of temperate interactions between plants and animals. Group projects focus on original data collection, analysis, and interpretation. Prerequisite or concurrent registration: BISC 3461 and BISC 1111– BISC 1112 except by permission of the instructor. Laboratory fee.

BISC 3463. Ecological and Evolutionary Genetics. 3 Credits.
An analysis of the ecological and genetic basis of evolutionary change. Topics include the organization and maintenance of genetic variation within and among natural populations, the genetic basis of complex traits, molecular ecology analyses, and genotype by environment interactions. Prerequisite: BISC 2450 or permission of instructor and BISC 1111– BISC 1112 except by permission of the instructor.

BISC 3464. Ecology and Evolution of Societies. 3 Credits.
Study of broadly important ecological and evolutionary patterns and processes exemplified by organisms that have undergone the major evolutionary transition to living in societies. Prerequisites: BISC 1111, BISC 1112. Recommended background: BISC 2454 or BISC 2454W.

BISC 4132. Advanced Cellular-Molecular Biology. 3 Credits.
An advanced cell biology course with emphasis on biochemistry and molecular biology; illustrations are drawn from different organisms and human biology. Oral and written analysis of research literature. For upper-level undergraduates and beginning graduate students. Restricted to Instructor approval required. Recommended background: Six credits in the Cellular and Molecular category.

BISC 4171. Undergraduate Research. 1-12 Credits.
Admission by permission of the staff member concerned. May be repeated for credit. Prerequisite: CHEM 2152 and BISC 1111– BISC 1112 except by permission of the instructor; 16 credit hours in biological science courses. Laboratory fee.

BISC 4171W. Undergraduate Research. 1-12 Credits.
Admission by permission of the staff member concerned. May be repeated for credit. Prerequisite: Chem 2152 and BISC 1111– BISC 1112 except by permission of the instructor; 16 credit hours in biological science courses. Laboratory fee.

BISC 4172. Independent Study. 1-3 Credits.
Prescribed reading list and consultations with staff advisor culminating in a written report and/or examination. Prerequisite: BISC 1111– BISC 1112 and permission of the instructor.

BISC 4173. Independent Study-Developmental Biology. 2 Credits.

BISC 4174. Independent Study-Organismic Biology. 2 Credits.

BISC 4175. Independent Study-Genetic/Evolutionary Biology. 2 Credits.

BISC 4176. Independent Study-Environmental Bio. 2 Credits.

BISC 4180. Undergraduate Research Seminar. 1 Credit.

BISC 6101. Responsible Research. 1 Credit.
This course provides an introduction to the ethical, social, and legal foundations of scientific practice. It is intended to provide a forum for graduate students and postdocs to discuss almost every aspect of the academic life of a scientist, except specific disciplinary topics that are treated in regular courses. Ensuring ethical conduct is an essential part of basic, applied, and clinical research, especially in the context of competitive, collaborative, and international settings so common nowadays. Students will be exposed to case studies typifying complex social, ethical, and legal dilemmas that may arise in the conduct of research.

BISC 6102. Scientific Presentation. 1 Credit.
This course allows students to perfect their Scientific Presentation skills. In this course, students will present, in front of peers and faculty, their current research projects and plans for future work leading towards a complete thesis or dissertation. Student presentations will be designed to address a general audience of biologists, containing sufficient background information to provide perspective insights into the fundamental questions being asked, and at the same time providing enough detail on technical issues and analytical procedures to allow evaluation of potential outcomes. The Class will provide a friendly forum for students to collect feedback and comments, to discuss project design, content, and general significance of their research.

BISC 6132. Advanced Cellular-Molecular Biology. 3 Credits.
Advanced cellular biology for upper-level undergraduates and beginning graduate students; emphasis on biochemistry and molecular biology; organisms and human biology with emphasis on oral and written analysis of research literature. Permission of the instructor is required. Restricted to students who have completed 16 credits of 2000-4000 level biology courses, including 6 credits in the cell and molecular category. Prerequisites: Graduate standing or undergraduates with 16 credits of 2000-4000 level biology courses, including 6 credits in the Cell and Molecular category and permission of instructor. Recommended background: 4-6 upper level biology courses, including 2 courses in the Cell and Molecular area.

BISC 6205. Current Topics in Cell Smith, Donaldson, Eleftherianos, Jeremic. 1-2 Credits.
May be repeated for credit. Prerequisite: BISC 2202 or BISC 3209.

BISC 6206. Current Topics in Evolutionary Ecology. 1-2 Credits.
May be repeated for credit.

BISC 6207. Seminar: Current Topics in Systematic Biology. 1-2 Credits.
Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs. Prerequisite: BISC 6210.

BISC 6210. Methods of Study of Evolution. 4 Credits.
A rigorous and up-to-date treatment of the theory and methods of systematics, including phylogenetic inference and its applications in evolutionary biology. Laboratory fee. Prerequisite: BISC 2450 .

BISC 6211. Biogeography/Coevolution. 4 Credits.
Survey of methods, techniques, and theory in biogeography. Geological and paleontological aspects of biogeography; large-scale biogeographic patterns; speciation and phylogeography. Prerequisite: BISC 2451 or BISC 2452 or permission of the instructor.

BISC 6213. Descriptive Systematics: Documenting Biodiversity. 3 Credits.
Study of those aspects of systematic biology concerned with description and inventory of biodiversity. Prerequisite: BISC 6210.

BISC 6214. The Phylogenetic Basis of Comparative Biology. 3 Credits.
The use of phylogenetic hypotheses to study questions in evolutionary biology and ecology. Prerequisite: BISC 6210; STAT 1127 .

BISC 6215. Vertebrate Phylogeny. 4 Credits.
A survey of vertebrate diversity, emphasizing evolutionary relationships and adaptations of the major groups. Prerequisite: BISC 2450 ; BISC 2332 recommended.

BISC 6216. Morphological Systematics. 4 Credits.
Methods of studying organismal morphology as a means of inferring phylogeny, emphasizing the concept of homology. Laboratory includes techniques of observing, measuring, and imaging morphology in systematic biology, including morphometric methods. Laboratory fee. Prerequisite: BISC 6210 .

BISC 6218. Innate Immunity. 3 Credits.
Discussion of innate immune systems in a wide variety of organisms; from sponges to vertebrates plus higher plants. Prerequisite: BISC 3212; recommended BISC 2202, BISC 2207, BISC 3209, BISC 2330.

BISC 6219. Host-Microbe Interactions. 3 Credits.
Overview of the molecular, genetic, cellular, and physiological basis of symbiotic and pathogenic interactions between plants and invertebrate and vertebrate animals and various microbial organisms, including bacteria, fungi, and viruses. Prerequisites: Microbiology (BISC 2337). Recommended background: Intro to Immunology (BISC 3212); Cell Biology (BISC 2202); Invertebrate Zoology (BISC 2330); Parasitology (BISC 2339), or permission of instructor.

BISC 6224. Molecular Evolution. 3 Credits.

BISC 6225. Molecular Phylogenetics. 4 Credits.
Review of molecular phylogenetic methods including data recovery, alignment, weighting, character optimization, and phylogenetic inference methods. Prerequisite: BISC 2207, BISC 2450, and BISC 6210.

BISC 6227. Seminar: Genetics. 3 Credits.
Review of selected topics in genetics, with emphasis on current literature; topics of special interest to participants encouraged. May be repeated for credit. Prerequisite: BISC 2207.

BISC 6228. Population Genetics. 3 Credits.
Origin, maintenance, and possible significance of genetic variation in populations. Selection, genetic drift, and population structure are emphasized. Both theoretical and applied aspects of population genetics are discussed. Same as FORS 6247. Prerequisite: BISC 2207.

BISC 6230. Human Genetics. 3 Credits.
Genetic mechanisms of transmission and expression of human traits, with emphasis on biochemical and cytogenetic aspects. Prerequisite: BISC 2207; previous course work in cell biology or cell biochemistry strongly recommended.

BISC 6243. Seminar: Ecology. 3 Credits.
In-depth study of selected topics, including reports on original publications. May be repeated for credit. Prerequisite: BISC 2454.

BISC 6249. Seminar: Developmental Biology. 3 Credits.
Discussion and reports on recent research on the endocrinological, genetic, and biochemical aspects of animal development. Prerequisite: a course in developmental biology or cell biology.

BISC 6251. Evolutionary Developmental Biology. 3 Credits.
Developmental mechanisms involved in the morphological changes that occur during the course of evolution.

BISC 6252. Seminar: Neurobiology. 3 Credits.
Study of current publications in functional neurobiology. May be repeated for credit with instructor's permission.

BISC 6274. Gene Regulation and Genetic Engineering. 3 Credits.
The control of gene expression as illustrated by several prokaryotic and eukaryotic model systems: discussions of recombinant DNA techniques. Prerequisite: BISC 2207.

BISC 6275. Introduction to Recombinant DNA Techniques. 3 Credits.
Lecture, 1 hour; laboratory, 4 hours. Basic techniques of genetic manipulation: cloning of genes, transformation of bacteria, PCR procedures, DNA sequencing, and other techniques. Prerequisite: BISC 2202 or BISC 2207 or BISC 2337 and permission of instructor. Laboratory fee.

BISC 6295. Research. 1-12 Credits.
Investigation of special problems. May be repeated for credit.

BISC 6998. Thesis Research. 3 Credits.

BISC 6999. Thesis Research. 3 Credits.

BISC 8998. Advanced Reading & Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

BISC 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

BIOMEDICAL ENGINEERING (BME)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BME 1010. Introduction to Biomedical Engineering. 1 Credit.
Basic and emerging concepts in electrical, computer, and biomedical engineering. Hands-on experiments and projects. Introduction to the professional literature and available resources and to technical writing, speaking, and presentation skills. (Fall).

BME 1020. Introduction to Biomedical Engineering. 2 Credits.
Continuation of BME 1010. Basic and emerging concepts in electrical, computer, and biomedical engineering. Hands-on experiments and projects. Introduction to the professional literature and available resources and to technical writing, speaking, and presentation skills. Prerequisite: BME 1010. (Same as ECE 1020) (Spring).

BME 2810. Biomedical Engineering Seminar I. 1 Credit.
BME 2810 and BME 2815 are taken in sequence by students in the biomedical engineering major. Overview of the field of biomedical engineering, including biomechanics, bioinformatics, telemedicine, instrumentation, and medical imaging. Prerequisite: BME 1020. (Fall).

BME 2815. Biomedical Engineering Seminar II. 1 Credit.
BME 2810 and BME 2815 are taken in sequence by students in the biomedical engineering major. Overview of the field of biomedical engineering, including biomechanics, bioinformatics, telemedicine, instrumentation, and medical imaging. (Fall and spring).

BME 2820. Biomedical Engineering Programming I. 3 Credits.
Introduction to Matlab Programming and fundamentals of programming in general with a focus on biomedical engineering problems. Functions, input/output, selection statements, loop statements, string manipulation, and debugging techniques will be covered; manipulation of vectors and matrices and the use of vectorized code. (Fall).

BME 2825. Biomedical Engineering Programming II. 3 Credits.
Introduction to C Programming and fundamentals of data structures with a focus on biomedical engineering problems; the use of data structures, pointers, and linked lists and discuss concepts such as binary trees and sorting algorithms. Students are expected to understand the basics of programming concepts such as the use of functions, input/output, selection statements, loop statements, string manipulation, and debugging techniques are understood, but no prior knowledge of C is required. Prerequisite: BME 2820; equivalent course may be substituted at instructor's discretion. (Fall).

BME 3820. Principles and Practice of Biomedical Engineering. 4 Credits.
Introduction to engineering principles applicable to medicine; medical measurements for clinical use and research; anatomy and physiology of the human body from system and cellular approaches. Principles of biomedical engineering are reinforced by determining and analyzing physiological measurements in laboratory exercises. Prerequisites: ECE 2110 and APSC 2113. (Fall).

BME 3907. Special Topics in Biomechanical Engineering. 3 Credits.
Topics vary by semester. May be repeated for credit if topic differs. See the Schedule of Classes for more details. (Fall, spring, and summer).

BME 3910. Capstone Design Preparation. 1 Credit.
Elements of project design; formulation of project ideas. Prerequisites: BME 2810, BME 2815. (Same as ECE 3910) (Fall).

BME 3915W. Biomedical Engineering Capstone Project Lab I. 1 Credit.
BME 3915, BME 4920, and BME 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. Prerequisite: BME 3910. (Same as ECE 3915W) (Spring).

BME 4820. Anatomy and Physiology for Engineers. 3 Credits.
Human anatomy and physiology from an engineering viewpoint. Analysis of functions of major physiological systems. Biopotentials, mechanics, gas exchange, chemical balance, electrical and chemical signaling, nervous control, voluntary and reflex factors. (Same as BME 6820) (Fall).

BME 4825. Biomedical Properties Laboratory. 1 Credit.
Introduction to biophysical concepts in a laboratory setting; emphasis on biomedical engineering. (Spring).

BME 4830. Introduction to Medical Imaging Methods. 3 Credits.
Common imaging modalities, including ultrasound, X-ray, MRI, CT, SPECT, and PET. Overview of linear systems, basic properties of an imaging system, the physics and instrumentation behind each modality, and their respective advantages, disadvantages, and applications. May be taken for graduate credit. Prerequisites: ECE 3220, BME 3820. (Spring).

BME 4920W. Biomedical Engineering Capstone Project Lab II. 3 Credits.
BME 3915, BME 4920, and BME 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. Prerequisite: BME 3915W. (Same as ECE 4920, ECE 4920W) (Fall, Every Year).

BME 4925W. Biomedical Engineering Capstone Project Lab III. 3 Credits.
BME 3915, BME 4920, and BME 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. (Same as ECE 4925) (Spring, Every Year).

BME 4990. Research. 1-3 Credits.
Applied research and experimentation projects, as arranged. Prerequisites: junior or senior status. (Fall and spring).

BME 6045. Special Topics. 1-3 Credits.
Topics to be announced in the Schedule of Classes. (Fall and spring).

BME 6050. Research. 1-12 Credits.
Applied research and experimentation projects, as arranged. May be repeated for credit.

BME 6065. Colloquium. 0 Credits.
Lectures by outstanding authorities in biomedical engineering. Topics to be announced each semester. (Fall and spring).

BME 6481. Regulatory Law for Medical Devices. 3 Credits.
An introduction to legal issues pertinent to medical device regulation; device classification, general and special controls, quality system regulation, 510(k) submissions, premarket approval applications (PMAs), clinical trials, investigational device exemptions (IDEs) and medical device reporting (MDR), recalls, labeling and advertising, enforcement, and emerging legal issues. Pharmaceutical regulation. (Fall).

BME 6482. Medical Measurements. 3 Credits.
Theory of measurements in biological areas and techniques for electronic measurements on biological specimens. Experiments in acquisition, processing, and measurement of physiological signals, ECG, EEG, and EMG. (Fall).

BME 6483. Medical Instrumentation Design. 3 Credits.
The medical device design process and many of its key aspects, including needs assessment, regulatory processes and concerns, intellectual property, patient safety, and market analysis. Prerequisites: BME 6482. (Spring).

BME 6484. Biomedical Signal Analysis. 3 Credits.
Origin, acquisition, and analysis of physiological signals. Deterministic and probabilistic modeling; fitting models; sequences and time series. Feature extraction from EEG and ECG; Fourier analysis and filtering; modeling. Noise and artifact removal and signal compensation. Prerequisites: BME 6482. (Spring).

BME 6485. Medical Imaging I. 3 Credits.
Principles of projection radiography, fluoroscopy, tomography, ultrasound and nuclear sources; biomagnetic imaging. Source and object; recorder resolution and noise; scatter and attenuation. Ultrasound techniques and instrumentation, including physics of ultrasound, transducers, ultrasound imaging, hemodynamics, Doppler techniques. Prerequisite: BME 4830. (Fall).

BME 6486. Clinical Medicine for Engineers. 3 Credits.
Overview of clinical medicine with emphasis on those areas most affected by engineering and technology. Prerequisites: BME 6482. (Spring, even years).

BME 6487. Rehabilitation Medicine Engineering. 3 Credits.
Cross-sectional view of those areas of medicine most involved with the treatment of handicapped individuals; application of engineering theory and techniques to the rehabilitation of handicapped individuals; solutions to major problem areas and specific problems. Prerequisite: BME 6482. (Spring, Every Year).

BME 6820. Anatomy and Physiology for Engineers. 3 Credits.
Human anatomy and physiology from an engineering perspective. Analysis of functions of major physiological systems. Biopotentials, mechanics, gas exchange, chemical balance, electrical and chemical signaling, nervous control, voluntary and reflex factors. (Same as BME 4820) (Fall).

BME 6840. Digital Image Processing. 3 Credits.
Properties of images and visual systems. Image acquisition, sampling, quantization. One- and two-dimensional image transform techniques; enhancement and restoration. Image coding and data compression. Segmentation, representation, boundary and shape, texture, matching. Image understanding. Prerequisites: ECE 6800. (Same as ECE 6840) (Spring, odd years).

BME 6842. Image Engineering. 3 Credits.
Sensor/camera design and analysis as a system. Detection and noise processes underlying the sensing of optical radiation; the engineering and physics of image formation. Topics covered include radiometry/photometry, optics and image formation, device and camera characterization, and image quality metrics and system design trades. Prerequisites: ECE 6010, ECE 6015. (Same as ECE 6842) (Fall, Every Year).

BME 6850. Pattern Recognition. 3 Credits.
Random vectors, transformations. Hypothesis testing, error probability: bias, variance, and sample size, resampling; sequential methods. Bayes, other linear classifiers. Discriminant functions, support vector machines, maximum-likelihood and parameter estimation, dimensionality reduction. Nonparametric methods; unsupervised learning and clustering; feature selection and ordering. Applications in industry and medicine. Student projects. Learning is reinforced by homework problems and in-class and at-home computer examples. Prerequisite: ECE 6015. (Same as ECE 6850) (Fall, Spring, and Summer, Every Year).

BME 6885. Computer Vision. 3 Credits.
Image processing; edge detection, segmentation, local features, shape and region description in 2D and 3D. Insights from human vision studies. Representation for vision: object models, synthetic images, matching, gaps, algorithms. Interference, production system, syntactic networks. Planning spatial reasoning for robot vision. Prerequisites: BME 6840 or ECE 6840 or equivalent. (Same as ECE 6885) (Fall, Spring, and Summer, Every Year).

BME 6994. Biomedical Engineering Regulatory Practicum I. 3 Credits.
First part of the BME 6994-BME 6995 practicum sequence. Students work with a practicum mentor to develop either an application for federal funding using the Small Business Innovation Research (SBIR) or Small Business Technology Transfer (STTR) mechanism or a 510(k) submission for U.S. Food and Drug Administration (FDA) medical device review. Independent research combined with the synthesis of technical and regulatory topics covered in the program. Restricted to students who have completed a minimum of 9 credits in the Master of Engineering in Regulatory Biomedical Engineering program. (Fall, spring, and summer).

BME 6995. Biomedical Engineering Regulatory Practicum II. 3 Credits.
Second part of the BME 6994-BME 6995 practicum sequence. Prerequisites: BME 6994. (Fall, spring, and summer).

BME 6998. Thesis Research. 3 Credits.
Thesis research. (Fall and spring).

BME 6999. Thesis Research. 3 Credits.
Thesis research. (Fall and spring).

BME 8484. Medical Imaging II: Image Analysis. 3 Credits.
Review of medical imaging modalities; review of image formation and characteristics, both static and dynamic; methods for and evaluation of: medical image reconstruction, enhancement, segmentation, registration, and description; feature extraction and classification; error analysis and the receiver operating characteristic; imaging applications in diagnosis and treatment, including surgery; metrics of truth and quality, with implications for image compression. Prerequisites: BME 6484. (Fall).

BME 8999. Dissertation Research. 0-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall, spring, and summer).

BIOMEDICAL SCIENCES (BMSC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BMSC 6218. Ethics for Translational Sciences. 2 Credits.
Ethical issues relevant to the design and conduct of translational research, such as data management, human-based research, conflict of interest, and responsible use of animals. Students debate contemporary cases on ethical issues related to translational sciences and write in-depth analyses on ethical issues in human genome research, stem cell research, and clinical research involving children. Prerequisites: permission of instructor. Recommended background: ANAT 6130 (Human Clinical Embryology), ANAT 6160 (Human Clinical Neuroanatomy), ANAT 6181 (Human Gross Anatomy), ANAT 6292 (Projects in Anatomical Sciences), ANAT 6150 (Human Clinical Microscopic Anatomy).

BMSC 8210. Genes to Cells. 4 Credits.
Proteins structure and function, introduction to metabolic processes. Structure and function of nucleic acids, organization of the genome, and regulation of protein synthesis and processing. Registration with permission of instructor.

BMSC 8212. Developmental Cell Biology and Systems Physiology. 4 Credits.
Structure and functions of cells and tissues, techniques used for the analysis of cell function (image analysis, microscopy). Physiological bases of organ systems and origins of disease. Registration with permission of instructor.

BMSC 8215. Lab Rotations. 1 Credit.
For Ph.D. students enrolled in the Institute for Biomedical Sciences. Laboratory training in advanced techniques in biomedical sciences research practices. May be repeated for credit.

BMSC 8216. Career Skills for the Biomedical Sciences. 1 Credit.
Scientific writing, presentation skills, and seminar planning. Developing roles in the field: research in varying settings, policy and program planning, grants administration, and the biotechnology issues within intellectual property law. Ethical issues related to the conduct of research, animal use, and human subject participation. The design of a successful grant proposal.

BMSC 8217. Career Skills for the Biomedical Sciences. 1 Credit.
Continuation of BMSC 8216. Scientific writing, presentation skills, and seminar planning. Developing roles in the field: research in varying settings, policy and program planning, grants administration, and the biotechnology issues within intellectual property law. Ethical issues related to the conduct of research, animal use, and human subject participation. The design of a successful grant proposal.

BMSC 8218. Career Skills for the Biomedical Sciences. 1 Credit.
Continuation of BMSC 8217. Scientific writing, presentation skills, and seminar planning. Developing roles in the field: research in varying settings, policy and program planning, grants administration, and the biotechnology issues within intellectual property law. Ethical issues related to the conduct of research, animal use, and human subject participation. The design of a successful grant proposal.

BMSC 8230. Molecular Basis of Human Disease. 3 Credits.
Principles of systems biology in the context of specific diseases. Problem solving at multiple levels of biology, integrating knowledge of DNA, RNA, proteins, cell biology, and tissue physiology. Prerequisite: BMSC 8210, BMSC 8212.

BMSC 8231. Advanced Proteomics Methods and Applications. 2 Credits.
Proteomics approaches to specific questions about a biological system. Advanced methods and applications. Prerequisite: BMSC 8230.

BMSC 8233. Integrative Bioinformatics. 3 Credits.
Bioinformatics techniques for analysis of macromolecular sequences, structures, gene expression arrays, and proteomics. Systems biology approaches to research problems. Restricted to permission of instructor. Prerequisites: BMSC 8230. Recommended background: undergraduate background in biology, computer sciences, biochemistry, or a related field.

BMSC 8234. Seminar in Systems Biology. 2 Credits.
Prerequisite: permission of instructor.

BMSC 8235. Applied Biostatistics for Basic Research. 2 Credits.
The handling and interpretation of large data sets, including biological data and genomic data. Restricted to Permission of instructor. Prerequisites: none.

BMSC 8237. Muscle: Heath and Disease. 2 Credits.
Genetics, physiology, and signaling in muscle health and disease, including muscle basics, growth, damage and repair, classification of weakness-causing diseases, treatment and research. Restricted to Permission of Instructor. Prerequisites: BMSC 8230. Recommended background: Undergraduate degree in biology, chemistry, biochemistry, or related field.

BMSC 8998. Readings and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

BMSC 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

BIOSTATISTICS (BIOS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BIOS 6295. Reading and Research. 1-12 Credits.
May be repeated for credit.

BIOS 6998. Thesis Research. 3 Credits.

BIOS 6999. Thesis Research. 3 Credits.

BIOS 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

BIOS 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

BUSINESS ADMINISTRATION (BADM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BADM 1001. First Year Development Course I. 1 Credit.
Required of all first-year students in School of Business. This course is designed to enhance students' education and begin preparation for business careers. The course meets periodically during the semester. Course fee. Restricted to students in the first year of enrollment in School of Business.

BADM 1002. First Year Development Course II. 1 Credit.
Continuation of BADM 1001. Required of all first-year students in School of Business. This course is designed to enhance students' education and begin preparation for business careers. The course meets periodically during the semester. Course fee. Restricted to students in the first year of enrollment in School of Business.

BADM 1003. Transfer Student Development. 1 Credit.
Required for all transfer students entering the School of Business. Provides information on University and School resources to assist with the student's transition. Helps students develop career-based knowledge; begin preparation for business careers; and learn the importance of civility and integrity in business discourse. Students perform service within the District of Columbia in order to apply business concepts and entrepreneurship skills. Restricted to GW School of Business students.

BADM 1004. The Age of Globalization. 3 Credits.
A multidisciplinary foundation in the globalization of people, markets, and firms. Required for all School of Business freshmen.

BADM 1900. Special Topics. 1-3 Credits.

BADM 2001. Markets and Politics. 3 Credits.
Economic and political resource allocation; social and political influences on business organizations; contemporary problems and issues.

BADM 2001W. Markets and Politics. 3 Credits.
Economic and political resource allocation; social and political influences on business organizations; contemporary problems and issues.

BADM 2301. Management Information Systems Technology. 3 Credits.
An introduction to data and information processing concepts and systems viewed from a contemporary management perspective. Emphasis on uses and applications as well as emerging managerial issues with the potential to reshape the form and function of information systems. Lab required. Prerequisite: basic knowledge of Microsoft Word, Excel, and PowerPoint.

BADM 2301W. Mgt Information Systems Tech. 3 Credits.
An introduction to data and information processing concepts and systems viewed from a contemporary management perspective. Emphasis on uses and applications as well as emerging managerial issues with the potential to reshape the form and function of information systems. Lab required. Prerequisite: basic knowledge of Microsoft Word, Excel, and PowerPoint.

BADM 3001. Career Management Strategy. 1 Credit.
Restricted to School of Business students in their junior year. The career development process, including job search strategies and formulation of a career management plan, with practice in producing a resume and interviewing for a position.

BADM 3101. Human Resource Management. 3 Credits.
Global and strategic implications of human capital policies and practices, including human resource planning, recruitment, selection, training, development, compensation, and collective bargaining. Prerequisite: BADM 1101 or PSYC 1001.

BADM 3102. Business and Government Relations. 3 Credits.
Economic and legal environment of business enterprise; social and political influences; contemporary problems and issues.

BADM 3102W. Business/Government Relations. 3 Credits.

BADM 3103. Human Capital in Organizations. 3 Credits.
An introduction and integration of concepts drawn from human resource management and organizational behavior. Application of these concepts to individual, group/team, and organizational scenarios through experiential exercises, cases, and projects. Development of skills in analyzing and evaluating human capital problems and determining appropriate solutions.

BADM 3401. Basic Marketing Management. 3 Credits.
Consumer and organizational buying behavior. Strategic marketing processes (market research, segmentation, targeting, positioning, and relationship-building). Product development and brand management, valuation and pricing, channel and logistics management, integrated marketing communications, e-commerce. Prerequisite: ECON 1012 or HONR 2044.

BADM 3401W. Basic Marketing Management. 3 Credits.
Consumer and organizational buying behavior. Strategic marketing processes (market research, segmentation, targeting, positioning, and relationship-building). Product development and brand management, valuation and pricing, channel and logistics management, integrated marketing communications, e-commerce. Prerequisites: ECON 1012 or HONR 2044.

BADM 3501. Financial Management and Markets. 3 Credits.
Introduction to financial markets, investment analysis, and financial management. Financial analysis, risk management, working capital management, capital budgeting, financial structure, cost of capital, and dividend policy. Prerequisites: ACCY 2001; ECON 1012 or HONR 2044; MATH 1221 or MATH 1231 or MATH 1252; and STAT 1051 or STAT 1053 or STAT 1111 or APSC 3115.

BADM 3601. Operations Management. 3 Credits.
Production planning concepts and analytical tools. Designing and managing production processes: facilities, equipment, process control systems. Design issues, demand forecasting, material planning, acquisition techniques. Managing the factory floor: scheduling, total quality management, continuous improvement concepts and methods. Prerequisite: STAT 1051, STAT 1053, STAT 1111 or APSC 3115.

BADM 4101. Business Law and Ethics. 3 Credits.
An introduction to practical reasoning at the intersection of business and society. Emphasis on application of ethics frameworks and core principles of business law to problems of individual, organizational, and social responsibility in business.

BADM 4101W. Business Law and Ethics. 3 Credits.
An introduction to practical reasoning at the intersection of business and society. Emphasis on application of ethics frameworks and core principles of business law to problems of individual, organizational, and social responsibility in business. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

BADM 4801. Strategy Formulation and Implementation. 3 Credits.
An integrative capstone course to develop skills in diagnosing organizational problems, formulating and selecting strategic alternatives, and recognizing problems inherent in strategy implementation. Restricted to seniors in the B.B.A., B.Accy., and SEAS business concentration programs.

BADM 4900. Special Topics. 0-3 Credits.
Experimental offering; new course topics and teaching methods.

BADM 4900W. Special Topics. 0-3 Credits.
Experimental offering; new course topics and teaching methods.

BADM 4950. Internship. 0 Credits.
School of Business undergraduates may register for this course when they wish to have an internship recorded on the transcript. The supervisor must verify that the internship has been completed for a minimum of six hours per week. An administrative fee is charged. May be repeated each semester if desired.

BADM 4995. Independent Study. 1-6 Credits.
Assigned topics with interdisciplinary focus. Admission by prior permission of advisor. May be repeated once for credit but in a separate semester.

CHEMISTRY (CHEM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CHEM 1000. Dean's Seminar. 3 Credits.
Contemporary topics in chemistry.

CHEM 1003. Contemporary Science for Nonscience Majors. 3 Credits.
Contemporary topics in physical, biological, and medical science. Chem 1003 is not prerequisite to Chem 1004. Laboratory fee.

CHEM 1004. Contemporary Science for Nonscience Majors. 3 Credits.
Continuation of CHEM 1003. Contemporary topics in physical, biological, and medical science. Chem 1003 is not prerequisite to Chem 1004. Laboratory fee.

CHEM 1111. General Chemistry I. 4 Credits.
Atomic structure and properties; stoichiometry; gas, liquid, and solid state; chemical bonding; solutions; chemical kinetics and equilibria; thermodynamics; acids and bases; electrochemistry; descriptive chemistry. Prerequisite: one year of high school algebra. Laboratory fee.

CHEM 1112. General Chemistry II. 0-4 Credits.
Continuation of CHEM 1111. Atomic structure and properties; stoichiometry; gas, liquid, and solid state; chemical bonding; solutions; chemical kinetics and equilibria; thermodynamics; acids and bases; electrochemistry; descriptive chemistry. Prerequisite: CHEM 1111. Laboratory fee.

CHEM 2010. History of Chemistry. 2,3 Credits.

CHEM 2085. Environmental Chemistry. 3 Credits.
Chemistry and physics of the environment, with emphasis on water and air pollution; environmental analysis and modeling and their limitations.

CHEM 2122. Introductory Quantitative Analysis. 3 Credits.
Theory and practice of quantitative analysis by modern methods; evaluation of analytical data emphasizing detection and correction of experimental errors. Correlated with CHEM 2123. Prerequisite: CHEM 1112.

CHEM 2123. Introductory Quantitative Analysis Laboratory. 1 Credit.
Laboratory complement to CHEM 2122. Prerequisite or concurrent registration: CHEM 2122. Laboratory fee.

CHEM 2123W. Introductory Quantitative Analysis Laboratory. 1 Credit.
Laboratory complement to CHEM 2122. Prerequisite or concurrent registration: CHEM 2122. Laboratory fee.

CHEM 2151. Organic Chemistry I. 3 Credits.
Systematic treatment of the structure, preparation, properties, and reactions of the principal classes of organic compounds. Fundamental principles of stereochemistry, reaction mechanisms, and spectroscopic methods of analysis. Prerequisite to CHEM 2151: CHEM 1112.

CHEM 2152. Organic Chemistry II. 3 Credits.
Continuation of CHEM 2151. Systematic treatment of the structure, preparation, properties, and reactions of the principal classes of organic compounds. Fundamental principles of stereochemistry, reaction mechanisms, and spectroscopic methods of analysis. Prerequisite to CHEM 2152: CHEM 2151.

CHEM 2153. Organic Chemistry Laboratory I. 1 Credit.
Laboratory complement of CHEM 2151. Introduction to and practice in basic skills of synthesis, separation, purification, and identification of organic compounds. Prerequisite or concurrent registration: CHEM 2151. Laboratory fee.

CHEM 2154. Organic Chemistry Laboratory II. 1 Credit.
Continuation of CHEM 2153. Laboratory complement of CHEM 2152. Introduction to and practice in basic skills of synthesis, separation, purification, and identification of organic compounds. Prerequisite or concurrent registration: CHEM 2152. Prerequisite: CHEM 2153. Laboratory fee.

CHEM 3140. Geochemistry. 3 Credits.
Chemical systems and processes on the planet Earth; origins and interactions among and within the Earth's lithosphere, oceans, and atmosphere; origin, distribution, and behavior of the elements; radioactive and stable isotope systems. Aqueous geochemistry; geochemical cycles. Same as GEOL 3140. Prerequisite: GEOL 1001 or GEOL 1005; CHEM 1111–CHEM 1112.

CHEM 3143. Aqueous Geochemistry. 3 Credits.
Same as Geol 143.

CHEM 3165. Biochemistry I. 3 Credits.
Introduction to the chemistry of living cells; structure and function of proteins, lipids, carbohydrates, and nucleic acids; enzyme structure, mechanism, and regulation. Prerequisite: CHEM 2151; credit toward the degree cannot be earned for CHEM 3165 and for BIOC 3261/ BISC 3261.

CHEM 3166. Biochemistry II. 3 Credits.
Continuation of CHEM 3165. Introduction to the chemistry of living cells; structure and function of proteins, lipids, carbohydrates, and nucleic acids; enzyme structure, mechanism, and regulation. CHEM 3165 is prerequisite to CHEM 3166. Credit toward the degree cannot be earned for CHEM 3166 and for BIOC 3263/ BISC 3263.

CHEM 3166W. Biochemistry II. 3 Credits.
Continuation of CHEM 3165. Introduction to the chemistry of living cells; structure and function of proteins, lipids, carbohydrates, and nucleic acids; enzyme structure, mechanism, and regulation. CHEM 3165 is prerequisite to CHEM 3166. Credit toward the degree cannot be earned for CHEM 3166 and for BIOC 3263/ BISC 3263.

CHEM 3170. Introduction to Physical Chemistry. 3 Credits.
Thermodynamics, chemical and physical equilibria, kinetics, and spectroscopy. Examples taken from biological systems. Not open to chemistry majors. May not be taken for credit by students who have received credit for CHEM 3171– CHEM 3172 or an equivalent course. Prerequisites: CHEM 1111– CHEM 1112; MATH 1231; PHYS 1012 or PHYS 1022 or PHYS 1026; or permission of instructor.

CHEM 3171. Physical Chemistry I. 3 Credits.
Gas laws, chemical thermodynamics, chemical equilibrium, kinetics, quantum chemistry, atomic and molecular spectra, structure of solids, liquids, and macromolecules. Prerequisite: CHEM 1112; MATH 1231; PHYS 1022; or permission of instructor.

CHEM 3172. Physical Chemistry II. 3 Credits.
Continuation of CHEM 3171. Gas laws, chemical thermodynamics, chemical equilibrium, kinetics, quantum chemistry, atomic and molecular spectra, structure of solids, liquids, and macromolecules. Prerequisite: CHEM 3171.

CHEM 3173. Physical Chemistry Laboratory. 2 Credits.
Laboratory complement to CHEM 3171 and CHEM 3172. Exploration of molecular structure and bonding as revealed through observation. Laboratory fee. Prerequisites: CHEM 2123 and CHEM 3171; or corequisite: CHEM 2123 and CHEM 3171.

CHEM 3262. Biochemistry Laboratory. 2 Credits.
Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Same as BIOC 3261/ BISC 3261. Prerequisite: CHEM 3165 or BIOC 3261/ BISC 3261. Laboratory fee.

CHEM 3263W. Special Topics in Biochemistry. 2 Credits.

CHEM 3564. Lipid Biotechnology. 0-2 Credits.
Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Laboratory fee. Prerequisites: CHEM 3165 or BIOC 3261 or BISC 3261. (Same as BISC 3564 and BIOC 3564).

CHEM 4113. Chemical Instrumentation. 3 Credits.
Electronic analog measurements and control of electrical quantities in chemical instrumentation; digital and analog data conversion and optimization of electronic measurements in chemical instrumentation; computer interfacing and programming using PC-based systems. Prerequisite: CHEM 3172 and CHEM 4122. Laboratory fee.

CHEM 4122. Instrumental Analytical Chemistry. 3 Credits.
Theory of instrumental methods in qualitative and quantitative analysis, determination of structure, with emphasis on atomic and molecular spectrophotometry, infrared spectroscopy, nuclear magnetic resonance, mass spectrometry, chromatography, and electroanalysis. Prerequisite or concurrent registration: CHEM 3171 or permission of instructor. Correlated with CHEM 4123.

CHEM 4123. Instrumental Analytical Chemistry Laboratory. 2 Credits.
Laboratory complement to CHEM 4122. Prerequisite or concurrent registration: CHEM 3171 and CHEM 4122. Laboratory fee.

CHEM 4134. Descriptive Inorganic Chemistry. 3 Credits.
Emphasis on periodic trends and structure and reactivity of transitional metal complexes. Prerequisite: CHEM 2122.

CHEM 4195. Undergraduate Research. 1-3 Credits.
Research on problems approved by the staff. Approval must be obtained prior to registration. A final written report on the work is required. For students requesting Special Honors in chemistry, a poster or oral presentation is also required. May be repeated for credit. Majors are encouraged to take the course for two semesters. Laboratory fee.

CHEM 4195W. Undergraduate Research. 1-3 Credits.
Research on problems approved by the staff. Approval must be obtained prior to registration. A final written report on the work is required. For students requesting Special Honors in chemistry, a poster or oral presentation is also required. May be repeated for credit. Majors are encouraged to take the course for two semesters. Laboratory fee.

CHEM 6221. Spectrochemical Analysis. 3 Credits.
Theory and application of recent spectrometric methods of analysis, including advances in optimization techniques, optical instrumentation, atomic spectrometry, laser-based analytical techniques, X-ray methods, and surface analysis techniques. Prerequisite: CHEM 4122.

CHEM 6222. Biomedical Mass Spectrometry. 3 Credits.
Principles, instrumentation, methods, and applications of mass spectrometry; selected state-of-the-art methods demonstrate basic principles to show how new methods of analysis are developed; typical applications highlight solutions of biomedical problems, including proteomics and metabolomics. Prerequisite: CHEM 4122.

CHEM 6235. Advanced Inorganic Chemistry I. 3 Credits.
Application of modern chemical theories to inorganic substances and reactions; detailed study, developed from the periodic table, of the chemistry of the more common elements; electronic spectra and reaction mechanisms of complexes; organometallic chemistry; homogeneous and heterogeneous catalysis; bioinorganic chemistry. Prerequisite: CHEM 3172, CHEM 4134.

CHEM 6236. Advanced Inorganic Chemistry II. 3 Credits.
Continuation of CHEM 6235. Application of modern chemical theories to inorganic substances and reactions; detailed study, developed from the periodic table, of the chemistry of the more common elements; electronic spectra and reaction mechanisms of complexes; organometallic chemistry; homogeneous and heterogeneous catalysis; bioinorganic chemistry. Prerequisite: CHEM 3172, CHEM 4134.

CHEM 6238. Chem of Inorganic Materials. 3 Credits.
Synthesis, structure, and properties of materials such as ceramics, superconductors, ionic conductors, nanomaterials, and magnetic, optical, and electronic materials. Emphasis on traditional and low-temperature routes. Prerequisite: CHEM 3171– CHEM 3172.

CHEM 6251. Advanced Organic Chemistry I. 3 Credits.
Synthesis, reactions, and properties of organic compounds; fundamental theories of organic chemistry, emphasis on reaction mechanisms. Prerequisite: CHEM 2152.

CHEM 6252. Advanced Organic Chemistry II. 3 Credits.
Continuation of CHEM 6251. Synthesis, reactions, and properties of organic compounds; fundamental theories of organic chemistry, emphasis on reaction mechanisms. Prerequisite: CHEM 6251.

CHEM 6257. Physical-Organic Chemistry. 3 Credits.
The transition state theory of chemical kinetics, applications to reaction mechanisms; kinetic isotope effects, linear-free energy relationships, concentrated and "super" acids, Woodward–Hoffman rules, free radical reactions. Prerequisite: CHEM 6251 or permission of instructor.

CHEM 6259. Polymer Chemistry. 3 Credits.
A study of the preparation, properties, and structure of macromolecules. Prerequisite: CHEM 2152 and CHEM 3170 or CHEM 3171 or permission of instructor.

CHEM 6273. Chemical Thermodynamics. 3 Credits.
Application of thermodynamics to chemical problems. Emphasis on statistical calculation of thermodynamic properties. Prerequisite: CHEM 3172 or CHEM 6372.

CHEM 6277. Chemical Bonding. 3 Credits.
Quantum mechanics, approximate methods, electron spin, Pauli principle, atomic and molecular structure. Prerequisite: CHEM 3172 or CHEM 6372.

CHEM 6278. Molecular Spectroscopy. 3 Credits.
Applications of quantum mechanics and group theory to the interpretation of electronic, vibrational, rotational, and magnetic resonance spectroscopy. Prerequisite: CHEM 6277.

CHEM 6280. Energy and the Environment. 3 Credits.
Fundamentals of energy conversion in thermomechanical, thermochemical, electrochemical, and photoelectric processes in existing and future power and transportation systems, with emphasis on efficiency, environmental impact, and performance.

CHEM 6281. Environmental Chemistry: Air, Water, and Soil. 3 Credits.
Survey of the behavior, movement and impact of natural and man-made chemicals in all layers of the environment in the context of the atmosphere, hydrosphere, and lithosphere; the effects of acid rain, sewage treatment, ozone destruction, anthropogenic climate change, air pollution, and eutrophication.

CHEM 6282. Green Industrial Chemistry. 3 Credits.
Introduction to the basic design principles for greener chemical technologies; widely used practices, including catalysis, use of renewable starting materials, minimization of energy inputs, and use of greener solvents.

CHEM 6283. Chemical Toxicology and Rational Design of Safer Chemicals. 3 Credits.
Introduction to the basic tools and paradigms of toxicology in the context of chemical design for minimizing potential toxicity of commercial chemicals; computational methods for prediction of bioavailability, reactivity, bioaccumulation and different types of toxicity; application of in silico methods to the rational re-design of functional and safer chemicals.

CHEM 6284. Environmental Analytical Chemistry. 3 Credits.
Advanced analytical methodology for environmental assessment; analytical instrumentation, techniques for remote measurements, determination of trace atmospheric constituents of anthropogenic and natural origin, measurement uncertainty analysis, detection and identification of organic and inorganic pollutants in air, water, soil and biota, and the determination of heavy metals and radionuclides in the environment.

CHEM 6298. Capstone Seminar in Environmental and Green Chemistry. 3 Credits.
Group projects carried out with an external partner or client—such as a government agency, nonprofit group, or chemistry laboratory research project—that identify and solve real world scientific problems related to environmental and green chemistry.

CHEM 6314. Fundamental-Computational Chem. 3 Credits.

CHEM 6315. Computational Chem-Biomolecule. 3 Credits.

CHEM 6320. Selected Topics in Analytical Chemistry. 1-3 Credits.
Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field of analytical chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6330. Selected Topics in Inorganic Chemistry. 1-3 Credits.
Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field of inorganic chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6350. Selected Topics in Organic Chemistry. 1-3 Credits.
Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field in organic chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6358. Synthesis and Structure Determination in Organic Chemistry. 3 Credits.
The design of syntheses for complex organic molecules; survey of modern synthetic methods, including asymmetric induction; spectroscopic methods of structure determination. Prerequisite: CHEM 6251 or permission of instructor.

CHEM 6370. Selected Topics in Physical Chemistry. 1-3 Credits.
Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field of physical chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6371. Physical Chemistry I. 1-3 Credits.
Same as CHEM 3171. Admission only by departmental permission. Credit assigned upon satisfactory completion of CHEM 6372.

CHEM 6372. Physical Chemistry II. 1-3 Credits.
Continuation of CHEM 6371. Same as CHEM 3172. Admission only by departmental permission. Credit for CHEM 6371 assigned upon satisfactory completion of this course.

CHEM 6390. Selected Topics in Chemistry. 0-3 Credits.
Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field in chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6395. Research. 1-12 Credits.
Limited to master's degree candidates. Survey of a topic approved by departmental staff and resulting in a written report and presentation of a seminar. Open to qualified students with advanced training. May be repeated for credit.

CHEM 6998. Thesis Research. 1-9 Credits.
graduate degree students.

CHEM 6999. Thesis Research. 3 Credits.
Limited to students in the Master's Degree program.

CHEM 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

CHEM 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

CHINESE (CHIN)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CHIN 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details. Restricted to First-year students in CCAS.

CHIN 1001. Beginning Chinese I. 4 Credits.
Basic functional and communicative proficiency in Chinese. Development of listening and speaking skills, reading and writing abilities, and cultural awareness.

CHIN 1002. Beginning Chinese II. 4 Credits.
Continuation of CHIN 1001. Basic functional and communicative proficiency in Chinese. Development of listening and speaking skills, reading and writing abilities, and cultural awareness. Prerequisites: CHIN 1001 or equivalent.

CHIN 1011. Intensive Beginning Chinese. 8 Credits.
Intensive beginning course equivalent to CHIN 1001– CHIN 1002. Laboratory fee.

CHIN 1088. E-Learning Tools for Chinese. 1 Credit.
Basic training for using computer programs, software, or web tools for Chinese word processing. Prerequisite: CHIN 1001. Laboratory fee.

CHIN 2003. Intermediate Chinese I. 4 Credits.
Continuation of grammar, with emphasis on speaking, reading, and writing. Prerequisite: CHIN 1002 or CHIN 1011. Laboratory fee.

CHIN 2004. Intermediate Chinese II. 4 Credits.
Continuation of CHIN 2003. Continuation of grammar, with emphasis on speaking, reading, and writing. Prerequisite: CHIN 2003. Laboratory fee.

CHIN 3105. Intermediate Chinese III. 3 Credits.
Augmentation of vocabulary, with emphasis on communicative proficiency development. Prerequisite: CHIN 2004. Laboratory fee.

CHIN 3106. Intermediate Chinese IV. 3 Credits.
Continuation of CHIN 3105. Augmentation of vocabulary, with emphasis on communicative proficiency development. Prerequisite: CHIN 3105. Laboratory fee.

CHIN 3109. Introduction to Classical Chinese. 3 Credits.
Introduction to classical writings in Chinese literature, history, and philosophy. Prerequisite: CHIN 2004 .

CHIN 3110. Introduction to Classical Chinese. 3 Credits.
Continuation of CHIN 3109. Introduction to classical writings in Chinese literature, history, and philosophy. Prerequisite: CHIN 2004 .

CHIN 3111. Chinese Literature in Translation. 3 Credits.
An introductory survey of Chinese literature read in English translation, including fiction, poetry, drama, essays, diaries, testimonials. The pre-modern period.

CHIN 3112. Chinese Literature in Translation. 3 Credits.
Continuation of CHIN 3111. An introductory survey of Chinese literature read in English translation, including fiction, poetry, drama, essays, diaries, testimonials. The modern period.

CHIN 3123. Introduction to Chinese Linguistics. 3 Credits.
The structure of the Chinese language, including such topics as the structure of sounds and words, sentence meaning and structure, the writing system, adaptation of foreign vocabulary, pragmatics, variation, and change. Course conducted in English.

CHIN 3124. Introduction to Chinese Linguistics. 3 Credits.
Continuation of CHIN 3123.The structure of the Chinese language, including such topics as the structure of sounds and words, sentence meaning and structure, the writing system, adaptation of foreign vocabulary, pragmatics, variation, and change. Course conducted in English.

CHIN 3136W. Chinese Women in Myth, Literature, and Film. 3 Credits.
Women's position in Chinese cultural and political life from prehistoric myth to the present time. Confucian writing, traditional theatre, and films and novels set in China. A general survey of Chinese history establishes the context for discussions of cultural and political phenomena, such as foot binding and the one-child policy. Course conducted in English. (Same as WSTU 3136W).

CHIN 3162. Chinese Culture Through Film. 3 Credits.
Survey of the Chinese cultural heritage presented through films. Topics include literature, philosophy, art, religion, and social history from prehistorical times to the modern era. Course conducted in English.

CHIN 3163. Taiwanese Literature and Film. 3 Credits.
A introductory survey of modern and contemporary Taiwanese literary and cinematic works. Readings include poetry, folk lyrics, dramas, novels, and memoirs that bear distinctive marks of Taiwan's diverse literary trends. Films include those by internationally renowned directors such as Hou Hsiao-hsien, Ang Lee, Edward Yang, and Tsai Ming-liang.

CHIN 3171. Poetry of the Tang and Song Periods. 3 Credits.
Reading of works of leading poets. Discussion of content and style. Prerequisite: CHIN 3109 .

CHIN 3172. Poetry of the Tang and Song Periods. 3 Credits.
Continuation of CHIN 3171. Reading of works of leading poets. Discussion of content and style. Prerequisite: CHIN 3109.

CHIN 3173. Chinese Drama and Theatre. 3 Credits.
Chinese drama and theatrical genres. Topics include the relation between theatrical performance and ritual practice, gender identities, and cross-cultural exchange. Course conducted in English.

CHIN 3188. Confucian Religion. 3 Credits.

CHIN 3841. Religion in Modern China. 3 Credits.
The changes, destructions, and reconstructions of Chinese religions from the late 19th century to the present day. The relationship between the (re)making of Chinese religions and the making of a modern Chinese nation-state. Same as REL 3841.

CHIN 4107. Readings in Modern Chinese I. 3 Credits.
Readings in newspapers, social science materials, and documentary materials. Prerequisite: CHIN 3106 .

CHIN 4108. Readings in Modern Chinese. 3 Credits.
Continuation of CHIN 4107. Readings in newspapers, social science materials, and documentary materials. Prerequisite: CHIN 4107 or equivalent.

CHIN 4119W. Business Chinese. 3 Credits.
Basics of business-related communication in both oral and written form. Integrated language skills. Prerequisite: CHIN 4107 or CHIN 4121 preparation approved by the instructor.

CHIN 4121W. Advanced Conversation and Composition I. 3 Credits.
Productive skills at the advanced discourse level, topic-specific practice of commonly used speech patterns and writing formats. Prerequisite: CHIN 3106 and permission of instructor.

CHIN 4122W. Advanced Conversation and Composition II. 3 Credits.
Continuation of CHIN 4121. Productive skills at the advanced discourse level, topic-specific practice of commonly used speech patterns and writing formats. Prerequisite: CHIN 4121 and permission of instructor.

CHIN 4179. 20th-Century Chinese Literature. 3 Credits.
Selected works of major 20th-century writers, including Lu Xun, Lao She, Zhang Ailing, Bai Xianyong, and others. Lectures and discussion in Chinese. Prerequisite: CHIN 4107 .

CHIN 4180W. 20th-Century Chinese Literature II. 3 Credits.
Continuation of CHIN 4179. Selected works of major 20th-century writers, including Lu Xun, Lao She, Zhang Ailing, Bai Xianyong, and others. Lectures and discussion in Chinese. Prerequisite: CHIN 4107 .

CHIN 4185. Directed Reading I. 3 Credits.
Reading of material in the student's field of interest. Admission by permission of instructor.

CHIN 4186. Directed Reading II. 3 Credits.
Continuation of CHIN 4185. Reading of material in the student's field of interest. Admission by permission of instructor.

CHIN 4186W. Directed Reading II. 3 Credits.
Continuation of CHIN 4185. Reading of material in the student's field of interest. Admission by permission of instructor.

CHIN 4198. Proseminar: Readings for the Major in Chinese Language and Literature. 3 Credits.
Recommended for all majors. Preparation for advanced research in Chinese sources. One-on-one tutorials, seminar meetings, and practice in consulting Chinese reference works, both traditional and modern. Literary criticism; keeping abreast of sinological scholarship. Prerequisite: CHIN 3106.

CHIN 4199. Proseminar: Readings for the Major in Chinese Language and Literature. 3 Credits.
Continuation of CHIN 4198. Recommended for all majors. Preparation for advanced research in Chinese sources. One-on-one tutorials, seminar meetings, and practice in consulting Chinese reference works, both traditional and modern. Literary criticism; keeping abreast of sinological scholarship. Prerequisite: CHIN 4198.

CHIN 6109. Introduction to Classical Chinese. 3 Credits.
Students explore the basic grammar and vocabulary of literary Chinese. Selections are based on the students' interests and level of proficiency, and will include such genres as prose, short stories, performance texts, ci poetry and qu. Graduate students who are taking 6109 will demonstrate their problem-solving and reading abilities through a 15-20 annotated translation at the end of the semester. Prerequisites: CHIN 2004 or equivalent. (Same as CHIN 3109).

CHIN 6110. Introduction to Classical Chinese. 3 Credits.
Students explore the basic grammar and vocabulary of literary Chinese. Selections are based on the students' interests and level of proficiency, and will include such genres as prose, short stories, performance texts, ci poetry and qu. Graduate students who are taking 6109-6110 will demonstrate their problem-solving and reading abilities through a 15-20 annotated translation at the end of the semester. Prerequisites: CHIN 2004 or equivalent. (Same as CHIN 3110).

CHIN 6111. Chinese Literature in Translation. 3 Credits.
A survey of the literatures and cultures of pre-modern China, from the origin of Chinese civilization through the last imperial dynasty including the works of representative writers as well as major literary modes, such as historical documents, philosophical writings, poetry, folktale, short story, drama, and novel. Graduate students taking CHIN 6111 will demonstrate their ability in conducting independent research by writing a 15-20 page research paper.

CHIN 6112. Chinese Literature in Translation. 3 Credits.
A survey of the literatures and cultures of China, from late Qing (the last imperial dynasty) to contemporary China and the Chinese-speaking world. Students will be introduced to works of representative writers as well as major literary genres, including fictions, poetry, dramas, and essays.Students taking CHIN 6112 will develop the ability to conduct independent research on the primary text, and to evaluate the significance of the works in cross-cultural, comparative context, by writing a 15-20 page term paper. (Same as CHIN 3112).

CHIN 6123. Structure of Chinese. 3 Credits.
Introduction to the structure of Chinese from the perspective of linguistic analysis; serves to prepare students for more advanced graduate level courses in Chinese linguistics. Coursework includes introductory readings, readings from the primary linguistics research literature, and hands-on problem solving, etc.

CHIN 6125. History of the Chinese Language. 3 Credits.
The methodologies and theories in Chinese historical phonology and syntax. Students will read materials in the original language, e.g. Classical Chinese, Vernacular writing, and etc.Students will work towards a term research paper throughout the semester on a topic of their own choice. For graduate students, there will be one extra question on all of the assignments throughout the semester including the homework problem sets, midterm exams and final exam.

CHIN 6126. Chinese Phonology. 3 Credits.
The theory and practice in Chinese phonology. Students will be provided with fundamentals of articulatory phonetics (the study of how speech sounds are produced) and phonology (the study of sound systems), which they apply to the study of phonetic and phonological properties of standard Chinese. Prerequisites: CHIN 1001 or equivalent.

CHIN 6128. Chinese Semantics. 3 Credits.
The formal approaches to semantics and interface issues between semantics and syntax and phonology, with an emphasis on aspects related to Chinese, such as quantificational isomorphism, modality, focus, question semantics, adjectival semantics and etc. Graduate students taking this course will turn in a research paper by the end of the semester to demonstrate their understanding of a certain topic and ability to do independent research.

CHIN 6171. Poetry of the Tang and Song Periods. 3 Credits.
Introduction to the world of Chinese poetry; examination of exemplary works of leading Tang and Song poets. Students will be reading and interpreting works by Li Bo, Du Fu, Han Shan, Du Xunhe, and Bai Juyi. Through individual and collaborative analytical exercises, students will become familiar with styles and aesthetic features of Tang and Song poetry. Students will be assigned a translation project: they will select a single classical poet, and translate a selection of poems by that poet into English, with full annotations. Undergraduate students are allowed by instructor approval. Prerequisites: CHIN 3109 or equivalent.

CHIN 6172. Poetry of the Tang and Song Periods. 3 Credits.
This course introduces students to the world of Chinese poetry by examining exemplary works of leading Tang and Song poets. Students will be reading and interpreting works by Li Bo, Du Fu, Han Shan, Du Xunhe, and Bai Juyi. Class work includes lectures by the instructor but emphasizes student participation through means such as guided translation, textrecitation, and students' presentations. Through individual and collaborative analytical exercises, students will become familiar with styles and aesthetic features of Tang and Song poetry. Students who take 6171-6172 will be assigned a translation project:they will select a single classical poet, and translate a selection of poems by that poet into English, with full annotations. Undergraduate students are allowed by instructor approval. Prerequisites: CHIN 3109 or equivalent.

CHIN 6173. Traditional Chinese Theatre and Drama. 3 Credits.
Traditional Chinese Theatre and Drama is a multimedia-enhanced course, which examines dramas and theatrical genres of China of pre-modern time. Students will be introduced to the history of Chinese theatre, the aesthetics of theatrical performances, as well as works of representative playwrights in major dramatic genres.Students will develop the ability to conduct independent research by writing a 15-20-page research paper on the primary text, and to evaluate the significance of the works in cross-cultural, comparative context. Undergraduate students are allowed by instructor approval.

CHIN 6179. 20th Century Chinese Literature I. 3 Credits.
Introdcution to modern Chinese literature through close reading and discussion of representative literary works from the era. The readings will include several genres such as essay, poetry, short story, and novella. All readings and class discussion will be in Chinese.Graduate students taking CHIN 6179 will demonstrate their ability in conducting independent research by writing a 15-20 page research paper. Undergraduate students are allowed only by instructor approval. Prerequisites: CHIN 4107 or equivalent.

CHIN 6180. 20th-Century Chinese Literature II. 3 Credits.
Introduction to the literature of 20th century China through close reading and discussion of representative literary works from the era. All readings and class discussion are in Chinese. Graduate students taking CHIN 6179 will demonstrate their ability in conducting independent research by writing a 15-20 page research paper. Undergraduate students are allowed only by instructor approval. Prerequisites: CHIN 4107 or equivalent.

CHIN 6199. Graduate Seminar. 3 Credits.
Preparation for advanced research in Chinese sources. One--on-one tutorials, seminar meetings, and practice in consulting Chinese reference works, both traditional and modern. Literary criticism; keeping abreast of sinological scholarship. Students will do research on a selected topic in Chinese literature or philosophy, and prepare a research paper of 25 or more pages on this topic. Restricted to individualized curriculum; admission by instructor approval.

CHIN 6201. Second Language Acquisition of Mandarin Chinese. 3 Credits.
This course is an overview of, and introduction to, the theoretical foundations of second language (L2) acquisition in general and the acquisition of Chinese as a foreign language in particular. It is designed to deepen the understanding of the Chinese language from the perspective of L2 learners. Research papers focusing on the L2 acquisition of Mandarin Chinese from various perspectives, such as psycholinguistics, cognitive linguistics, pedagogical theories, will be introduced in this class.

CHIN 6210. Introduction to Teaching Chinese as a Foreign Language. 3 Credits.
Gain knowledge of TCFL essentials including Chinese pedagogical grammar, instructional design, technology application, and testing and assessment. Discuss National Standards and assessment guidelines for proficiency development, and current studies of second language acquisition (SLA). Examine key issues, studies, and practices on the teaching and acquisition of difficult areas of Chinese, such as the pronunciation and writing systems, as well as topics of general interest. Explore language-teaching methodologies and techniques, and Chinese language testing and assessment. Admission by permission of instructor.

CHIN 6310. Practicum in Chinese Language Instruction. 3 Credits.
Develop basic skills for teaching Chinese as a foreign language (TCFL) through classroom observation, group discussion, lesson planning, syllabus writing, test designing, and supervised field experience in Chinese instruction. Gain knowledge of classroom management. Required seminar and practice sessions. Admission by permission of instructor. Prerequisites: CHIN 6210 or permission of instructor.

CHIN 6841. Religion in Modern China. 3 Credits.
The changes, destructions, and reconstructions of Chinese religions from the late 19th century to the present day. The relationship between the (re)making of Chinese religions and the making of a modern Chinese nation-state. (Same as CHIN 3841, REL 3841).

CHIN 6998. Thesis Research. 3 Credits.

CHIN 6999. Thesis Research. 3 Credits.

CIVIL ENGINEERING (CE)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CE 1010. Introduction to Civil and Environmental Engineering. 1 Credit.
An introduction to the profession of civil and environmental engineering. Field visits and laboratory exercises complement classroom instruction. (Fall).

CE 1020. Introduction to a Sustainable World. 1 Credit.
The science underlying the basic processes that gave rise to the world we live in and that maintain its viability for human life. Ecosystem-functioning environmental issues, such as greenhouse gas emission and ozone, with current efforts to resolve them. Technological innovations in the context of sustainability.

CE 1098. Variable Topics. 1-36 Credits.

CE 2210. Engineering Computations. 3 Credits.
Numerical methods for engineering applications. Methods for solving systems of linear equations, root finding, curve fitting, and data approximation. Numerical differentiation and integration and numerical solution of differential equations. Computer applications. Prerequisites: CSCI 1121, APSC 2113. (Spring).

CE 2220. Introduction to the Mechanics of Solids. 3 Credits.
Stress and strain, axial load problems, torsion, shear force and bending moment, pure bending of beams, shearing stresses in beams, compound stresses, analysis of plane stress and plane strain, combined stresses, deflection of beams, statically indeterminate problems, columns, energy methods. Prerequisite: APSC 2057, APSC 2113.

CE 2510. Environmental Sustainability. 3 Credits.
An introduction to environmental sustainability with focus on the nexus of water, energy, and climate; energy demands of water systems, water footprints of energy generation, and how the two valuable resources are limiting each other; technologies and research frontiers toward a sustainable water and energy supply.

CE 2710. Introduction to Transportation Engineering. 3 Credits.
Transportation system components; roadway traffic capacity and network performance measures; signalized and un-signalized intersections; monitoring techniques, instruments and data processing. Sustainability issues and environmental impact of transportation systems with focus on urban design, planning and regulation. Prerequisites: Math 2233. (Spring).

CE 3110W. Civil Engineering Materials. 2 Credits.
Mechanical properties and behavior of civil engineering materials such as metals, concrete, and fiber-reinforced polymer composites. Properties range from plastic deformations of metallic materials to crushing of confined and unconfined concrete. Basis of the strength of materials. Concepts of creep, fatigue, fracture, and crack propagation. Prerequisite: CE 2220. (Fall).

CE 3111W. Civil Engineering Materials Lab. 1 Credit.
Measurement of stress–strain characteristics and study of failure modes in ductile steel, brittle concrete, and anisotropic composite materials. Experiments include data collection, data analysis, and interpretation and presentation of results regarding tension, compression, bending, impact, and shear properties. Prerequisite or corequisite: CE 3110W. Prerequisites: CE 3110W. (Fall).

CE 3140. Sustainability in Engineering Materials. 2 Credits.
Sustainable engineering: overall materials energy needs/properties and impacts; load resistance and aging, thermodynamics, water conservation, heat transfer, use of energy-efficient materials in construction, life-cycle assessment. Prerequisite: CE 3110, CE 3111.

CE 3230. Structural Theory I. 3 Credits.
Theory of statically determinate structures; stability and determinacy; influence lines and moving loads. Analysis of beams, frames, trusses, and arches. Calculation of deflections. Prerequisites: CE 2210, CE 2220. (Fall).

CE 3240. Structural Theory 2. 3 Credits.
Theory of statically indeterminate structures using matrix methods and classical approaches such as moment distribution and slope-deflection; influence lines; energy methods. Prerequisite: CE 3230.

CE 3310. Reinforced Concrete Structures. 3 Credits.
Properties of concrete and reinforcement; design of flexural reinforcement, shear reinforcement; development of reinforcement; design of columns, floor slabs; ethics and professionalism in design. A design project, including the use of computer software and a detailed report, is required. Prerequisite or corequisite: CE 3240.

CE 3520. Environmental Engineering I: Water Resources and Water Quality. 3 Credits.
Physical and chemical analyses of water quality and characteristics. Microbiology of water and pathogens. Introduction to water treatment processes involving coagulation, flocculation, filtration, and disinfection. Prerequisite or corequisite: CE 3610.

CE 3521. Environmental Engineering Laboratory. 1 Credit.
Laboratory experiments for physical and chemical analyses of water and wastewater. Measurement of turbidity, alkalinity, dissolved oxygen, BOD, COD, suspended solids, and optimum coagulant dose using jar tests. Corequisite: CE 3520.

CE 3610. Hydraulics. 3 Credits.
Fluid statics: pressure forces, buoyancy, and flotation. Application of kinematic principles; flow fields, stream tubes, and flow nets. Fluid dynamics: applications to pipe flow, hydraulic models, measurement of pressure, and velocity. Open channel flow: applications to water resources engineering. Prerequisite: MAE 3126.

CE 3611. Hydraulics Laboratory. 1 Credit.
Laboratory experiments and demonstrations of hydraulics in pipe and open-channel flow. Topics include center of pressure, floating bodies, Bernoulli's theorem, discharge coefficients, velocity profile, and head losses. Prerequisite or corequisite: CE 3610.

CE 3720. Highway Engineering and Design. 3 Credits.
Road vehicle performance. Principles of highway design: horizontal and vertical alignments, roadside design; drainage and drainage structures, earthwork, intersections, interchanges, parking facilities; basic traffic models; highway materials. Application of safety standards. Prerequisite: MATH 2233; prerequisite or corequisite: APSC 3115 and CE 2220.

CE 3730. Sustainable Urban Planning Dynamics. 3 Credits.
Human and physical processes shaping urban environments; human–environment interactions in the context of an urban region; urban design, materials, transport, planning, and regulation. Prerequisite: CE 2710.

CE 4320. Metal Structures. 3 Credits.
Principles of the design of metal structures, structural elements, connections, specific problems of analysis including the use of computer software, methods of construction, professionalism in design. Prerequisite: CE 3240.

CE 4330W. Contracts and Specifications. 3 Credits.
Law of contracts, construction contracts, specifications, bidding, insurance and bonds, professional liability, arbitration of disputes, litigation. Restricted to juniors and seniors. (Spring, Every Year).

CE 4340. Design and Cost Analysis of Civil Engineering Structures. 0-3 Credits.
Total structural systems concepts. Design of civil engineering structures such as piers, wharves, bulkheads, offshore platforms, dams, and other special structures. Principles of cost analysis for timber, steel, and reinforced concrete structures. Project and report are required. Prerequisites: CE 3310, CE 4320, CE 4410. (Spring).

CE 4410. Introduction to Geotechnical Engineering. 3 Credits.
Soils and rock formation, soil composition, permeability, seepage and flow netanalysis, stresses in soil medium, consolidation and settlement, shear strength of soil, analysis of lateral earth pressures, soil compaction. Prerequisite: CE 2220, MAE 3126.

CE 4411. Geotechnical Engineering Laboratory. 1 Credit.
Laboratory experiments to evaluate liquid and plastic limits, grain-size distribution, shear strength, compressibility, permeability, and moisture–density relationship of soils. Prerequisite or corequisite: CE 4410.

CE 4450. Introduction to Geo-environmental Engineering. 3 Credits.
Characterization of soils and wastes, engineering properties of soils and geo-synthetics, fundamental concepts of fate and transport of contaminants, common practice in design and construction of waste containment systems, current methods for remediation of contaminated groundwater and soils. Prerequisites: CE 3520, CE 4410. (Spring, Every Year).

CE 4530. Environmental Engineering II: Water Supply and Pollution Control. 3 Credits.
Introduction to wastewater treatment systems including clarification, suspended and attached growth processes. Use of dissolved oxygen models. Water supply and wastewater collection systems, applied hydraulics of pipelines and pumps. Planning to meet quality needs and regulatory requirements. Prerequisite: CE 3520.

CE 4620. Hydrology and Hydraulic Design. 3 Credits.
Descriptive hydrology: hydrologic cycle, precipitation, stream flow, evaporation, and transpiration. Quantitative hydrology: hydrograph analysis, hydrographs of basin outflow, storage routing. Probability concepts in hydrology: flood frequency, rainfall frequency, stochastic hydrology. Culverts and stilling basins. Prerequisite or corequisite: APSC 3115, CE 3610.

CE 4810. Research. 1-3 Credits.
Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status.

CE 4820. Special Topics. 1-6 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

CE 6101. Numerical Methods in Engineering. 3 Credits.
Eigenvalue problems. Numerical solution of systems of equations and ordinary differential equations. Solution techniques for elliptic, parabolic, and hyperbolic partial differential equations. Numerical methods for solving finite element equations. Introduction to solution of fluid-flow problems. Prerequisite: CE 2210.

CE 6102. Application of Probability Methods in Civil Engineering. 3 Credits.
Uncertainty in real-world information; basic probability concepts and models; random variables; useful probability distributions, statistical estimation of distribution parameters from observed data; empirical determination of distribution models; testing hypothesis; regression and correlation analyses; decision theory. Prerequisite: APSC 3115.

CE 6201. Advanced Strength of Materials. 3 Credits.
Deflection of beams using singular functions, unsymmetrical bending of beams, beams on elastic foundation. Beam-column problems, shear center for thin-walled beam cross sections, curved beams. Applications of energy methods, torsion, basic equations for theory of elasticity, thin- and thick-walled cylinders, stress concentration, and failure criteria. Prerequisites: CE 2220, CE 3240. (Spring).

CE 6202. Methods of Structural Analysis. 3 Credits.
Modern methods of analysis of statically indeterminate structures, matrix analysis based on flexibility, stiffness, energy and variational methods, substructuring techniques; consideration of plastic collapse of structures; introduction to the finite element method. Prerequisites: CE 2220, CE 3240. (Fall).

CE 6203. Reliability Analysis of Engineering Structures. 3 Credits.
Probability theory, theory of structural reliability, probabilistic analysis of strength and loads, risk and reliability function, empirical distribution, probability plot. The design service life, method of perturbation, Monte Carlo simulation. Fatigue and fracture, proof testing, inspection and repair–replacement maintenance. Prerequisite: APSC 3115.

CE 6204. Analysis of Plates & Shells. 3 Credits.
Bending and stretching of thin elastic plates under loading with various boundary conditions, continuous plates and plates on elastic foundations, theory of folded-plate structures. Theory of curved surfaces; general linear bending theory and its simplification to membrane theory; bending stresses in shells of revolution, shallow-shell theory. Prerequisites: CE 2220, CE 3240. (Spring, odd years).

CE 6205. Theory of Structural Stability. 3 Credits.
General criteria for stability, buckling of elastic and inelastic columns and frames, torsional and lateral buckling, variational methods. Buckling of plates and shells under static loads, stability of stiffened structures, effect of imperfections and boundary conditions. Prerequisites: CE 2220, CE 3240. (Fall).

CE 6206. Continuum Mechanics. 3 Credits.
Introduction to the mechanics of continuous media. Tensor calculus; kinematics; stress and stress rate, conservation of mass, conservation of linear and angular momentum, energy balance, second law of thermodynamics; constitutive theory; linear and nonlinear elasticity, newtonian fluids, micropolar elasticity. Prerequisites: CE 2220. (Fall, spring, and summer, even years).

CE 6207. Theory of Elasticity I. 3 Credits.
Introduction to Cartesian tensors; deformation, stress, constitutive relations for linear elasticity; formulation of boundary value problems, variational principles, torsion and bending of prismatial rods, plane problems. Prerequisites: CE 2220. (Same as MAE 6207) (Spring).

CE 6208. Plasticity. 3 Credits.
Introduction to the continuum theory of plastic deformation. Physical basis of rate-independent plasticity. Concepts of yield, strain hardening and softening, reverse yield, and cyclic plasticity. Constitutive equations describing plastic deformation. Prerequisite: CE 6201 or CE 6206.

CE 6209. Mechanics of Composite Materials. 3 Credits.
Stress–strain relationship for orthotropic materials, invariant properties of an orthotropic lamina, biaxial strength theory for an orthotropic lamina. Mechanics of materials approach to stiffness, elasticity approach to stiffness. Classical lamination theory, strength of laminates. Statistical theory of fatigue damage. Same as MAE 6233. Prerequisite: CE 3240.

CE 6210. Introduction to Finite Element Analysis. 3 Credits.
Calculus of variations. Variational formulation of the finite element method. Weighted residual techniques. Computer implementation of the finite element method. Application to problems in heat transfer, stress analysis, fluid flow, and structural analysis. Prerequisites: proficiency in one computer language, CE 2220, CE 3240. (Fall).

CE 6301. Design of Reinforced Concrete Structures. 3 Credits.
Structural behavior of reinforced concrete structures, ultimate strength and deformation characteristics; design of structural components including beams, columns, floor slabs, deep beams, corbels, and composite slab/beam systems. Prerequisite: CE 3310.

CE 6302. Prestressed Concrete Structures. 3 Credits.
Structural behavior and failure modes of prestressed concrete structures; design in prestressed concrete, including long-span structures, bridges, and precast systems. Prerequisite: CE 3310.

CE 6310. Advanced Reinforced Concrete Structures. 3 Credits.
Conception, analysis, and design of low-rise and high-rise buildings by ultimate-strength methods, precast systems, progressive collapse, earthquake considerations, domes, folded plates, shell-type structures, and special topics. Prerequisite: CE 6301.

CE 6311. Bridge Design. 3 Credits.
Application of basic design procedures for reinforced and prestressed concrete bridges, according to AASHTO bridge specifications. Various types of concrete bridges, design superstructure bridge elements (deck slab, girders, bearing pads), and development of superstructure/substructure details. Prerequisite: CE 6302.

CE 6320. Design of Metal Structures. 3 Credits.
Structural behavior of metal structures and composite girders. Conception, analysis, and design of low-rise and high-rise buildings by elastic and inelastic methods. Earthquake considerations and special topics. Prerequisite: CE 4320.

CE 6321. Advanced Metal Structures. 3 Credits.
Conception and design of advanced structural components and systems, hysteretic behavior, plastic design principles, box-type girders, cable systems, and unique structural systems. Prerequisite: CE 6320. (As arranged).

CE 6340. Structural Dynamics. 3 Credits.
Vibration of continuous systems: membranes, beam plates, and shells; approximate methods of vibration analysis; methods of integral transform; analysis of nonlinear systems; wave propagation. Prerequisites: APSC 2058, CE 3240. (Fall, odd years).

CE 6341. Random Vibration of Structures. 3 Credits.
Introduction to random processes, responses of linear structures to stationary and nonstationary random inputs. Structural responses to earthquakes, waves, boundary-layer turbulences, wind loads, etc. Failure analysis of structures under random loads. Prerequisites: APSC 3115, CE 6340. (Spring, even years).

CE 6342. Structural Design to Resist Natural Hazards. 3 Credits.
Prediction of forces due to earthquakes and strong winds; generalized codes; pseudostatic methods for preliminary design; codes based on spectra, energy absorption and ductility; influence of foundations; ground failures; static and aeroelastic effects of strong winds. Design project. Prerequisites: CE 3240, CE 4340, either CE 6340 or CE 6701. (Spring).

CE 6350. Intro to Biomechanics. 3 Credits.
Fundamentals of continuum mechanics as they apply to biological materials: concepts of stress, strain, and equilibrium; elastic and viscoelastic properties of solids; physiological fluid mechanics and bioheat and mass transfer. Fundamentals of solid mechanics of soft tissues and bone structures. Development of computer models and applications. Prerequisite: CE 2220.

CE 6401. Fundamentals of Soil Behavior. 3 Credits.
Soil mineralogy, clay–water–electrolyte systems, soil composition, fabric, structure, volume change behavior, permeability, coupled phenomena, in-situ evaluation of soil behavior. Prerequisite: CE 4410.

CE 6402. Theoretical Soil Mechanics. 3 Credits.
Porous media, stress–strain behavior of soil skeleton, elastic and elastoplastic models for soil behavior, critical state concept, cam clay, strength of soils, stress–dilatancy, stress paths. (Fall, odd years).

CE 6403. Geotechnical Engineering. 3 Credits.
Principles of soil mechanics applied to the analysis and design of mat foundations, pile foundations, retaining structures including sheeting and bracing systems, and waterfront structures. Foundations on difficult soils and reinforced earth structures. Prerequisite: CE 4410.

CE 6404. Geotechnical Earthquake Engineering. 3 Credits.
Ground motion, wave propagation, foundation isolation, site response analysis, seismic stability of retaining structures, soil structure interaction. Prerequisite: graduate standing.

CE 6405. Rock Engineering. 3 Credits.
Classification and properties of rock; nature of rock masses and rock discontinuities; field exploration; methods of excavation; design and applications to foundation slopes, tunnels, and chambers in rock. Prerequisite: CE 4410.

CE 6501. Environmental Chemistry. 3 Credits.
Principles of chemistry of natural waters, water supplies, wastewaters, hazardous wastes. Stoichiometry, equilibrium, solubility, kinetics, organic chemistry, biochemistry, analytical techniques. Examples from water/wastewater practice to illustrate applications. Prerequisites: CHEM 1111, CHEM 1112. (Fall).

CE 6502. Advanced Sanitary Engineering Design. 3 Credits.
Elements of design including basic parameters and hydraulic requirements. Layout and design of water supply and wastewater systems, pumping stations, and treatment plants. Plant expansions and modifications. Prerequisite: CE 4530.

CE 6503. Principles of Environmental Engineering. 3 Credits.
Basic concepts of water, air, and terrestrial environments and interrelationships among them. Principles of environmental chemistry and microbiology. Assessment of environmental quality and impacts. Environment and health. Water and wastewater systems. Legal and regulatory controls. Prerequisites: CE 3520. (Fall).

CE 6504. Water and Wastewater Treatment Processes. 3 Credits.
Theory and application of commonly used processes. Sedimentation, coagulation, filtration, disinfection, gas transfer, activated sludge, trickling filters, oxidation ponds, sorption, and sludge stabilization and disposal. Process combinations to produce treatment systems. Prerequisite: CE 6503.

CE 6505. Environmental Impact Assessment. 3 Credits.
Public policy and legislation on environmental quality. Methods for assessing impacts of engineering projects. Technology for assessing impacts on air, water, and land environments, applied to transportation facilities, water and wastewater facilities, industrial and community development. Prerequisites: CE 3520. (Fall).

CE 6506. Microbiology for Environmental Engineers. 3 Credits.
Principles and applications of advanced treatment systems for water, wastewater, and hazardous wastes, including: biological nutrient removal, oxidation-reduction processes, stripping, sorption, membrane processes, chemical precipitation, others. Prerequisites: CE 3520. (Spring, even years).

CE 6507. Advanced Treatment Processes. 3 Credits.
Principles and applications of advanced treatment systems for water, waste-water, and hazardous wastes, including: biological nutrient removal, oxidation-reduction processes, stripping, sorption, membrane processes, chemical precipitation, others. Prerequisite: CE 6504.

CE 6508. Industrial Waste Treatment. 3 Credits.
Types of industries, waste sources. Characteristics, measurements, and evaluation. Minimization and reuse. Treatment process selection, development, and design. Regulations, permits, standards, monitoring, and pretreatment. (Fall).

CE 6509. Introduction to Hazardous Wastes. 3 Credits.
Regulations, including RCRA and Superfund. Transport and fate of hazardous substances. Elements of environmental toxicology, risk assessment, and hazard ranking. Monitoring, data collection, and evaluation. Waste minimization. Case histories. Prerequisites: CE 3520. (Spring).

CE 6601. Open Channel Flow. 3 Credits.
Types and regimes of flow; energy and momentum principles, uniform flow, gradually varied flow, spatially and rapidly varied flow. Flow in nonprismatic channels. Unsteady flow; dam break problem, flood routing. Prerequisite: CE 3610 .

CE 6602. Hydraulic Engineering. 3 Credits.
Hydraulic design of conveyance, regulating, and measurement structures. Design for spillways, energy dissipators, inlet and outlet works related to dams. Forces on hydraulic structure and stability analysis. Hydraulic turbines and pumps. Design considerations for flow through pipes. Transients and cavitation. Prerequisite: CE 3610.

CE 6603. Design of Dams. 3 Credits.
Project planning and investigations. Types of dams; design of earth–rock fill dams; stability analysis, foundation treatment, wind–wave protection. Construction methods for dams. Reservoir sedimentation. Safety inspection of dams. Prerequisite: CE 3610.

CE 6604. Advanced Hydrology. 3 Credits.
Precipitation, evaporation, and transpiration. Soil physics; stream flow, drainage basins, hydrograph analysis, and stream-flow routing. Design criteria, flood frequency statistics and analysis, flood forecasting and control, water supply forecasting. Prerequisite: CE 4620.

CE 6605. Ground Water and Seepage. 3 Credits.
Permeability theory of groundwater flow, flow nets, analogs, computer solutions; applications to engineering problems such as excavation dewatering, flow through dams, stabilization of earth slopes. Prerequisites: CE 4410. (Spring).

CE 6606. Mechanics of Water Waves. 3 Credits.
Irrotational theory for deep- and shallow-water waves, reflexion, refraction, diffraction, attenuation. Water waves of finite amplitude: shallow-water theory, tides, bores, long-waves theory, conoidal and solitary waves. Wave generation by wind. Wave breaking and reflexion. Prerequisite: APSC 6213 and permission of instructor.

CE 6607. Water Resources Planning and Control. 3 Credits.
The parameters of water resources planning and control, economics of water resources and related natural resources, economics of water-quality control, physical parameters of water resource development, water resources law. Prerequisite: approval of department.

CE 6608. Hydraulic Modeling. 3 Credits.
Dimensional analysis and similitude. Types of models—physical, mathematical. Distortions in physical models. Erodible bed models. Prerequisite: CE 3610.

CE 6609. Numerical Methods in Environmental and Water Resources. 3 Credits.
Use of microcomputers in water resources. Elements of finite difference schemes, basic operations, convergence, stability, and consistency. Nonuniform flow and error analysis; unsteady laminar flow; diffusion problems; unsteady flow in open channels; water hammer, seepage flow, and diffusion–dispersion problems. Prerequisites: CE 2210, MAE 3126. (Spring).

CE 6610. Pollution Transport Systems. 3 Credits.
Distribution of pollutants in natural waters and atmosphere, diffusive and advective transport, mathematics for stream pollutant deoxygenation rates, groundwater pollution transport, sediment transport, thermal transport, numerical simulation of pollutant transports in streams and estuaries. Prerequisite: CE 3610, MAE 2131.

CE 6701. Analytical Mechanics. 3 Credits.
Fundamental principles, particle and rigid-body dynamics, generalized coordinates, variational principles and Lagrange's equations, nonholonomic systems, Hamilton's equations, theory of small oscillations. Prerequisites: APSC 2058, APSC 2113. (Fall).

CE 6702. Vehicle Dynamics. 3 Credits.
Engineering principles and analytical methods explaining the performance of an automotive vehicle. Basic mechanics governing vehicle dynamic performance in longitudinal, ride, and handling modes. Engineering analysis techniques applied to basic systems and subsystems to derive the governing equations. Prerequisite or corequisite: CE 6701. Prerequisites: CE 6701 (either prerequisite or corequisite). (Spring, even years).

CE 6705. Nonlinear Finite Element Modeling and Simulation. 3 Credits.
Rigid and flexible body methods for modeling crashes. Application of dynamic nonlinear finite element methods with contact algorithms for modeling crash phenomena. Modeling and simulation of vehicles, airbags, safety restraining systems, and highway barriers. (Spring).

CE 6706. Pavement & Runway Design. 3 Credits.
Pavement types, wheel-load characteristics; stresses in pavements and subgrades; empirical methods of design of flexible and rigid highway and airfield pavements; general principles of runway design. (Spring, odd years).

CE 6707. Systems Dynamics Modeling and Control. 3 Credits.
Introduction of concepts in control theory and applications to solve problems in civil and transportation engineering dealing with single-input/single-output and multi-input/multi-output systems. Review of classical control theory in the frequency and time domain, state–space analysis, system optimization, and non-linear control. (Fall).

CE 6721. Traffic Engineering and Highway Safety. 3 Credits.
Roadway traffic capacity and network performance measures; steady and unsteady traffic flow phenomena; traffic control signalization theory and practical implementation; monitoring techniques, instruments, and data processing for highway safety. Traffic related highway safety design concepts. (Fall).

CE 6722. Intelligent Transportation Systems. 3 Credits.
Commands, controls, and communications in modern multimodal transportation; infrastructure/highway and vehicle automation, advanced traffic management, vehicle control and safety systems; information, data, and sensory requirements; practical applications and projects. Prerequisite: CE 2710 or CE 3720. Recommended background: basic knowledge of transportation engineering. (Spring, Every Year).

CE 6800. Special Topics. 1-6 Credits.
Topic to be announced in the Schedule of Classes.

CE 6801. Civil and Environmental Engineering Graduate Internship. 1 Credit.
For graduate students in the department. May be repeated once for credit. Prerequisite: required courses in the area of focus and department approval. Additional prerequisites may be required for a specific internship as determined by the research supervisor.

CE 6808. Research. 1-12 Credits.
Basic research projects, as arranged. May be repeated for credit.

CE 6998. Thesis Research. 3 Credits.

CE 6999. Thesis Research. 3 Credits.

CE 8320. Theory of Elasticity II. 3 Credits.
Application of integral transform and analytic function theory to solution of plane problems; elastic wave propagation. Three-dimensional elasto-statics. Prerequisite: APSC 6211; CE 6207.

CE 8321. Nonlinear Mechanics of Continua. 3 Credits.
Polar decomposition, invariance, isotropy, representation theorems for invariants and isotropic tensor functions. Deformation, kinematics, stress, balance principles. Principles for constitutive relations. Applications to nonlinear elasticity and non-Newtonian fluids. Prerequisite: CE 6206.

CE 8330. Advanced Finite Element Analysis. 3 Credits.
Review of variational formulation of the finite element method. Formulation of various continuum and structural elements. Application to static and dynamic problems in elasticity, plasticity, large deflection, and instability in plates and shells. Recent developments in finite element methods. Same as MAE 6288. Prerequisite: CE 6206, 6210; or MAE 6210, MAE 6286.

CE 8350. Sedimentation Engineering. 3 Credits.
Problems of erosion and sedimentation. Properties of sediment. Initiation of motion. Suspension of sediment and sediment discharge theories. Sedimentation measurements. Economic and legal aspects. Prerequisite: CE 6601 or approval of department.

CE 8351. Mechanics of Alluvial Channels. 3 Credits.
Physical processes in drainage basins and channels. Channel forms and bed forms. Hydraulics and sediment transport in alluvial channels. Design of stable channels. Qualitative and quantitative response of rivers. Channel stabilization, navigation channels. Case studies including environmental impacts. Prerequisite: CE 6601 or approval of department.

CE 8352. Advanced Hydraulics. 3 Credits.
Theory of unsteady flow. Diffusion and dispersion through pipes and open channels. Numerical solutions using finite element and finite difference methods. Prerequisite: CE 6601 or approval of department.

CE 8370. Intelligent Systems Theory and Applications. 3 Credits.
Overview of artificial intelligence, neural networks, genetic algorithms, fuzzy systems, and hybrid intelligent systems and their integration with other information processing methods. Intelligent systems applications; examples are drawn from ITS and traffic engineering, vehicle safety, remote sensing, and structural design optimization. Prerequisite: CE 6707.

CE 8380. Advanced Biomechanics. 3 Credits.
Historical overview of biomechanics and biomaterials. Fundamental concepts in mechanics as applied to the treatment of biological systems. Approaches to the mechanical analysis of the human structure under physiological and non-physiological loading conditions. Constitutive laws for biological materials. Finite element applications. Prerequisite: CE 6206 or 6350. (As arranged).

CE 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy qualifying examination. May be repeated for credit.

CE 8999. Dissertation Research. 1-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

CLASSICAL STUDIES (CLAS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CLAS 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

CLAS 2104. Ancient Medicine and Modern Medical Terms. 3 Credits.
The formation of medical terms derived from Greek and Latin, along with principles that govern the derivation of their meaning. The course includes a survey of ancient medical centers and practices.

CLAS 2105. Special Topics. 0-3 Credits.
Topics in Greek and Roman literature and culture; topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

CLAS 2105W. Special Topics. 3 Credits.
Topics in Greek and Roman literature and culture; topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

CLAS 2106. Mythology of the Classical World. 3 Credits.
The creation of the world, the nature of the gods, and the adventures of heroes as described in various Greek and Roman literary sources (e.g., epic, drama, hymns) and as shown in ancient art.

CLAS 2107. Greek and Roman Drama. 3 Credits.
Study of Greek and Roman tragedy and comedy; the nature and setting of dramatic performance in classical antiquity.

CLAS 2112. History of Ancient Greece. 3 Credits.
A political and social survey of Bronze Age Minoan and Mycenaean civilizations, the Iron Age, Archaic Period, Classical Greece through Alexander the Great. (Same as HIST 2112).

CLAS 2113. The Roman World to 337 A.D.. 3 Credits.
Prehistoric Italy; rise and decline of the Roman Empire and Latin civilization; cultural, social, and political developments in the Greek world under Roman rule. Same as HIST 2113.

CLAS 2803. The Ancient Near East and Egypt to 322 B.C.. 3 Credits.
Survey of Egyptian, Mesopotamian, Anatolian, West Semitic, and Iranian civilizations from the Neolithic period to Alexander's conquest. Same as HIST 2803.

CLAS 2804. History of Ancient Israel. 3 Credits.
The history of ancient Israel from the Patriarchs through the Romans. Topics include historical, archeological, political, social, cultural, religious, diplomatic, military, economic, and intellectual events, movements, and relationships. Same as HIST 2804.

CLAS 3105. Topics in Classical Studies. 0-3 Credits.

CLAS 3111. Topics in Ancient History. 3 Credits.
May be repeated for credit provided the topic differs. Same as HIST 3111.

CLAS 3114. Topics in Ancient Literatures and Cultures. 3 Credits.
May be repeated for credit provided the topic differs.

CLAS 3115. Topics in Ancient Art and Archaeology. 3 Credits.
May be repeated for credit provided the topic differs. Same as AH 3105.

CLAS 3901. Directed Project. 1-3 Credits.
Individual advanced reading or research, to be arranged with a member of the faculty. May be repeated for credit. Admission by permission of instructor and department.

CLAS 3901W. Directed Project. 1-3 Credits.

CLAS 4111. Capstone Study. 3 Credits.
The capstone study seminar enables junior or senior majors to design, in consultation with a Classical Studies faculty member, a culminating project aligned with their interests, previous curricular experience, and/or future goals. The results of a student's capstone study is submitted as a written report and shared with all Classical Studies majors in a presentation that might include written, oral, and/or digital formats. Capstone studies should demonstrate that a student can locate and evaluate information about the ancient world in both traditional and digital forms and present his or her findings clearly and logically. Restricted to Junior or Senior Status Only; Classical Studies majors only. Recommended background: Classical Studies.

CLAS 4901. Directed Project. 1-3 Credits.
Continuation of CLAS 3901. Individual advanced reading or research, to be arranged with a member of the faculty. May be repeated for credit. Admission by permission of instructor and department.

CLINICAL MANAGEMENT & LEADERSHIP (CML)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CML 2140. Mgt of HR in Health Sci Org. 3 Credits.
Builds on concepts introduced in HSci 104. Theory and application of management and leadership as they affect the management of human resources in health sciences organizations. Focus is on leadership, ethics, and organizational dynamics in a changing health care environment.

CML 2141. Planning&Mktg/Health Sciences. 3 Credits.
The role of planning and marketing in the management and promotion of health sciences services, products, and organizations. Focus on the theory and application of quality principles in assessment of on-going organizational effectiveness, concepts and techniques of project planning, and methods for identifying and addressing customer needs.

CML 2142. Financial Mgt/Health Sciences. 3 Credits.
An overview of accounting and financial concepts for management of health sciences organizations. Budgeting, cash management, reimbursement guidelines, and financial management.

CML 2143. Current Issues/Hlth Sci Mgt. 3 Credits.
Evaluation of major problem areas in the management of health sciences organizations. Discussions include legal, technological, managerial, organizational, and leadership issues in the changing health care environment.

CML 4144. Seminar/Health Sci Leadership. 3 Credits.

CML 6202. Human Resource Development. 3 Credits.
Methods, techniques and policies appropriate for the development and management of human resources complementary to an organization's vision, strategy, and desired culture. Managerial knowledge, skills and behaviors required for the effective management of people to promote and maintain a professional health care organization will be explored.

CML 6203. Health Info Quality & Outcomes. 3 Credits.
Approaches to medical informatics to support managerial decision making, patient care, and quality improvement in clinical practices. Ethical, legal, and social dimensions of health care information technology.

CML 6204. Marketing Clinical Services. 3 Credits.
The marketing process from the viewpoint of clinical practice managers. Needs assessment, environmental analysis, planning, distribution, pricing, promotion.

CML 6205. CaseStudies/CliniclMgt&Ldrshp. 3 Credits.
Integrative case-based approach to the analysis of complex problems in the management and leadership of clinical practice services.

CML 6274. Health Economics and Finance. 3 Credits.
Issues of health care economics, financial management, and budgeting that relate to managerial decision-making. Applied financial management, management control systems, budgeting, staffing, and cost accounting.

CML 6275. Ldrshp&Change in Clinical Mgt. 3 Credits.
Theories and models of leadership and change from a systems perspective. The development of leadership solutions to problems in clinical organizations; integration of all field course work into implementation plans for health care system changes.

CLINICAL RESEARCH ADMINISTRATION (CRA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CRA 2101. Basics of Clinical Research. 3 Credits.
Fundamental concepts, trends, regulations, and practices in clinical research. An overview of industry and government practices and policies in the development of patient care products (drug, devices, biologicals, and diagnostics) and treatment protocols.

CRA 2102. Processes of Clinical Research. 3 Credits.
The key process steps involved in the design, implementation, analysis, and approval of investigational new products with an emphasis on the operational steps involved in conducting clinical trials.

CRA 2103. Good Clinical Practices. 3 Credits.
The organization and management of data, documents, materials and findings resulting from clinical research as prescribed by governmental institutions, regulatory agencies, industry sponsors, and research organizations. Audit standards and mechanisms are introduced, and practice audits are conducted.

CRA 2104. Business of Clinical Research. 3 Credits.
Fiscal and managerial components of clinical research, including the budgeting processes, fiscal management, software applications, legal and contractual issues, and recruitment of personnel and subjects. Examination of all entities involved in clinical research, including drug, device, biological, and diagnostics sponsors; academic medical centers; and contract research organizations, site management companies, physician-run organizations, and health delivery organizations.

CRA 2105. Topics in Clinical Research. 3 Credits.
Guided readings and study in selected aspects of clinical research administration.

CRA 2107. Intro Monitoring Clin. Trials. 3 Credits.
Introduction to the role of monitoring in clinical research administration to ensure valid, reliable, and accurate clinical data and adherence to good clinical practices by sponsors and study sites.

CRA 4106. Clin Research Admin Internship. 3 Credits.

CRA 6201. Critical Analysis Clin Rsch. 3 Credits.
Analyses of the essential components of clinical research including good clinical practice, human subject protection, study design, and trials administration.

CRA 6202. Medicines Development. 3 Credits.
Examination of nonclinical, clinical, commercial, regulatory and risk assessment strategies required to develop a clinical development plan for an approvable, marketable new therapeutic and propose life cycle management strategies.

CRA 6203. Partnerships with Human Subjects. 3 Credits.
Regulatory, policy, ethical, and practical considerations associated with the engagement, recruitment, retention, and interaction with human research subjects.

CRA 6204. The Clinical Research Industry. 3 Credits.
Integration of project management principles, decision making models, cross-cultural competency, and interdisciplinary team dynamics to facilitate effective and efficient conduct of clinical trials.

CRA 6205. Clinical Investigation. 3 Credits.
Analysis and evaluation of study design strategies and current practices for major therapeutic areas of clinical research (e.g., vaccine development, cardiovascular disease, anti-infectives, CNS, etc.).

CRA 6208. International Clinical Rsrch. 3 Credits.
Analysis of the strategies and methods of clinical research in international settings; explore cultural and ethical consideration in global clinical research projects.

CRA 6209. Quality and Risk Management. 3 Credits.
Managing risk and safety assessments to ensure quality in clinical research.

CRA 6210. MedicalWriting/ClinicalResrch. 3 Credits.
Strategies and practices in writing documentation related to clinical research administration.

CRA 6212. Teaching Strategies in the Health Professions. 3 Credits.
Teaching skills pertinent to the delivery of education in health sciences professions. Course design illustrates teaching and learning practices grounded in andragogy, contributing to curriculum program objectives of enhancing teaching skills. (Same as EHS 6212).

CRA 6213. Curriculum Development in Health Professions. 3 Credits.
Curriculum development and assessment skills in the health professions. Variables that affect the manner in which individuals learn and interact within professions and organizations. (Same as EHS 6213).

CRA 6275. Ldrshp&Change in ClinRschAdmin. 3 Credits.
A capstone course focusing on the concept of leadership within the contexts of health professionals, health systems, and health policy.

COLLEGE OF PROFESSIONAL STUDIES (CPS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CPS 0920. Continuing Research-Master's. 1 Credit.

CPS 1000. Special Topics. 1-4 Credits.

CPS 1090. Assessment of Prior Learning. 1-12 Credits.

CPS 1191. Special Topics. 1-3 Credits.
Pre-college level course of various topics. May be repeated for credit provided the topic differs.

CPS 2101. The Criminal Justice System. 4 Credits.

CPS 2102. Resource Management. 4 Credits.

CPS 2103. Particular Forms of Crime. 4 Credits.

CPS 2104. Leading Teams. 4 Credits.

CPS 2105. Deviance & Social Control. 4 Credits.

CPS 2106. Strategic Planning. 4 Credits.

CPS 2107. Models of Policing. 4 Credits.

CPS 2108. Criminal Intelligence. 4 Credits.

CPS 2109. Criminal Analysis. 4 Credits.

CPS 2110. Predictive Policing. 4 Credits.

CPS 2130. Intro to Forensic Science. 4 Credits.

CPS 2131. Crime Scene Investigation. 4 Credits.

CPS 2132. Computer Crime Investigation. 4 Credits.

CPS 2133. Incident Management. 4 Credits.

CPS 2134. Ethical Dilemmas in Policing. 4 Credits.

CPS 2170. Domestic Violence. 4 Credits.

CPS 2171. The Criminal Mind. 4 Credits.

CPS 2172. Comparative Police Systems. 4 Credits.

CPS 2173. Transnational Threats&Security. 4 Credits.

CPS 2174. Crisis & Emergency Planning. 4 Credits.

CPS 2175. Emergency Pub. Health Issues. 4 Credits.

CPS 2176. Media,PR&Crisis Communication. 4 Credits.

CPS 2177. Crime Prevention&Phys Security. 4 Credits.

CPS 2191. Special Topics. 1-6 Credits.

CPS 4190. Capstone Project. 4 Credits.

CPS 4192. Capstone Simulation. 2 Credits.

CPS 4199. Independent Research. 1-6 Credits.

CPS 6291. Special Topics. 1-6 Credits.

CPS 6292. Special Topics. 0 Credits.
Topics in politics and strategic communications. Topics vary by semester. Consult the Schedule of Classes for more details.

CPS 6294. Independent Research. 1-6 Credits.

CPS 6295. Supervised Internship. 1-6 Credits.

CPS 6298. Paralegal Studies Practicum. 0-3 Credits.
Master's degree candidates in the paralegal studies program work in legal environments while completing their studies. Students take active roles to obtain, manage, and maximize the value of their positions. Restricted to graduate students.

CPS 6300. Capstone Research Project. 3 Credits.
Culminating experience for students in the master's in strategic public relations program. Students use skills and knowledge learned in the program to prepare an in-depth case study on a recent major public relations case or crisis. Prerequisites: PSPR 6201, PSPR 6202, PSPR 6203, PSPR 6204, PSPR 6205 and PSPR 6206.

COLUMBIAN COLLEGE OF ARTS AND SCIENCES (CCAS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CCAS 0920. Continuing Research - Masters. 1 Credit.

CCAS 0940. Continuing Research - Doctoral. 1 Credit.

CCAS 1005. GWECP Advising. 0 Credits.

CCAS 2154. Elective Internship. 0-3 Credits.
Fieldwork and academic work carried out under faculty supervision. Students contract with agency, faculty, and Columbian College. Restricted to students of at least sophomore standing who have obtained approval from the Columbian College Undergraduate Studies Office.

CCAS 2190. Special Interdisciplinary Topics. 1-3 Credits.
May be repeated for credit provided the topic differs.

CCAS 2190W. SpecialInterdisciplinaryTopics. 1-3 Credits.

CCAS 3001. Undergraduate Research. 0-3 Credits.
Open to undergraduates at any level. Focused exploration of an idea, question, or issue, under the guidance of a research mentor/supervisor, culminating in a report about the experience. Students must find a sponsoring faculty member and receive approval from the Office of Undergraduate Studies in the Columbian College of Arts and Sciences. Zero-credit option is graded on a P/NP basis only and is available only during summer sessions. Restricted to Registration is restricted; students need to find a faculty mentor/supervisor and receive CCAS approval.

CCAS 4191. Special Interdisciplinary Major Capstone. 3 Credits.
Required of all students completing a special interdisciplinary major.

CCAS 6154. Elective Internship. 0-3 Credits.
Fieldwork and academic work carried out under faculty supervision. Students contract with agency, faculty, and Columbian College. May be repeated to a maximum of 6 credits. Admission by permission of Columbian College. Graded on a P/NP basis only. Zero credit option available only during summer sessions.

COMMUNICATION (COMM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

COMM 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details. Restricted to First-year students in CCAS.

COMM 1025. Introduction to Communication Studies. 3 Credits.
Introduction to historical and intellectual development of the field. Students survey the origins of contemporary theory; learn about fundamental concepts, models, investigative tools, and contexts of communication; and explore a variety of professional opportunities awaiting communication graduates.

COMM 1040. Public Communication. 3 Credits.
Study and practice of the basic techniques of public speaking used to inform, to entertain, and to persuade audiences. Emphasis on the speech-building process: audience analysis, research, development, composition, organization, style, delivery, and criticism.

COMM 1041. Interpersonal Communication. 3 Credits.
Study and practice of verbal and nonverbal communication in ritual, information and perspective sharing, problem solving, and relationship formation, maintenance, and dissolution. Designed to raise awareness of the complexity and power of the communication process in daily life and to help students develop interpersonal skills cognitively, affectively, and behaviorally.

COMM 1042. Business and Professional Speaking. 3 Credits.
Study of the communication process in business and professional organizations; practice in interviewing, small group communication, and public presentations. For non-majors and non-minors only.

COMM 2000. Sophomore Colloquium. 3 Credits.
Topic vary by semester. See the Schedule of Classes for more detailed information. Restricted to CCAS students with sophomore standing.

COMM 2100. Communication Theory. 3 Credits.
Inquiry into the nature and function of communication theory as a framework for the study of communicative behavior. Emphasis is placed on analysis of paradigmatic approaches in rhetorical, interpersonal, and mass communication theories and models, and on examination of contemporary research literature in communication. Prerequisite: COMM 1025.

COMM 2120. Small Group Communication. 3 Credits.
The study and practice of communication in small groups, focusing on problem solving, norms, roles, and leadership. Prerequisite: COMM 1025 or permission of the instructor.

COMM 2140. Nonverbal Behavior. 3 Credits.
Introduction to predominant theories, principles, and problems in the study of nonverbal behavior; application of research results to everyday life. Topics include facial expression, eye behavior, physical appearance, body movement and gestures, tactile messages, vocal characteristics, use of time, spatial dynamics, gender and life-stage differences.

COMM 2162. Sociology of the Family. 3 Credits.
Examination of the stages of family life: birth, childhood, premarital relationships, marriage and sex roles in marriage, retirement, and old age. Special emphasis on development and maintenance of interpersonal relations. Prerequisites: SOC 1001 or SOC 1002 or COMM 1025. (Same as SOC 2162).

COMM 3110. Research Methods-Communication. 3 Credits.
Processes of inquiry within interpersonal and public communication. Students are introduced to concepts of framing research questions, conducting literature reviews, developing a research design, using qualitative and quantitative research tools, and interpreting results of research in communication. Prerequisite: COMM 2100.

COMM 3170. Organizational Communication. 3 Credits.
Exploration of the philosophy, process, problems, and potential of human communication within organizational contexts. May involve experiential workshops and fieldwork.

COMM 3171. Professional Communication. 3 Credits.
Principles and theories of communication applied to situations encountered in organizational and professional environments. Development of knowledge and abilities for workplace tasks, such as interviewing, facilitating meetings, providing performance appraisals, designing and delivering instructional materials and other professional presentations.

COMM 3172. Health Communication. 3 Credits.
Exploration of the nature, functions, and impact of relational communication in the context of health care. Both formal (health care organizations) and informal (family communication) systems may be studied. Topics can include provider–patient interaction, media and health, confirmatory communication. Prerequisite: COMM 1041 or COMM 2100 or permission of instructor.

COMM 3173. Communication in a Mediated World. 3 Credits.
An exploration of human-to-human communication mediated by computer technology. Traditional communication theories are applied and adapted to the computer-mediated realm; newer theories of computer-mediated communication are addressed.

COMM 3174. Intercultural Communication. 3 Credits.
Exploration of the process, trends, rewards, and difficulties of human communication in intercultural contexts, with an eye toward establishing guidelines for mitigating miscommunication across cultures. May involve fieldwork.

COMM 3175. Strategic Communication. 3 Credits.
Exploration of the strategies and techniques employed in successful communication in the face of obstacles such as shrinking budgets and technological expansion. Emphasis on the principles of communication planning through a strategic matrix in an evolving communication environment.

COMM 3176. Issues and Image Management. 3 Credits.
The issues and image management function in corporate, professional, and nonprofit organizations. Assignments may include in-class collaboration on case studies of communication campaigns and crisis communication strategies, interviews with professionals in the practice of communication management, and a communication audit of strategies and messages of a selected organization.

COMM 3177. Corporate Ethical Communication. 3 Credits.
How businesses analyze their communication methods in the context of internal ethical standards. General codes of ethics, marketing ethics, corporate social responsibility, consumer protection, environmental protection, and ethical issues that corporate decision makers face in developing policies that affect employees, customers, and society as a whole.

COMM 3179. Sexual Communication. 3 Credits.
Exploration of sexual communication addressing behaviors, attitudes, and knowledge; the formation of sexual norms, negotiating sexual intimacy and safer-sex, gender roles in sexual relationships, sexual health communication campaigns, and parent-child sexual communication. (Same as COMM 6179).

COMM 3180. Communication Criticism. 3 Credits.
Evaluation of communication paradigms along critical dimensions of analysis. Prerequisite: COMM 1040 or COMM 4150 or permission of instructor.

COMM 3190. Selected Topics. 1-3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

COMM 4150. Persuasion. 3 Credits.
In-depth study of the principles and techniques of persuasion from both production and consumption perspectives, in both personal and mediated contexts. Emphasis on the common-premise model, with consideration of such topic areas as pathos/ethos/logos, attitude and behavior change, effectiveness, ethics, and subconscious influence. Prerequisite: COMM 1025.

COMM 4196. Independent Study. 1-3 Credits.
Independent research and special projects. Open to seniors or exceptionally well-prepared juniors majoring in communication. Before students are permitted to register, they must submit a written proposal of the plan of study and obtain approval of the faculty member who will direct the study and of the program chair.

COMM 4197. Internship. 3 Credits.
For communication majors and minors. Student-secured internships in public or private communication-related organizations in the metropolitan area. Students spend at least 15 hours per week doing communication-related work. Meetings, reports, and/or analysis paper are required. Admission requires prior program approval. Graded on a Pass/No Pass basis.

COMM 4199W. Senior Seminar. 3 Credits.
Capstone course limited to communication majors. Students work on an individually designed research project throughout the term, the results of which are presented in a major paper. Selected reading and discussion. Restricted to Limited to students majoring in the field. Prerequisites: COMM 2100 and COMM 3110.

COMM 6100. Communication Theory. 3 Credits.
An in-depth examination of theories of human communication, including those related to interpersonal, small group, intercultural, and media communication. Emphasis is placed on close examination of contemporary research literature in these areas. Restricted to Graduate students in Communication Management program.

COMM 6110. Research Methods in Communication. 3 Credits.
Graduate-level study of communication-based quantitative and qualitative research methods. Restricted to Graduate students.

COMM 6150. Persuasion. 3 Credits.
In-depth advanced study of principles, techniques, and ethics of persuasion from both sender and receiver perspectives, and across both personal and mediated contexts. Emphasis is on the common-premise model with special consideration of such topics as audience analysis; systems of ethics; persuasive claims; pathos/ethos/logos; attitude and behavior change; sender, message, channel, and receiver characteristics; and, subconscious influence. Restricted to Graduate students.

COMM 6165. Organizational and Communication Networks. 3 Credits.
The application of tools of social network analysis to organizational settings and behavior as well as communication processes, both within and among organizations. Restricted to Graduate students.

COMM 6171. Professional Communication. 3 Credits.
Principles and theories of advanced public communication used in organizational and professional environments; job interviewing, providing performance appraisals, designing and delivering instructional materials, facilitating and participating on panels, and other professional presentations. Restricted to graduate students.

COMM 6172. Health Communication. 3 Credits.
Health communication theory, methods of health communication research, and practices of effective health communication campaigns. Restricted to graduate students.

COMM 6174. Intercultural Communication. 3 Credits.
A multidisciplinary examination of the conceptual foundations of culture, the effects of culture on communication in comparative and multicultural contexts, and the suggested guidelines for communication competence in intercultural communication settings. Restricted to Graduate Students.

COMM 6189. Intercultural Negotiation. 3 Credits.
Introduction to negotiation and dispute resolution in intercultural contexts. Students hone their negotiation and conflict management skills through a series of simulation exercises. Theoretical and methodological issues related to the study of negotiation in intercultural contexts. Restricted to Graduate students; open to undergraduate students with permission of the instructor.

COMM 6190. Leadership Communication. 3 Credits.
Leadership as a function of human communication.Theories of leadership and communication strategies employed by leaders in a variety of contexts. Exploration of leadership as a form of social action. Emphasis on effectiveness and social implications of the strategies employed in leadership communication. Case studies. Restricted to undergraduate students with the instructor's approval.

COMM 6196. Independent Study. 1-12 Credits.
Directed research and study in a specific area of communication management, which must be pre-approved by department faculty prior to registration. Restricted to graduate students.

COMM 6199. Master's Thesis. 3-6 Credits.
Students must identify a member of the full-time faculty to serve as thesis adviser prior to registration. May be repeated for credit. Restricted to communication management master's degree candidates who have selected the thesis option.

COMM 6242. Organizational Communication and Conflict Management. 3 Credits.
An examination of models for effective organizational communication and constructive conflict resolution. Specific focus on organizational communication principles as well as theoretical and practical approaches to conflict analysis, management, and resolution. Restricted to Graduate students. (Same as ORSC 6242).

COMPUTER SCIENCE (CSCI)

Explanation of Course Numbers

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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CSCI 1010. Computer Science Orientation. 1 Credit.
Introduction to the field of computer science. Basic and emerging concepts and applications of computer science. Hands-on experiments and team projects. Technical resources, professional ethics, writing, and presentation.

CSCI 1011. Introduction to Programming with Java. 3 Credits.
An introductory course in programming a computer, using the Java language. Object-oriented programming, classes, applets, methods, control structures, inheritance, overriding, GUI widgets, containers, and exceptions.

CSCI 1020. Applications Software. 3 Credits.
Introduction to the use of microcomputer hardware and software for word processing (e.g., Word), spreadsheets (e.g., Excel), and database management (e.g., Access), with emphasis on the use of computers to solve typical problems in academia and business.

CSCI 1021. Introduction to Computers and the Internet. 3 Credits.
Survey of computers and languages. Introduction to computer programming. History of computing and networking. The effects of computing and the Internet on our lives. E-commerce and new technologies. Concepts of web page design. (Fall and spring).

CSCI 1022. Introduction to Internet Technology. 3 Credits.
An introductory course for non-technical students who wish to obtain a better understanding of the hardware and software that comprise the Internet. Information transfer over fiber, routing and switching of packets, methods of information transfer, protocols, software, ISP, web pages and multimedia.

CSCI 1023. Introduction to Web Software Development. 3 Credits.
Introduction to the Internet. Topics include address and URL to find your way, linking to a URL, HTML and web programming, building a web page, building a home page, client-server techniques. (Fall and spring).

CSCI 1030. Technology and Society. 3 Credits.
Historical, social, and ethical issues of the technological age. Ethical principles and skills and social analysis skills needed to evaluate the design and implementation of complex computer systems. Privacy, computer crime, equity, intellectual property, professional ethics. Data collection, analysis, and presentation; technical writing and oral communication skills.

CSCI 1030W. Technology and Society. 3 Credits.
Historical, social, and ethical issues of the technological age. Ethical principles and skills and social analysis skills needed to evaluate the design and implementation of complex computer systems. Privacy, computer crime, equity, intellectual property, professional ethics. Data collection, analysis, and presentation; technical writing and oral communication skills.

CSCI 1041. Introduction to FORTRAN Programming. 3 Credits.
Structured programming with high-level language using FORTRAN. Control structures. Different data types with emphasis on real and complex number computations. Arrays used with vector and matrix manipulation to solve simultaneous equations. External subroutines for mathematical and graphical applications. Prerequisite or corequisite: Math 1220 or MATH 1231.

CSCI 1111. Introduction to Software Development. 3 Credits.
Introduction to the solution of problems on a digital computer using the Java language. Object-oriented programming concepts; documentation techniques; design of test data. Writing, debugging, and running programs in an interactive computing environment.

CSCI 1112. Algorithms and Data Structures. 3 Credits.
Object-oriented software. Inheritance, exceptions, development of classes, event-driven programming. Data structures such as trees, lists, stacks, queues, and strings. Sorting and searching. Introduction to algorithm performance prediction. May be taken for graduate credit by students in fields other than computer science. Prerequisites: CSCI 1111 with a grade of C or higher; and MATH 1220 or MATH 1231. (Spring).

CSCI 1121. Introduction to C Programming. 3 Credits.
Structured programming with the C language. Control structures. Data types. Use of pointers. Matrix manipulation to solve simultaneous equations. External subroutines for mathematical and graphical applications. Introduction to C> Complex number representation. Corequisite: MATH 1220 or MATH 1231.

CSCI 1131. Introduction to Programming with C. 3 Credits.
Intensive introductory course for students with a science, mathematics, or other quantitative background. Solution of numerical and nonnumerical problems on a digital computer using C programming language in a Unix environment. Recommended for graduate and advanced undergraduate students in other departments. Prerequisite: MATH 1232 .

CSCI 1132. Data Structures and Software Design. 3 Credits.
Data structures such as trees, lists, stacks, queues, and strings. Big-O notation and introduction to algorithm performance analysis. Solutions of numerical and non-numerical problems. Use of I/O libraries. Application development and software testing. Prerequisite: CSCI 1121.

CSCI 1311. Discrete Structures I. 3 Credits.
Mathematics for computer science. Sets, functions, sequences. Propositional and predicate calculus, formal proofs, mathematical induction. Matrices, semigroups, groups, isomorphism. Relations, partitions, equivalence relations, trees, graphs. May be taken for graduate credit by students in fields other than computer science. Prerequisites: MATH 1220 or MATH 1231. (Fall).

CSCI 2113. Software Engineering. 3 Credits.
Programming techniques and software development in one or more programming languages. Application development with GUIs, database access, threads, Web programming. Prerequisites: CSCI 1112 with a grade of C or higher; MATH 1231. (Fall).

CSCI 2312. Discrete Structures II. 3 Credits.
Basic discrete techniques in computer science. Proofs, algebraic structures, number theory, graph theory, (coloring and planar graphs, communication networks), advanced recurrences, advanced sums, approximations and asymptotics. Prerequisites: CSCI 1311 with a grade of C or higher; MATH 1231. (Fall).

CSCI 2441. Database Systems and Team Projects. 3 Credits.
Design of relational database systems, relational query languages, normal forms, design of database applications. Team software development, integration, and testing. Professional code of ethics, intellectual property, privacy, software copyrights. Corequisite: CSCI 2113.

CSCI 2441W. Database Systems and Team Projects. 3 Credits.
Design of relational database systems, relational query languages, normal forms, and design of database applications. Team software development, integration, and testing. Professional code of ethics, intellectual property, privacy, and software copyrights. Corequisite: CSCI 2113. (Spring).

CSCI 2461. Computer Architecture I. 3 Credits.
Number representation, computer arithmetic, digital logic and circuit design. Computer organization, micro-architecture and processor datapath, assembly and machine language programming. Introduction to memory organization and the hardware–software interface. Implementation of high-level language constructs. Prerequisites: CSCI 1112, CSCI 1311. (Fall, Every Year).

CSCI 3212. Algorithms. 4 Credits.
Core concepts in design and analysis of algorithms, data structures, and problem-solving techniques. Hashing, heaps, trees. Graph algorithms, searching, sorting, graph algorithms, dynamic programming, greedy algorithms, divide and conquer, backtracking. Combinatorial optimization techniques. NP-completeness. Prerequisite: CSCI 1311, CSCI 2113.

CSCI 3221. Programming Languages. 3 Credits.
Programming language and software design fundamentals. Writing programs in a non-procedural programming language. Closures; procedure and data abstraction; object-oriented, procedural, and declarative programming; continuation compilation and interpretation, and syntactic extension. Advanced control structures appropriate for parallel programming. Prerequisite: CSCI 2113.

CSCI 3240. Pre-Senior Design with Research. 3 Credits.
For students who wish to combine a research project with their Senior Design project. The goal is to complete the research, under a faculty mentor, within three semesters. Prerequisite: CSCI 3212, CSCI 3313, CSCI 3411, and permission of instructor.

CSCI 3313. Foundations of Computing. 4 Credits.
Theoretical foundations. Formal languages and automata; regular expressions, context-free languages; finite state automata and pushdown automata; Turing machines and computability, recursive function theory, undecidability. Compiler construction. Lexical and syntax analysis; parsing and parsing techniques; lexical and parsing tools. Prerequisite: CSCI 2461, CSCI 2113.

CSCI 3362. Probability for Computer Science. 3 Credits.
Introduction to probability and statistics for computer scientists. Random variables. Conditional probability, independence, correlation. Applications to computer science, including information theory, data compression, coding, inference, Markov chains, introduction to randomized algorithms. Prerequisite: Math 1232, CSCI 1311; or permission of instructor.

CSCI 3410. Systems Programming. 3 Credits.
Concepts underlying all computer systems. Processor operation, hierarchical memory systems, embedded boards, data acquisition, actuation, and systems software such as compilers, linkers, and operating systems from the programmer's perspective. Use of embedded platforms to examine how programs interact with and are constrained by hardware. Prerequisite: CSCI 2461, CSCI 2113.

CSCI 3411. Operating Systems. 4 Credits.
Process management, process state, concurrent processing, synchronization, events. Operating system structure, the kernel approach, processor scheduling, task switching, monitors, threads. System management, memory management, process loading, communication with peripherals. File systems. Socket programming, packets, Internet protocols. Prerequisite: CSCI 2461, CSCI 2113.

CSCI 3462. Computer Architecture II. 3 Credits.
Computer organization; design of computer components and of a simple computer. Instruction set and assembly language of a pipelined RISC processor; introduction to high-performance processors; design of cache, main memory, and virtual memory systems; program performance models and system performance; I/O structure and peripherals. Prerequisites: CSCI 2113, CSCI 2461. (Same as ECE 3515) (Spring, Every Year).

CSCI 3571. Introduction to Bioinformatics. 3 Credits.
An introduction to the use of computational techniques in molecular biology, genetics, and evolution. Techniques and software for database searching, sequence alignment, gene finding, phylogenetics, genomics, and proteomics. May be taken for graduate credit. Prerequisites: BISC 1111 and BISC 1112 or permission of the instructor. (Same as BISC 2584) (Spring, Every Year).

CSCI 3907. Special Topics. 1-3 Credits.
Topic to be announced in the Schedule of Classes. (Fall and spring).

CSCI 3908. Research. 1-3 Credits.
Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status.

CSCI 4222. Theory of Computer Translators. 3 Credits.
Lexical and syntax analysis, regular expressions, context-free grammars, parsing techniques, top-down parsing, efficient parsing, syntax-directed translation, intermediate formats, flow of control, block structures, procedure calls, symbol tables, run-time storage, error-detection and recovery, code optimization, code generation. Prerequisite: CSCI 3462, CSCI 3313.

CSCI 4223. Principles of Programming Languages. 3 Credits.
Fundamental concepts underlying design of programming languages. Detailed study of functional and object-oriented computational models. Types, evaluation, abstraction, control flow, modules, mutation, laziness, polymorphism, subtyping, inheritance. Practice learning new languages. Prerequisites: CSCI 1311, CSCI 2113. (Same as CSCI 6223) (Spring, Odd Years).

CSCI 4235. Development of Open-Source Software. 3 Credits.
Design, process, tools, and culture of open-source software development. Cross-platform development and testing. Geographic dispersal, social and team dynamics, licenses (GPL, BSD, other); code reuse (modular code, shared libraries); very-large-scale distributed development techniques (CVS, Bugzilla, release-management, mailing-lists). May be taken for graduate credit. Prerequisite: CSCI 2113 or CSCI 6221.

CSCI 4237. Software Design for Handheld Devices. 3 Credits.
Design of interactive software for handheld devices. Event driven programming, user interface design practices, memory management, handheld debugging techniques. May be taken for graduate credit. Prerequisite: CSCI 2113 or CSCI 6221.

CSCI 4243. Capstone Design Project I. 3 Credits.
Planning, design, and construction of the capstone project. Economic analysis of the project. Application of software engineering principles, including software requirements, specification, requirements engineering, reuse, documentation, verification/validation, testing, configuration management. Report writing and presentations. Prerequisite: senior status.

CSCI 4243W. Capstone Design Project I. 4 Credits.
Planning, design, and construction of the capstone project. Economic analysis of the project. Application of software engineering principles, including software requirements, specification, requirements engineering, reuse, documentation, verification/validation, testing, configuration management. Report writing and presentations. Prerequisite: senior status.

CSCI 4244. Capstone Design Project II. 4 Credits.
Continuation of CSCI 4243. Planning, design, and construction of the capstone project. Economic analysis of the project. Application of software engineering principles, including software requirements, specification, requirements engineering, reuse, documentation, verification/validation, testing, configuration management. Report writing and presentations. Prerequisite: senior status.

CSCI 4314. Discrete Analysis-Computer Sci. 3 Credits.
Combinatorial theory: permutations and combinations, generating functions, recurrence relations, the principle of inclusion and exclusion. Block designs. Applications to the analysis of algorithms, computer organization, VLSI placement, coding theory, simulation, and other problems. May be taken for graduate credit. Prerequisite: CSCI 1311 or permission of the instructor. (Fall, Every Year).

CSCI 4331. Cryptography. 3 Credits.
Algorithmic principles of cryptography from Julius Caesar to public key cryptography. Key management problems and solutions. Cryptographic systems and applications. Prerequisite: CSCI 2312, CSCI 3313, CSCI 3212.

CSCI 4341. Continuous Algorithms. 3 Credits.
Overview of structures in continuous mathematics from a computational viewpoint. Main topics include continuous system simulation, computational modeling, probability, statistical techniques, next-event simulation, algorithms for continuous optimization, machine learning, neural networks, statistical language processing, robot control algorithms. Prerequisite: CSCI 1311, CSCI 2113.

CSCI 4342. Computational Linear Algebra and Applications. 3 Credits.
Application of linear algebra to computer science and engineering, with a computational perspective. Topics include points, vectors, matrices, and their programming representations; algorithms for 3D transformations, pose and viewpoint estimation; linear equations, independence, rank; algorithms for matrix decompositions, reduction of dimension; computation with large matrices, under and over-determined systems; applications to large data, computer vision, text processing. Prerequisite: CSCI 2113.

CSCI 4361. Simulation Methods. 3 Credits.
Computational methods for continuous and discrete system simulation; effects of computer software and hardware architectures on computational precision and accuracy requirements. Random-number generation and testing; calibration and scaling technique; verification and validation technique. May be taken for graduate credit. Prerequisite: CSCI 2113 or permission of the instructor. (Spring, Every Year).

CSCI 4364. Machine Learning. 3 Credits.
Overview of core machine learning techniques: nearest-neighbor, regression, classification, perceptron, kernel methods, support vector machine (SVM), logistic regression, ensemble methods, hidden Markov models (HMM), non-parametrics, online learning, active learning, clustering, feature selection, parameter tuning, and cross-validation. Prerequisites: CSCI 3212, CSCI 3362 and MATH 2184; or permission of the instructor. (Same as CSCI 6364) (Fall, Every Year).

CSCI 4415. Real-Time and Embedded Systems. 3 Credits.
Development of software for real-time control of physical systems. Reliability and fault tolerance, exceptions and exception handling, reliability and concurrent processes, timeouts, deadline scheduling, shared-memory and message-based device drivers. May be taken for graduate credit. Prerequisite: CSCI 2113.

CSCI 4417. UNIX System Programming. 3 Credits.
Exposure to UNIX internals. Use of UNIX system calls and utilities in conjunction with script and C programs. RFCs, GNU project, and other collaborative traditions in the UNIX community. May be taken for graduate credit. Prerequisite: Senior status or 1 year of C programming and UNIX user experience.

CSCI 4418. UNIX System Administration. 3 Credits.
System administration for the stand-alone system or small networks. Installation of two or more UNIX variants (Linux, FreeBSD, Solaris) on Intel or Sparc platforms. Configuration of mail, name services, and other network utilities. Backup and recovery, security and ethics. May be taken for graduate credit. Prerequisite: CSCI 4417.

CSCI 4431. Computer Networks I. 3 Credits.
Higher-layer protocols and network applications on the Internet, such as session layer, presentation layer, data encryption, directory services and reliable transfer services, telnet, network management, network measurements, e-mail systems, and error reporting. Prerequisite: CSCI 2461, CSCI 2113.

CSCI 4431W. Computer Networks I. 3 Credits.
Higher-layer protocols and network applications on the Internet, such as session layer, presentation layer, data encryption, directory services and reliable transfer services, telnet, network management, network measurements, e-mail systems, and error reporting. Prerequisite: CSCI 2461, CSCI 2113.

CSCI 4432. Computer Networks II. 3 Credits.
Computer networks and open system standards. Network configurations and signals, encoding and modulation, transmission media, connection interfaces, error detection and correction, signal compression, switching, link layer control, ISDN, X.25, frame relay, ATM, and Sonet. Bridges, routers, and routing algorithms. Prerequisite: CSCI 4431.

CSCI 4455. Computer Game Design and Programming. 3 Credits.
Principles, techniques, and design of computer games. Graphic game engines, modeling, motion, AI and interaction; sound design and synthesis; real-time software and hardware issues. May be taken for graduate credit. (Fall).

CSCI 4511. Artificial Intelligence Algorithms. 3 Credits.
Knowledge representation and reasoning, propositional logic and predicate calculus. Logic programming. Search, game trees, backtracking. Planning. May be taken for graduate credit. Restricted to graduate students. Prerequisites: CSCI 3221 and CSCI 3212.

CSCI 4521. Introduction to Mobile Robotics. 3 Credits.
Overview of autonomous mobile robotics. Sensing, localization, calibration, mapping, perception, decision making, planning, and control. Emphasis on algorithmic rather than hardware aspects of robotics. Development of algorithms that can operate autonomous mobile platforms in complex, real-world environments. Prerequisite: MATH 1232, MATH 2184; CSCI 3362 or CSCI 4341.

CSCI 4525. Autonomous Robotics: Manipulation. 3 Credits.
Introduction to robot manipulation. Core principles necessary to program robots for autonomous operation in dynamic and typically human-centric environments. Transdisciplinary concepts from computer science (reinforcement learning, perception), mechanical engineering (kinematics, dynamics), and electrical engineering (control theory). Prerequisite: permission of instructor.

CSCI 4527. Introduction to Computer Vision. 3 Credits.
Introduction and overview of computer vision. Image-formation signal processing and filtering. Saliency, image features and feature extraction, tracking, stereo disparity estimation, structure form motion, photogrammetry, optic flow, homography estimation and warping, scene segmentation, place recognition, object recognition, robust estimation, and camera calibration. Prerequisites: MATH 1232, MATH 2184 and CSCI 3362 or CSCI 4341. (Same as CSCI 6527) (Spring, Every Year).

CSCI 4531. Computer Security. 3 Credits.
Risk analysis, cryptography, operating system security, identification and authentication systems, database security. Prerequisite: CSCI 3411; corequisite: CSCI 4431.

CSCI 4532. Information Policy. 3 Credits.
Roles, issues, and impacts of computer-based information systems in national and international arenas, focusing on privacy, equity, freedom of speech, intellectual property, and access to personal and governmental information. Professional responsibilities, ethics, and common and best practices in information use.

CSCI 4541. Network Security. 3 Credits.
Security protocols and applications in local, global, and wireless networks; IPSec and packet-level communication security systems; network authentication and key-exchange protocols; intrusion detection systems and firewalls; secure network applications; network worms and denial-of-service attacks. Prerequisite: CSCI 4531.

CSCI 4551. Concepts and Applications of Computer Graphics. 3 Credits.
Introduction to computer graphics without programming; building 3-D geometry and rendering; computer animation; virtual reality and computer games; hands-on projects in modeling, rendering, and animation using commercial software; hands-on projects in photo and video manipulation.

CSCI 4552. Design of Computer Animation I. 3 Credits.
Use of commercial 3-D computer animation packages to create digital artistic works. Principles of animation, including timing, exaggeration of motion, and anticipation; use of a storyboard; modeling; motion; rendering and editing. Prerequisite: CSCI 4551.

CSCI 4553. Design of Computer Animation II. 3 Credits.
Use of commercial 3-D animation packages to create artistic works and visualizations. Process-spanning concepts of development through pre-production, production, and post-production. Emphasis on developing original content and attaining high production values. Prerequisite: CSCI 4552.

CSCI 4554. Computer Graphics 1. 3 Credits.
Hardware; concepts of graphics subroutine packages; programming concepts for interaction, display, and data structuring; basic clipping and scan-conversion algorithms; homogeneous coordinates; three-dimensional viewing transforms; basic rendering. May be taken for graduate credit. Prerequisite: CSCI 2113 or CSCI 6221.

CSCI 4561. Design of User–Interface Programs. 3 Credits.
Structure of interactive programs. Widgets, windows, and input devices. Client–server model, event-driven programming, and callbacks. Window systems (e.g., Xwindows) and dialog control. May be taken for graduate credit. Prerequisite: CSCI 2113 or CSCI 6221.

CSCI 4572. Computational Biology. 3 Credits.
Pairwise alignment and scoring. Multiple sequence alignment. Fragment assembly, physical mapping of DNA. Phylogenetic trees. Molecular structure prediction and protein folding. Microarrays and microarray data, image comparison. Clustering. Overview of biological databases, PDB, MMDB, GenBank. Draft genomes and genome browsers. Pathway databases. May be taken for graduate credit. Prerequisite: CSCI 3571 and CSCI 3212 or CSCI 6212.

CSCI 4576. Introduction to Biomedical Computing. 3 Credits.
A survey of the problems and solutions in biomedical computing. Application of computers in medicine. Patient care and monitoring systems, electronic medical records, digital imaging and analysis. Telemedicine, medical ethics, health care regulations and organizations.

CSCI 4577. Biomedical Computing. 3 Credits.
Computing issues in epidemiology and biosurveillance, decision support, medical imaging and visualization, image-guided surgery; medical databases, issues in system integration, mobile medical computing. May be taken for graduate credit. Prerequisite: CSCI 2113, CSCI 4576; corequisite: CSCI 2441.

CSCI 6010. Introduction to Computer Science Fundamentals. 3 Credits.
Review of programming in a high-level language using Java or C++ Introduction to objects and object-oriented programming: static and dynamic objects, inheritance, dynamic method invocation. Data structures: 2D-arrays, linked-lists, stacks, queues, trees, hashing. Discrete structures: sets, graphs, permutations and combinations. Prerequisite: one year of course work in programming in C, C++ or Java.

CSCI 6011. Introduction to Computer Systems. 3 Credits.
Introduction to basic concepts underlying all computer systems. Processor operation, hierarchical memory systems, elementary logic circuits, and systems software such as compilers, linkers, and operating systems from the programmer's perspective. Prerequisite: one year of course work in programming in C, C< or Java.

CSCI 6012. Cybersecurity and Privacy. 3 Credits.
Overview of cybersecurity and privacy, including cryptography, authentication, malware, viruses, network security, anonymity, privacy and online privacy, risk management; common cyberattacks and techniques for detection and defense; policy and legal perspectives for managing cybersecurity missions supporting private sector and government; cyber technologies as applied to the stability of global information and communications infrastructure; government cybersecurity policies. (Fall, spring, and summer).

CSCI 6013. Security in Mobile Computing. 3 Credits.
Relationship between security strategic plan and business strategic plan; mobile device solutions (MDS) to access enterprise corporate data; bring your own device (BYOD) paradigm; mobile device management (MDM) best practices, policies, network controls to identify countermeasures, and risk mitigation strategies against common threats. Overview of mobile security solutions for classified processing and communications. Prerequisites: CSCI 6012. (Fall, spring, and summer).

CSCI 6212. Design and Analysis of Algorithms. 3 Credits.
Design and analysis of algorithms. Turing machines; NP-Complete theory. Algorithmic techniques: divide-and-conquer, greedy, dynamic programming, graph traversal, backtracking, and branch-and-bound. Applications include sorting and searching, graph algorithms, and optimization. Restricted to graduate students. Prerequisites: CSCI 1112 and CSCI 1311.

CSCI 6221. Advanced Software Paradigms. 3 Credits.
Object-oriented, procedural, functional, and concurrent software design paradigms; design patterns; software life-cycle concepts. Tradeoffs between compiled and interpreted languages. Examples from Java, C, C++ and Perl. Prerequisites: CSCI 1112 and CSCI 1311 or graduate status.

CSCI 6223. Principles of Programming Languages. 3 Credits.
Fundamental concepts underlying design of programming languages. Detailed study of functional and object-oriented computational models. Types, evaluation, abstraction, control flow, modules, mutation, laziness, polymorphism, subtyping, inheritance. Practice learning new languages. Prerequisite: CSCI 1311, CSCI 2113.

CSCI 6231. Software Engineering. 3 Credits.
The life-cycle model. Requirements and specifications. Design models, structured and object-oriented design. Program development, PDL's tools, configuration control. Program, unit, and integration testing. Program verification. Other development models. Development metrics. Computer-aided software engineering (CASE). Prerequisite: CSCI 6221, CSCI 6212.

CSCI 6232. Software Engineering Development. 3 Credits.
Formal methods in software engineering. First-order logic, basic specification elements, rigorous proofs, formal development process, concurrency. Prerequisite: CSCI 6461, CSCI 6212.

CSCI 6233. Software Testing & Quality. 3 Credits.
Flow graphs and path testing, transaction flow testing, data flow testing, software metrics, system testing, test planning and documentation, reliability, statistical testing. Prerequisite: CSCI 6231.

CSCI 6234. Object-Oriented Design. 3 Credits.
Object-oriented systems, software reusability, software modularity, top–down and bottom–up approaches, object classification, genericity, metaprogramming, concurrent object-oriented programming languages. Prerequisite: CSCI 6221.

CSCI 6235. Component-Based Enterprise Software Development. 3 Credits.
Component-based software development for enterprise applications. Component models, multi-tier architecture. Specific case studies may include topics such as Enterprise Java Beans, DCOM, and COBRA. Prerequisite: CSCI 6221.

CSCI 6311. Theory of Computation. 3 Credits.
Theoretical foundations of computer science. Formal languages and automata; regular expressions, context-free languages, parsing; Turing machines and complexity; partial recursive functions; undecidability; program correctness; fixed-point theory; formal specifications of software. Prerequisite: CSCI 6212.

CSCI 6312. Graph Theory & Applications. 3 Credits.
Undirected and directed graphs. Connectivity, partitions, cycles and matchings. Edge and vertex coloring, chromatic polynomials, and the four-coloring problem. Planar graphs and Kuratowski's theorem. Properties of random graphs. Applications to a variety of problems. Prerequisite: CSCI 6212.

CSCI 6318. Complex Systems. 3 Credits.
The edge-of-chaos phenomenon, phase transitions, power laws, small-world networks, Boolean networks, cellular automata, and complex dynamics. Applications to networks and biological systems. Prerequisite: CSCI 6212.

CSCI 6331. Cryptography. 3 Credits.
Review of mathematical theory for cryptography. Classical ciphers. Modern block and stream ciphers. Symmetric and asymmetric systems. Digital signatures. Public key infrastructure. Authentication. Prerequisite: CSCI 6212.

CSCI 6341. Continuous Algorithms. 3 Credits.
Overview of structures in continuous mathematics from a computational viewpoint. Main topics include continuous system simulation, computational modeling, probability, statistical techniques, next-event simulation, algorithms for continuous optimization, machine learning, neural networks, statistical language processing, robot control algorithms. Prerequisite: CSCI 1311, CSCI 2113.

CSCI 6342. Computational Linear Algebra and Applications. 3 Credits.
Linear algebra applied to computational problems in computer science and engineering. Topics include points, vectors, matrices, and their programming abstractions; 3D transformations, pose and viewpoint estimation; linear equations; algorithms for matrix decompositions, dimension reduction, computation with large matrices, under- and over-determined systems; applications to big data, computer vision, text processing. Prerequisite: CSCI 2113.

CSCI 6351. Data Compression. 3 Credits.
Background on signals, information theory, transforms, human vision, and metrics. Lossless and lossy compression techniques. Video compression. Compression standards. Progressive transmission. Prerequisite: CSCI 6212.

CSCI 6362. Probability for Computer Science. 3 Credits.
Concepts of probability and statistics used in computer science. Random variables. Conditional probability, independence, correlation. Law of large numbers, central limit theorem. Applications to computer science, including entropy, information theory, data compression, coding, inference, Markov chains, randomized algorithms. Prerequisites: MATH 1232, CSCI 1311; or permission of instructor.

CSCI 6364. Machine Learning. 3 Credits.
Machine learning algorithms: nearest-neighbor, regression, classification, perceptron, kernel methods, support vector machine (SVM), logistic regression, ensemble methods, boosting, graphical models, hidden Markov models (HMM), non-parametrics, online learning, active learning, clustering, feature selection, parameter tuning, and cross-validation. Prerequisite: CSCI 6212; CSCI 6362, MATH 2184; or permission of instructor.

CSCI 6365. Advanced Machine Learning. 3 Credits.
Theory and algorithms for machine learning research. In-depth focus on advanced machine learning topics such as clustering, learning from data streams, and Climate Informatics. Prerequisite: CSCI 4364, CSCI 6212, CSCI 6362, MATH 2184; or permission of instructor.

CSCI 6411. Advanced Operating Systems. 3 Credits.
Fundamentals of operating system design and structure, resource management, and system support for multi-core. Topics include scheduling, synchronization, system structure, virtual address spaces, memory management, I/O management, and systems abstractions for modern multi-core architectures. The course involves an implementation component and requires substantial programming experience. This course can be taken for credit by undergraduates who have taken CSCI 3411. Prerequisite: CSCI 6461 or CSCI 2461.

CSCI 6412. OS Design & Implementation. 3 Credits.
Builds on CSCI 6411 to provide students with the knowledge to build parts of modern operating systems, which will be studied and motivated from the viewpoint of practical design and implementation. Students will learn how operating system's components for resource management and abstraction are built from the ground up and integrated into working systems considering the challenges of reliability, multi-core, and security. The course has a significant implementation component; substantial low-level programming experience is required. Prerequisite: CSCI 6411.

CSCI 6421. Distributed and Cluster Computing. 3 Credits.
In-depth study of the algorithmic and implementation challenges in building large scale distributed applications. Topics include distributed coordination, scheduling, consistency issues, and fault tolerance algorithms. The course will cover how fundamental distributed systems concepts are applied to both high performance computing and cloud computing environments. The course will mix algorithmic concepts and practical implementation concerns; substantial programming experience is recommended. Prerequisite: CSCI 6212, CSCI 3411.

CSCI 6431. Computer Networks. 3 Credits.
Fundamental concepts in the design and implementation of computer communication networks and internet, their protocols, and applications. Layered network architectures, applications, network programming interfaces, transport, routing, data link protocols, local area networks, network management, and network security. Prerequisite: CSCI 6461.

CSCI 6433. Internet Protocols. 3 Credits.
Understanding of the layered protocols for the Internet. Interconnection of networks. The IP protocol and routing algorithms, switches, bridges, and routers. The transmission control protocol (TCP). Addressing and names. Application-specific protocols, FTP, TELNET, SMTP, SNMP, HTTP. Domain name services. Prerequisite: CSCI 6221, CSCI 6431.

CSCI 6434. Design of Internet Protocols. 3 Credits.
Protocol specifications and formal description methods. Finite-state descriptions of Internet protocols. Specification and Description Language. Implementation of protocol specifications. Prerequisite: CSCI 6212, CSCI 6433.

CSCI 6441. Database Management Systems. 3 Credits.
Design and architecture of relational database management systems; query languages, data models, index structures, database application design. Prerequisite: CSCI 6221, CSCI 6461.

CSCI 6442. Database Systems II. 3 Credits.
Concepts in database systems. Relational database design. Editing, report generation, updating, schema refinement, tuning. Construction of database management systems. Conceptual and logical design of a database. Prerequisite: CSCI 6441.

CSCI 6443. Data Mining. 3 Credits.
Fundamental concepts of data mining. Algorithm techniques for data mining, including classification, clustering, association rules mining. Prerequisite: CSCI 6441 or permission of instructor.

CSCI 6444. Introduction to Big Data and Analytics. 3 Credits.
Big data, its properties, technology, and the types and classes of analytics that can be applied to it; associated storage and programming systems. Students gain practical experience through focused projects to apply different analytics to a data set. Prerequisite: CSCI 2113 or CSCI 6221. (Fall, spring, and summer).

CSCI 6451. Information Retrieval Systems. 3 Credits.
Information organization and retrieval of natural language data by digital computer systems; statistical, syntactic, and logical analysis of natural language; dictionary and thesaurus systems; searching strategies and cataloging. Large-scale file structures. Prerequisite: CSCI 6221, CSCI 6461.

CSCI 6461. Computer System Architecture. 3 Credits.
Concepts in processor, system, and network architectures; architecture of pipeline, superscalar, and VLIW/EPIC processors; multiprocessors and interconnection networks. Cache coherence and memory subsystem design for multiprocessor architectures. Parallel and distributed system architecture; internetworking. Prerequisite: CSCI 1311, CSCI 1112, CSCI 2461.

CSCI 6511. Artificial Intelligence. 3 Credits.
Representation and space search. Heuristic search. Predicate calculus. Knowledge representation and knowledge engineering for expert systems. Rule-based, hybrid, and O-O systems. Semantic nets, frames, and natural language. Theorem provers. Overview of planning, learning, neural nets. Use of AI languages. Prerequisite: CSCI 4511, CSCI 6212.

CSCI 6515. Natural Language Understanding. 3 Credits.
The state of the art of natural language parsing and semantic understanding by computer systems. Review of formal, context-free, and transformational grammars and parsing. Augmented transition networks: problems of complexity, semantics, and context. Deterministic parsing and semantic parsing. Prerequisite: CSCI 6511.

CSCI 6521. Introduction to Mobile Robotics. 3 Credits.
Concepts of autonomous mobile robotics with emphasis on algorithmic aspects. Sensing, sensor fusion, localization, calibration, mapping, perception, decision making, planning, behavior-based control, world modeling, and navigation. Development of algorithms that can operate autonomous mobile platforms in complex, real-world environments. Prerequisite: MATH 1232, MATH 2184; CSCI 6362 or CSCI 4341.

CSCI 6525. Autonomous Robotics: Manipulation. 3 Credits.
Manipulation and autonomous operation in dynamic, human-centric environments. Reinforcement learning, perception, optimization algorithms, kinematics, dynamics, control theory. Prerequisite: CSCI 6362, MATH 2184; or permission of instructor.

CSCI 6527. Introduction to Computer Vision. 3 Credits.
Image signal processing and filtering. Saliency, features and feature extraction, tracking, stereo disparity estimation, structure form motion, photogrammetry, optic flow, homography estimation and warping, scene segmentation, place recognition, object recognition, robust estimation, and camera calibration. Current research topics. Prerequisite: MATH 1232, MATH 2184; CSCI 6362 or CSCI 6341.

CSCI 6531. Computer Security. 3 Credits.
Functional description of cryptographic primitives. Risk analysis. Policy models: security, confidentiality, integrity, hybrid. Design principles: access control, information flow, confinement. Assurance: formal methods, evaluation. Malicious logic: security effects of programming languages. Prerequisite: CSCI 6461.

CSCI 6532. Information Policy. 3 Credits.
Roles, issues, and impacts of computer-based information systems in national and international arenas, focusing on privacy, equity, freedom of speech, intellectual property, and access to personal and governmental information. Professional responsibilities, ethics, and common and best practices in information use.

CSCI 6534. Information Security in Government. 3 Credits.

CSCI 6541. Network Security. 3 Credits.
Security protocols and applications in local, global, and wireless networks; IPSec and packet-level communication security systems; network authentication and key-exchange protocols; intrusion detection systems and firewalls; secure network applications; network worms and denial-of-service attacks. Prerequisite: CSCI 6531.

CSCI 6542. Computer Network Defense. 3 Credits.
Offensive and defensive information warfare operations. Simulation of various attacks on and defenses of computer systems. Laws related to information warfare. History and literature related to information warfare attacks. Prerequisite: CSCI 6541.

CSCI 6545. Software Security. 3 Credits.
Security for software systems. Theory and practice of designing and implementing secure software. Security in the context of software engineering. Practical experience with building a software system and securing it, with emphasis on correctness and robustness. Requires substantial prior programming experience. Prerequisite: CSCI 6461 or CSCI 6411; CSCI 6531 or EMSE 6540 or permission of instructor.

CSCI 6547. Wirless and Mobile Security. 3 Credits.
Mobile Agents, Wireless Web, WAP, WEP, Peer-to-Peer Computing; secure routing; intrusion detection and authentication on wireless networks; security for handheld devices; encryption and cryptographic measures for wireless; real-time wireless security; security measures for embedded devices. Prerequisite: CSCI 6431, CSCI 6531.

CSCI 6548. E-Commerce Security. 3 Credits.
Advanced technical topics in e-commerce security. X.500 registration systems, X.509/PKIX certification systems, secure payment methods, smart cards, authorization models in open distributed environments. Secure web systems, technologies, and applications. Prerequisite: CSCI 6541.

CSCI 6554. Computer Graphics II. 3 Credits.
Curves and surfaces. Spatial sampling and aliasing. Visible surface algorithms. Illumination and shading models, raytracing and radiosity. Image manipulation and texture mapping. Procedural models. Prerequisite: CSCI 4554.

CSCI 6555. Computer Animation. 3 Credits.
Euler angles and quaternions; articulated figure motion; forward and inverse kinematics; kinematic, physics based, and behavioral motion control; rendering problems (temporal aliasing); sound synthesis and synchronization; recording and editing techniques. Prerequisite: CSCI 4554 or permission of instructor.

CSCI 6561. Design of Human–Computer Interface. 3 Credits.
Design of dialogues for interactive systems. Psychological, physiological, linguistic, and perceptual factors. Advantages and disadvantages of various interaction techniques, command language syntaxes, and data presentations. Design methodology and guidelines. Case studies, research readings, and projects. Prerequisite: CSCI 6221.

CSCI 6562. Design of Interactive Multimedia. 3 Credits.
History, theory, and development of multimedia concepts. Hardware components, platforms, and authoring tools. Scientific, technical, and cognitive foundations of various media including text, sound, graphics, and video. Interface design. Use of a media taxonomy as a design and evaluation tool. Completion of a multimedia portfolio required. Prerequisite: CSCI 6221.

CSCI 6572. Computational Biology Algorithms. 3 Credits.
Algorithms and models for DNA and protein sequence alignments, gene finding, identification of gene regulatory regions, sequence evolution and phylogenetics, RNA and protein structure, microarray and/or proteomics data analysis. Prerequisite: CSCI 6212 ; programming experience in C/C or Java.

CSCI 6900. Colloquium. 0 Credits.
Lectures by outstanding authorities in computer science. Topics to be announced each semester. (Fall and spring).

CSCI 6907. Special Topics. 1-3 Credits.
Topics to be announced in the Schedule of Classes. (Fall and spring).

CSCI 6908. Research. 1-12 Credits.
Applied research and experimentation projects, as arranged. May be repeated for credit.

CSCI 6998. Thesis Research. 3 Credits.

CSCI 6999. Thesis Research. 3 Credits.

CSCI 8211. Advanced Topics in Algorithms. 3 Credits.
Graph algorithms, strongly connected components, biconnected components, dominators in acyclic graphs, ordered trees, network flow, planarity testing, bipartite matching, theory of NP completeness, NP-complete problems. Design and analysis of approximation algorithms for NP-complete problems. Prerequisite: CSCI 6212.

CSCI 8231. Advanced Topics in Software Engineering. 3 Credits.
Seminar on current research and developments in software engineering. Students develop a software package with the aid of available software tools such as requirement tool, design tool, code generators, testing tools, measurement tools, cost estimation tools. Prerequisite: CSCI 6232, CSCI 6233.

CSCI 8331. Advanced Cryptography. 3 Credits.
Linear and differential cryptanalysis. Cryptanalysis of AES. Factorization and primality. Computational and information-theoretic secrecy. Theory of secrecy. Zero-knowledge proofs. Secret sharing. Cooperative distributed cryptography. Provable security. Prerequisite: CSCI 6331.

CSCI 8401. Advanced Topics in Systems. 3 Credits.
Seminar on current research and developments in computer operating systems. May be repeated for credit. (Spring, even years).

CSCI 8431. Advanced Topics in Computer Networks and Networked Computing. 3 Credits.
Seminar on current research and developments in computer networks, Internet, networked computing, mobile computing and pervasive computing. May be repeated for credit. Prerequisites: CSCI 6461, CSCI 6212, CSCI 6433.

CSCI 8440. Advanced Topics in Data Management. 3 Credits.
Seminar on current research and developments in computer database systems and information retrieval. May be repeated for credit. Prerequisite: CSCI 6442 or CSCI 6451.

CSCI 8531. Advanced Topics in Security. 3 Credits.
Seminar on current research and developments in information assurance. May be repeated for credit. Prerequisite: CSCI 6531.

CSCI 8554. Advanced Topics in Computer Graphics. 3 Credits.
Seminar on current research and developments in computer graphics. Spatial and temporal anti-aliasing: hidden-surface algorithms: illumination models, radiosity, textural mapping. May be repeated for credit. Prerequisite: CSCI 6554.

CSCI 8900. Advanced Selected Topics. 3 Credits.
Topics announced in the Schedule of Classes.

CSCI 8901. Research and Evaluation Methods. 3 Credits.
Required for all computer science doctoral candidates. The scientific method; research/design requirements and objectives: qualitative, quantitative, and case studies; performance metrics; design procedures and control; sources of error and bias; evaluation tools; formal validation methods; documentation standards. Prerequisite: APSC 3115.

CSCI 8998. Computer Science Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy qualifying examination. May be repeated for credit.

CSCI 8999. Dissertation Research. 1-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

CORCORAN ART HISTORY (CAH)

CAH 1090. Art History I: Art Now, Contemporary Perspectives in the Visual Arts. 3 Credits.
In this seminar course, first-year students will be introduced to the major ideas and issues in modern and contemporary art and design as they explore what it means to be an artist today. Through a focused study of artworks and exhibitions, historical and critical writings on art from the 19th and 20th centuries, students will gain an understanding of how the visual arts evolved into the diverse media landscape of the present. The course is intended to introduce students to the study of art history and the relevance of art history to their own work. The student will learn how to use the vocabulary of art history and art theory to think, speak, and write effectively about art. Students will participate in discussion and other in-class activities, give oral presentations, and demonstrate their skills and knowledge in short papers, in-class writings, and on social media. There will be field trips to local libraries and collections.

CAH 1091. Art History II: Historical Perspectives in the Visual Arts. 3 Credits.
This course covers the history of art and architecture produced by cultures around the world from prehistory to the end of the 19th century. We will look at works of architecture, sculpture, and painting both in the process of their creation and meaning in cultural context. Using case studies from different cultures and time periods, the course is subdivided to explore some of the general themes that often provide meaning to artistic expression including: cosmology and belief, ceremony and society, the body, the icon, and identity. By the end of the course you should have the skills necessary to analyze works of art and architecture based on an understanding of visual, iconographic and contextual analysis, comparative study, and the interpretation of primary documents and secondary sources. Museum visits will be a major component of discussion sessions.

CAH 2025. 20th Century Art. 3 Credits.
This course is a survey of twentieth-century art beginning with the avant-garde movements of the late 19th- and early 20th-century and concluding with the major trends in contemporary art. Examines the major movements-Fauvism, Cubism, Dada, Constructivism, and Surrealism, Abstract Expressionism, Pop Art, Conceptual Art, Minimalism, and Postmodernism, in relation to biographical and formal concerns, contemporary social and political conditions and current art history debates.

CAH 2026. Contemporary Culture. 3 Credits.
This course will examine our society's production and reception of various forms of media, including print images and graphic design, TV and cable TV, film and video, computer interfaces and software design, Internet/Web as a visual platform, digital multimedia, and advertising. The course is concerned with helping students develop an informed and critical understanding of the nature of contemporary culture, in particular the mass media, the techniques used by them, and the impact of this media culture on the visual arts and design. The course will increase students' understanding of how the media works, how it produce meaning, how it are organized, and how it constructs reality. Through readings, screenings and group discussions, the course will provide students with theoretical and practical tools with which to understand and analyze contemporary culture.

CAH 2300. Medieval Legends in Art. 3 Credits.
This course examines the relationship between medieval epic tales and artistic representations of those stories from the 11th-14th centuries in Western Europe. Although the written texts often coincide with the chronological record of the literature, the visual retellings of the legends are not merely illustrations of the written word. We will examine the meanings of visual programs by comparing visual material (tapestries, manuscript paintings, stone sculpture, and small-scale decorative objects) with textual narratives. Special emphasis will be placed on the romantic legends of King Arthur and the Knights of the Round Table by Chrétien de Troyes and also romantic tales of medieval Germany, such as Roland, Tristan, and the Niebelungenlied. For term projects students will research recent reinterpretations of medieval legends, such as Monty Python's Holy Grail, Tolkien's Lord of the Rings, the literature or films of Harry Potter, King Arthur (2004), Tristan & Isolde (2006), or even the BBC series on Merlin. Course topics include: oral tradition, medieval memory, and the visual record; framing single-scene images and narrative cycles; audiences for visual and written epics; royal portraits in word and image; courtly epics and tapestries; the relationship of secular legends and their representation in stone on churches; courtly ideals for heroes and heroines; 19th c. Romantic idealization of medieval epics in art; and modern cinematic versions of Arthurian legends. This course may also be taken for AS credit.

CAH 3030. History of Architecture and Interior Design. 3 Credits.
Through this course, students are familiarized with major architectural styles, predominantly of Western civilization, from 1800 to the present. Concurrently, this seminar presents the historical development of interior design from the 19th century to the present, covering seminal movements such as the design reform of the 19th century, Art Nouveau, Arts and Crafts, and Modernism. At times this course may be cross-tallied at the graduate level as CAH 6030. Additional work required for graduate level credit is outlined in the course syllabus.

CAH 3050. History and Aesthetics of Photography. 3 Credits.
This survey describes the development of photography from a technological innovation to an artistic medium from the medium's beginnings to the 1950s. Classes consist of slide lectures, discussions, and student presentations; individual research is emphasized. Lectures and discussion will be supplemented with artifactual material from the collection of Professor Beck. Museum and gallery visits are required. This course is equivalent to CAH 2050.

CAH 3060. History of Design. 3 Credits.
Since the mid-nineteenth century design has exercised an increasingly important role as a cultural force, from the chairs we sit in to the utensils with which we eat. This wide-ranging survey from 1850 to the present presents a history of designed objects, images, and spaces, including products, furniture, appliances, interiors, posters and other printed materials, and the latest digital media. Influences among the design disciplines, as well as developments in materials and technologies, are studied within their cultural, political, economic, and social contexts. Recommended for all design students and required for BFA in Interior Design majors.

CAH 3065. Digital Media Culture. 3 Credits.
The impact of electricity on a post-Guttenberg world changed the way we live, think and communicate. From the early days of the telegraph, telephone, radio, television, to the Internet and beyond, the ease and speed with which information can be conveyed digitally is dramatically changing long-established business and social patterns. Focusing on both contemporary and obsolete technologies and mediums, this course covers the impact of the digital revolution on culture, business and the individual. Equal parts communication, media study and popular history, we'll go from Thomas Edison to MTV to Facebook, and analyze communication and social trends. This course willprovide an understanding of how technology continues to consume older versions of communication, creating exciting hybrid communication mechanisms which redesign and reshape how we live and interact.

CAH 3150. Theories and History of Graphic Design. 3 Credits.
This course investigates traditional and contemporary ideas, language, and theories of graphic design. It includes a survey of the development of graphic design from 1900 until the present. Specific graphic design assignments will be assigned to support certain historical lessons.

CAH 3203. Contemporary Asian Art and Culture. 3 Credits.
This course will examine the work of contemporary Asian artists in all media, including forms of popular culture. Recognized by collectors, critics, and curators from America and Asia, Asian artists have renewed and appropriated and transformed traditional Asian values, cultures, themes, and styles, as they negotiated the hegemony of western modernism. Topics include the appropriation of traditional media and genre, the redefinition of old themes or symbols, the engagement with politics, society, and the states, the exploration of consumerism and popular culture, and the intersection of western and eastern artistic styles found in Asia, mainly in contemporary China, Taiwan, South-Korea, India, and Japan as well as East-Asian diasporas around the world.

CAH 3210. American Art. 3 Credits.
This course will explore painting, sculpture, and photography produced in the United States from the American Revolution to the end of the First World War. We will examine the work of individual artists—Gilbert Stuart, Winslow Homer, Thomas Eakins, John Singer Sargent, James McNeill Whistler, Frederick Remington, Hiram Powers, Eastman Johnson, Mary Cassatt, and Alfred Stieglitz—as well as art movements—the Hudson River School of landscape painting, Luminism, Realism, American Impressionism, Modernism and the Avant-Garde in America. Students will be expected to develop an understanding of the major artists, art movements, and art historical issues related to the visual arts produced in the United States. Instruction time will be divided between the classroom and the following museums, which have significant collections of American Art—the Corcoran Gallery of Art, the National Gallery of Art, and the Smithsonian American Art Museum. In some terms this course may be cross-tallied at the undergraduate level as CAH 3210 and at the graduate level as CAH 6510. Students enrolled at the graduate level will be required to do additional work in order to earn graduate credit.

CAH 3211. California Dreaming: 1945-1980. 3 Credits.
In the decades following World War II, California enjoyed a special status in the American national consciousness. From the coffeehouses of San Francisco's North Beach to the beaches of Los Angeles, from Hollywood to Yosemite, images and products "made in California" created a powerful dream of possibility and promise. In art and design, California offered an alternative culture to the New York art world, the importance of which is increasingly being recognized. Building on an array of recent books and exhibitions, this course examines the unique art and culture of California in the postwar decades. We will investigate the relationship of art and design to the image of California and to the region's social and political history, in the process questioning some of the prevailing myths about the Golden State. Topics include: the counterculture of San Francisco which produced assemblage, collage and the poetry of the Beats; earthworks and site-specific environmental projects; the Bay Area figurative school of painting; the "light-and-space" work of Bell, Irwin, and Turrell, called "the California sublime" by Rosalind Krauss; the beach and car culture of Los Angeles; the Chicano art movement; Pop, conceptual, and body art; West Coast Abstract Expressionism; studio productions of Hollywood and Disney; the relationship of jazz and rock to visual art; mid-century modern furniture and housing design; West Coast art photography.This course is designed to coincide with the exhibition Richard Diebenkorn: The Ocean Park Series, 1967-1988 at the Corcoran Gallery of Art, June 30 to September 23, 2012.

CAH 3240. Cultures of Photography: WWII to 2000. 3 Credits.
This course will survey the nature of photography, its practices, meanings, and visual results during a critical era of rapid development of the medium. The class will also explore the ways that contextual and cultural understandings have shaped the readings of images over the second half of the 20th century. Lectures and discussion will be supplemented with artifactual material from the collection of Professor Beck. In some semesters this course may be cross-listed at the undergraduate level as CAH 3240 and at the graduate level as CAH 6550. Additional work is required for graduate level credit.

CAH 3350. Art History Seminar. 3 Credits.

CAH 3360. The Black Arts Movement. 3 Credits.
This course focuses on the historical, social, and cultural impact of the Black Arts Movement of the 1960s and 1970s. Through an interdisciplinary approach, students will be introduced to the issues and themes pivotal to this international art movement's symbols of racial consciousness, transformations in urban life, fashions and hairstyles, music and cinema as aesthetic statements. We will explore the works of painters, sculptors, photographers, graphic artists, and filmmakers, including Romare Bearden, Faith Ringgold, David Hammons, Gordon Parks, Elizabeth Catlett, Betye Saar, and Charles White.

CAH 3530. Art and Architecture of Washington DC. 3 Credits.
This course will investigate the art and architecture of the city of Washington, DC: major collections, special exhibitions, historic architecture, and the city itself. A majority of our time will be spent on site, outside the classroom, so this is a walking-intensive class. Weekly reading and frequent short writing assignments are required, as well as a developed seminar paper at the conclusion of the seminar. At times this course may be cross-tallied at the undergraduate level as CAH 3530 and at the graduate level as CAH 6530. Students enrolled for graduate credit complete additional work at an advanced level and are graded according to the Graduate Grade Standard (see Student Handbook).

CAH 3531. Iconic American Designers. 3 Credits.
This course offers an in-depth examination of works by a select group of iconic American designers, from the 19th century to the present. We will consider the esthetic, social, and historical implications of the design work of Gustav Stickley, Greene & Greene, Frank Lloyd Wright, Louis Comfort Tiffany, Eero Saarinen, Charles and Ray Eames, Josef and Anni Albers, Frances Knoll, Herman Miller, and Eliot Noyes, among others. Students from diverse disciplinary approaches (fine arts, photography, and design) are encouraged to enroll so that our discussions will be richly informed by different perspectives. Requirements include: presentations, papers, and participation in discussions. At times this course may be cross-tallied at the graduate level as CAH 6531. Additional work required for graduate level credit is outlined in the course syllabus.

CAH 3700. Theories of Art. 3 Credits.
This course investigates traditional and contemporary concepts about the relation of ideas, language, and theory to art. Readings cover the history of aesthetics and a selection of modern theoretical proposals, including ethical, political, and psychological interpretations, and theories of expression and communication. Classes combine textual analysis with student criticism. Students develop their own analytical and interpretative propositions concerning contemporary art and design.

CAH 3800. Independent Study: Art History. 3 Credits.
This option is appropriate for degree students who want access to independent faculty supervision, lab areas, and supplies for independent projects, and do not need or desire extensive course instruction.

CAH 3900. Internship: Art History. 1-3 Credits.
For degree students only. Internships can help students develop marketable skills, establish professional contacts, and explore different career options.

CAH 4110. The Photograph in Contemporary Art. 3 Credits.
Fifty years ago, the world of art virtually excluded photographs from its purview. Today, it is impossible to imagine contemporary art without the presence of photography and other lens-based media. What were the causes of this profound shift, and how did it happen? This seminar will examine the art, artists, and critical discourses that together form the environment for today's photo-based art. Class sessions will include slide presentations, discussions of assigned readings, and critiques of participants' artworks and critical writings. Among the artists to be discussed are Andy Warhol, Ed Ruscha, Robert Heinecken, Bernd and Hilla Becher, Robert Smithson, Jan Groover, William Wegman, Cindy Sherman, Nan Goldin, Robert Mapplethorpe, and Adam Fuss. Readings will include essays by Michael Fried, Roland Barthes, Rosalind Krauss, John Szarkowski, and Jean Baudrillard. Students from all disciplines and art media are welcome to register; prior knowledge of 20th-century art and photography is useful.

CAH 4202. New Media. 3 Credits.
Has the screen replaced the canvas? This class looks at the history and theory, as well as major practitioners, of new media art. Starting with Moholy-Nagy, whose Painting Photography Film (1927) argued for the advent of new artistic forms characterized by reproduction, projection, and transmission, we will trace the emergence of new media from the late 1960s and 1970s up to the present day. Topics will include video art, installation, and computer and internet-based art. Students will research contemporary artists working in new media. In some terms this course may be offered at the undergraduate level as CAH 4202 or at the graduate level as CAH 7202. Additional work is required to earn graduate level credit.

CAH 4300. Victorian Avant-Garde: British Art & Culture (1851-1901). 3 Credits.
The second half of the 19th century was a period of extreme technological, social, and cultural upheaval. During these years, traditional ideas about art, design, literature, and journalism were challenged by new ways of thinking that seeded the ground for more radical changes in the 20th century. The class will focus on close and critical readings of primary artworks and texts in Washington-area libraries, archives, and museums. Visits are scheduled for the Rare Book and Special Collections Department of the Library of Congress and the National Gallery of Art. Topics include: The Great Exhibition of 1851, the Pre-Raphaelite Brotherhood, the Arts and Crafts Movement, Aestheticism, and the Revival of Printing. Key figures include: John Ruskin, Dante Gabriel Rossetti, Julia Margaret Cameron, Elizabeth Siddal, William Morris, W.E. Godwin, Walter Pater, J.M.W. Whistler, Aubrey Beardsley, and Oscar Wilde. Along with weekly readings and short written responses, there will be one long-form seminar essay and presentation due at the conclusion of the semester, as well as a shorter theoretical essay and a mid-term exam. (Same as CAH 7300).

CAH 4400. History of Exhibitions 1850 - Present. 3 Credits.
The exhibition is where modern and contemporary art meets the public.This course looks at the history and theory of exhibiting new art in the past 150 years, starting with the French Salon and the independent alternatives that challenged it (Courbet, the Impressionists, and Post-Impressionists), through avant-garde exhibitions (Expressionists, Dada, and Surrealists), installation art and alternative exhibition strategies, and leading to today's art fairs and biennials (Art Basel, Documenta, the Venice Biennale, the Whitney Biennial, etc.). We will cover historic exhibits including the Armory Show and Hitler's Degenerate Art exhibit. Individual and group projects will research specific recent exhibitions, as we consider such issues as design, audience, and critical reception. At times this course may be cross-tallied at the graduate level as CAH 6400. Additional work required for graduate level credit is outlined in the course syllabus.

CAH 4410. From Arts and Crafts to Ikea. 3 Credits.
While the widespread influence of William Morris' Arts and Crafts movement confirms its importance and success, its failure to create truly affordable handcrafted goods for everyday use and everyday people eventually inspired a manufacturing revolution. Since the early twentieth-century, mass-produced objects or interior complexes assembled with specific design vocabularies have stimulated a major consumer industry, mediated by sales and marketing strategies that intentionally appeal to the broadest possible clientele.Pursuing discussions inspired by Arts & Crafts into the present age, this course will touch on discourses about fashion versus style, 'sham' or kitsch versus high design, the inherent value of crafted versus mass produced items, and innovations in materials or manufacturing techniques that either reflect their own period of time or romanticize the past-all topics that still resonate within the design and manufacturing arena. What began with many regionally inventive streams-including Germany's Bauhaus curriculum, Scandinavia's national romanticist movement, or America's Colonial and Mission revivals--has culminated in mass-marketed brands and ensemble marketing, represented by IKEA, Herman Miller, Ethan Allan, or Pottery Barn (among others). This course surveys various pioneers whose design ethos eventually merged with mass production, reviewing a variety of ensemble design approaches: for example, Peter Behrens, Lily Reich (with Mies van der Rohe), Marcel Breuer, Le Corbusier's Thonet preference, Charles and Ray Eames, the Saarinens at Cranbrook, the reproduction industry that represents Frank Lloyd Wright, Russell Wright, and others. The integration of non-Western influences (characterized in the past as Japonisme, Chinoiserie, folkloric or primitivist), the impact of various international expositions, and the success of the "museum"-store mentality (which made Isamo Noguchi, Alvar Aalto, and others more affordable to a wider audience) will also be introduced.This seminar-style survey concludes with the "Target" approach (featuring architect Michael Graves), as well as some consideration of recycled or 'green' products that are marketed as "environmentally correct." By the end of this class, students will be aware of the major stylistic distinctions, socio-cultural influences, revivals, and shifts in design practices from the eighteenth century to the present in their fields of interior design or decoration. At times this course may be cross-tallied at the graduate level as CAH 6410. Additional work required for graduate level credit is outlined in the course syllabus.

CAH 6030. History of Architecture and Interior Design. 3 Credits.
Major architectural styles and the development of interior design since the nineteenth century, covering such seminal movements as Art Nouveau, Arts and Crafts, the International Style, and Modernism. Consideration of the social and cultural forces that shape design.

CAH 6040. Contemporary Culture & Design. 3 Credits.
This course will examine how the field of design reflects the movements and attitudes of our contemporary culture and vice versa. Each year the course will explore different topics through a combination of seminar, special guest lectures, student presentations, and readings. Students will complete an extensive research project on a topic of their choice and present their findings at the end of the semester. The Spring semester will focus on the objects with which we surround ourselves- from the highly functional to the purely decorative and the imminently disposable to the cherished heirloom. We will explore the societal influences, the environmental impact, and the role and responsibility of designers in a culture of objects.

CAH 6130. The History of the Western Book: From Gutenberg to Google. 3 Credits.
This one semester course is a brief survey of the history of the book over the last 550 years. We will examine not only the production methods of a wide range of book and print materials, but the cultural and theoretical issues that underpin our understanding of the role of the book in history. Although we will discuss non-Western and ancient and mediaeval manuscript books, the focus of the course is on developments in Europe and North America. Special, but not exclusive, attention will be paid to illustrated and decorated books, as well as 20th century livres d'artiste. Many of the course sessions will be held at the Library of Congress, where students will have direct access to the materials under study. As digital technologies have forced us to reconsider the signifying power of the "'body of the book,"' academic interest in the field of material bibliography has expanded considerably. This course is designed to introduce students to these scholarly issues and debates. Priority to graduate students of the Art and the Book department; open to other degree students as space is available.

CAH 6235. Surface, Space, Place. 3 Credits.
This course examines the thicket of practical and theoretical underpinnings of art and design in spatial contexts. Careful attention will be paid to urban planning and ideologies of power that impact decisions on what appears in the visual environment. How do planned landscapes, such as cemeteries and gardens, negotiate both physical and mental space? How do we imagine "formless" environments, such as outer space and the Internet, to have contours and divisions? This course makes extensive use of area resources, such as the National Mall, Dumbarton Oaks, Rock Creek Cemetery, and various museum collections and monuments, to register space and place in history and memory. Course open to graduate students, and to qualified undergraduates with permission of Academic Studies department chair.

CAH 6330. The 20th Century Artist Book: Tradition and Innovation. 3 Credits.

This course will explore the historical, theoretical, and critical development of artists' books throughout the 20th and early 21st centuries within the context of movements and trends in the visual and performing arts. Books associated with the Arts & Crafts Movement, Russian Futurism, Surrealism, fluxus, Conceptual Art, and Postmodernism, among others will be closely studied. Johanna Drucker's anthology "The Century of Artists' Books"(1995) will serve as a guide. Readings and presentations will be based on individual books, presses, writers, and artists. Independent research at the Library of Congress and other area research centers will culminate in a developed seminar paper to be presented to the class at the conclusion of the semester. In some semesters this course maybe offered at the undergraduate level as CAH 3330 and at the graduate level as CAH 6330. Additional work is required to earn graduate credit. Priority to graduate students of the Art and the Book department; open to other degree students as space is available.

CAH 6332. The Creative Space: Viewing & Reading. 3 Credits.

The emergence of Netscape and the Internet in the 1990s ushered in an important shift in our cultural sensibility surrounding the aesthetic apprehension of words and images. Instead of the meditative, contemplative approach cultivated by the Fine Arts and Literature, we were now asked to "browse" and adopt a more casual, less totalizing approach to our apprehension of mixed verbal and pictorial messages.This course presumes that the emergence and importance of "browsing" today is much more than a technological development limited to digital culture. Instead, it is a symptom of a larger shift in attitudes affecting aesthetic categories generally, part of the construction of a new cultural space "between viewing and reading," a space with its own attitudes and norms.To explore this potential space, and the attitudes and competencies associated with it, we will examine examples from artists' books, painting, sculpture, film, video and digital environments that mix words and images, and in doing so contest the dominant paradigms of viewing and reading and suggest an intermediary position or "betweenness". The course will begin with a theoretical overview of the problems facing works that combine words and images and suggest betweenness, problems of classification, value and meaning. After establishing a theoretical position, we will move through a series of readings and examples week by week that will allow us to cultivate a critical vocabulary. Graded assignments in this class will address both production and reception. Students will be required to produce two works that address the potential middle ground between viewing and reading and the phenomenon of browsing. Two papers analyzing a work or works that address the concepts of the class will also be required.

CAH 6400. History of Exhibitions. 3 Credits.

The exhibition is where modern and contemporary art meets the public. This course looks at the history and theory of exhibiting new art in the past 150 years, starting with the French Salon and the independent alternatives that challenged it (Courbet, the Impressionists, and Post-Impressionists), through avant-garde exhibitions (Expressionists, Dada, and Surrealists), installation art and alternative exhibition strategies, and leading to today's art fairs and biennials (Art Basel, Documenta, the Venice Biennale, the Whitney Biennial, etc.). We will cover historic exhibits including the Armory Show and Hitler's Degenerate Art exhibit. Individual and group projects will research specific recent exhibitions, as we consider such issues as design, audience, and critical reception. At times this course may be cross-tallied at the undergraduate level as CAH 4400. Students wishing to pursue undergraduate credit should register for the undergraduate section.

CAH 6410. From Arts and Crafts to Ikea. 3 Credits.
While the widespread influence of William Morris' Arts and Crafts movement confirms its importance and success, its failure to create truly affordable handcrafted goods for everyday use and everyday people eventually inspired a manufacturing revolution. Since the early twentieth-century, mass-produced objects or interior complexes assembled with specific design vocabularies have stimulated a major consumer industry, mediated by sales and marketing strategies that intentionally appeal to the broadest possible clientele.Pursuing discussions inspired by Arts & Crafts into the present age, this course will touch on discourses about fashion versus style, 'sham' or kitsch versus high design, the inherent value of crafted versus mass produced items, and innovations in materials or manufacturing techniques that either reflect their own period of time or romanticize the past-all topics that still resonate within the design and manufacturing arena. What began with many regionally inventive streams-including Germany's Bauhaus curriculum, Scandinavia's national romanticist movement, or America's Colonial and Mission revivals--has culminated in mass-marketed brands and ensemble marketing, represented by IKEA, Herman Miller, Ethan Allan, or Pottery Barn (among others). This course surveys various pioneers whose design ethos eventually merged with mass production, reviewing a variety of ensemble design approaches: for example, Peter Behrens, Lily Reich (with Mies van der Rohe), Marcel Breuer, Le Corbusier's Thonet preference, Charles and Ray Eames, the Saarinens at Cranbrook, the reproduction industry that represents Frank Lloyd Wright, Russell Wright, and others. The integration of non-Western influences (characterized in the past as Japonisme, Chinoiserie, folkloric or primitivist), the impact of various international expositions, and the success of the "museum"-store mentality (which made Isamo Noguchi, Alvar Aalto, and others more affordable to a wider audience) will also be introduced.This seminar-style survey concludes with the "Target" approach (featuring architect Michael Graves), as well as some consideration of recycled or 'green' products that are marketed as "environmentally correct." By the end of this class, students will be aware of the major stylistic distinctions, socio-cultural influences, revivals, and shifts in design practices from the eighteenth century to the present in their fields of interior design or decoration. At times this course may be cross-tallied at the undergraduate level as CAH 4410. Students wishing to pursue undergraduate credit should register for the undergraduate section.

CAH 6510. American Art. 3 Credits.
This course will explore painting, sculpture, and photography produced in the United States from the American Revolution to the end of the First World War. We will examine the work of individual artists—Gilbert Stuart, Winslow Homer, Thomas Eakins, John Singer Sargent, James McNeill Whistler, Frederick Remington, Hiram Powers, Eastman Johnson, Mary Cassatt, and Alfred Stieglitz—as well as art movements—the Hudson River School of landscape painting, Luminism, Realism, American Impressionism, Modernism and the Avant-Garde in America. Students will be expected to develop an understanding of the major artists, art movements, and art historical issues related to the visual arts produced in the United States. Instruction time will be divided between the classroom and the following museums, which have significant collections of American Art—the Corcoran Gallery of Art, the National Gallery of Art, and the Smithsonian American Art Museum. In some terms this course may be cross-tallied at the undergraduate level as CAH 3210 and at the graduate level as CAH 6510. Students enrolled at the graduate level will be required to do additional work in order to earn graduate credit.

CAH 6530. Art and Architecture of Washington DC. 3 Credits.
This course will investigate the art and architecture of the city of Washington, DC: major collections, special exhibitions, historic architecture, and the city itself. A majority of our time will be spent on site, outside the classroom, so this is a walking-intensive class.Weekly reading and frequent short writing assignments are required, as well as a developed seminar paper at the conclusion of the seminar. At times this course may be cross-tallied at the undergraduate level as CAH 3530 and at the graduate level as CAH 6530. Students enrolled for graduate credit complete additional work at an advanced level and are graded according to the Graduate Grade Standard (see Student Handbook).

CAH 6531. Iconic American Designers. 3 Credits.
This course offers an in-depth examination of works by a select group of iconic American designers, from the 19th century to the present. We will consider the esthetic, social, and historical implications of the design work of Gustav Stickley, Greene & Greene, Frank Lloyd Wright, Louis Comfort Tiffany, Eero Saarinen, Charles and Ray Eames, Josef and Anni Albers, Frances Knoll, Herman Miller, and Eliot Noyes, among others. Students from diverse disciplinary approaches (fine arts, photography, and design) are encouraged to enroll so that our discussions will be richly informed by different perspectives. Requirements include: presentations, papers, and participation in discussions. At times this course may be cross-tallied at the graduate level as CAH 3531. Additional work required for graduate level credit is outlined in the course syllabus.

CAH 6550. Cultures of Photography: WWII to 2000. 3 Credits.
This course will survey the nature of photography, its practices, meanings, and visual results during a critical era of rapid development of the medium. The class will also explore the ways that contextual and cultural understandings have shaped the readings of images over the second half of the 20th century. Lectures and discussion will be supplemented with artifactual material from the collection of Professor Beck. In some semesters this course may be cross-listed at the undergraduate level as CAH 3240 and at the graduate level as CAH 6550. Additional work is required for graduate level credit.

CAH 6800. Directed Studies: Art History. 3 Credits.
For degree students only. Enrollment requires prior permission.

CAH 6900. Internship: Art History. 1 Credit.
For degree students only. Enrollment requires prior permission. Restricted to Instructor Permission Required.

CAH 7211. Museums in the Digital Age. 3 Credits.
This intensive two-week course explores the impact of digital media on museums, with a particular emphasis on museum exhibitions. Students will examine the recent history of digital media in museums, meet distinguished practitioners in the field, and work with a local (Washington, DC) museum to introduce digital media into its permanent galleries.While the focus of the course will be on museum exhibitions, students will also examine the evolving relationship between museums and their audiences. Digital media gives museum professionals an array of tools - mobile, site-based, web-based - but raises serious challenges to long-standing expectations about collections, curatorial authority, and audience participation. Students will explore both the current impact and future visions for these tools, their implications, and their significance for museums.

CAH 7281. World Textiles. 3 Credits.
This global survey course will introduce students to the important textiles of Asia, Africa, Oceania, and the Americas, from a material culture point of view. Dress and textiles in nomadic, rural, urban, and court social settings will be covered, while exploring issues such as gender, religious and political symbolism, and trade and migration of textiles, designs, and materials in ancient, historic, and modern times. The course will equip students with the basic terminology and methodology used in analyzing and cataloging textiles. Emphasis will be on those examples typically encountered in museum and other collections. The course includes both slide lectures and museum visits, all of which are required for successful completion of the course.

CAH 7283. Modern Textiles and Contemporary Fiber Art. 3 Credits.
This course will introduce the student to the development of modernist textiles and to contemporary fiber art, examining the continued vitality of textiles in the 20th and 21st centuries and the development of fiber art as an important art form. Topics will include: overviews of important art movements (Arts and Crafts, Art Nouveau, Dada and Surrealism, Modernism and others) which have influenced modern textiles; influences of non-western art forms on textiles design; discussion of important designers, artists, and manufacturers.The course will be a mixture of seminar discussions and visits to museums with relevant textile collections (Baltimore Museum of Art, Renwick Gallery, Textile Museum). Guest lectures, drawn from museum curators, interior designers, and contemporary fiber art appraisers will augment class-led discussions. In addition there will be required visits to the homes of contemporary fiber art collectors and to studios of fiber artists.Students will be responsible for leading several class discussions based on reading. Students will produce several PowerPoint presentations based on topics drawn from themes of the course, produce two papers, and discuss their papers with the class.

CAH 7300. Victorian Avant-Garde: British Art & Culture (1851-1901). 3 Credits.
The effects of the technological, social, and cultural upheaval of the 19th century on traditional ideas about art, design, literature, and journalism; the more radical changes in these media in the 20th century. Study of primary artworks and texts in Washington-area libraries, archives, and museums. The Great Exhibition of 1851, Pre-Raphaelite Brotherhood, Arts and Crafts Movement, Aestheticism, and Revival of Printing. John Ruskin, Dante Gabriel Rossetti, Julia Margaret Cameron, Elizabeth Siddal, William Morris, W.E. Godwin, Walter Pater, J.M.W. Whistler, Aubrey Beardsley, and Oscar Wilde. (Same as CAH 4300).

CAH 7532. Pop, Wiggle, and Wave: Transformative Design of the1960's. 3 Credits.
Culturally relevant and quintessentially American, design in the 1960's fused a slick, modern vibe with a hipster aesthetic. Explore this iconic period through a hands-on, fast-paced seminar which will inform and inspire. Students will gain an understanding of the language of design of the 1960's, its antecedents in modernism and its regional and international variations. By looking at design in this period as a cultural history and using the lens of social georgraphy, the class will connect the impact of the 60's with culture, style, form and making today.

CAH 7540. History of Modern Graphic Design. 3 Credits.
With the Industrial Revolution came advances in printing and the new medium of photography, both of which shaped the design of books, magazines, posters, and newspapers. Beginning in the mid-19th century, the course will examine the significant historical events, modern art movements, designers, and technological advances which shaped the development of modern graphic design. The course will include readings and discussion about contemporary visual systems and the effects of the digital revolution in the field of design.

CORCORAN ARTS & HUMANITIES (CAS)

CAS 1110. Writing I. 3 Credits.
For degree students only. This two-semester Foundation sequence is conducted as a workshop, with in-class discussion of student work and of assigned readings drawn from modern and contemporary essays, short stories, and poems. Goals of the course include development and refinement of reading, writing, creative ability, critical thinking, and research skills. Successful completion of CAS 1110 Writing I and CAS 1120 Writing II is prerequisite for Academic Studies courses beyond the 1000 level.

CAS 1120. Writing II. 3 Credits.
This second part of the two-semester Foundation sequence is conducted as a workshop, with in-class discussion of student work and of assigned reading drawn from modern and contemporary essays, short stories, and poems. Goals of the course include development and refinement of reading, writing, creative ability, critical thinking, and research skills. Prerequisite: CAS 1110. Successful completion of CAS 1110 Writing I and CAS 1120 Writing II is prerequisite for Academic Studies courses beyond the 1000 level.

CAS 2000. Special Topics: Humanities. 3 Credits.
The Humanities course at the Corcoran is a required two-semester survey (CAS 2000 and CAS 2010) of works of literature, philosophy and social theory, and of the ideas that give them enduring value. The goal of this course is to provide thoughtful training in the methods of the humanities employed in all college work and in investigating ideas, books, and art: close reading and interpretation of texts, exchange of ideas in discussion, and persuasive critical writing. Works of central importance from world cultural traditions are studied, focusing on a topic of universal and contemporary significance, as a model for the personally motivated intellectual inquiry that defines and enhances the careers of artists, designers, and independent thinkers. Topics by section each semester it is offered. Prerequisites: CAS 1120 Writing II.

CAS 2010. Humanities II. 3 Credits.
The Humanities courses at the Corcoran is a required two-semester survey (CAS 2000 and CAS 2010) of works of literature, philosophy and social theory, and of the ideas that give them enduring value. The goal of this course is to provide thoughtful training in the methods of the humanities employed in all college work and in investigating ideas, books, and art: close reading and interpretation of texts, exchange of ideas in discussion, and persuasive critical writing. Works of central importance from world cultural traditions are studied, focusing on a topic of universal and contemporary significance, as a model for the personally motivated intellectual inquiry that defines and enhances the careers of artists, designers, and independent thinkers. Topics by section each semester it is offered. Prerequisites: CAS 1120 Writing II.

CAS 2590. Cultural Resources of Washington, DC. 3 Credits.
The artistic field is a universe of belief. Cultural production distinguishes itself from the production of the most common objects in that it must produce not only the object of its materiality, but also the value of this object, that is, the recognition of artistic legitimacy. This is inseparable from the production of the artist or the writer as artist or writer, in other words, as a creator of value. (Pierre Bourdieu)As the French sociologist Pierre Bourdieu has observed: artists are made, not born. In this seminar, first-year students will be introduced to the diverse cultural resources within the major metropolitan area of Washington, D.C. that lead to the making of artists. Students will investigate the web of institutions that make up the experience of art, culture, and society; these institutions generate, motivate, activate, foster, and disseminate change - and sometimes stand in its way. Although this course is reading and writing intensive, we will move from the classroom to the locations of culture and the various institutions unique to Washington, D.C. that form the experience of art, the creation of culture, and a vision of society. For example, students may choose to explore the changes and shifts in cultural capital for black and African Americans as seen through the locations of former slave Frederick Douglass' house in Anacostia, the Black Renaissance whose music lit up the Lincoln Theatre on U Street (next door to Ben's Chili Bowl, the iconic restaurant that withstood the 1968 race riots after MLK's assassination), local café and bookstore chain Busboy and Poets named after poet Langston Hughes, the White House that now is home to the first black President of America, and the Corcoran, whose most recent successful art show highlighted 30 African American artists in 2012. As cultural institutions in Washington, D.C., including the Corcoran, continue to re-examine and re-negotiate their purpose and relevance, we will not only ask, "How have these cultural resources and tools transformed and influenced art and the world," but also ask, "How will these cultural resources and tools transform and influence my art and my world?".

CAS 3050. Script and News Story Writing. 3 Credits.
The written word, as a complement to visual images, is an integral aspect of the news story. In this course, students will explore the relationship between the photograph and the written word, and will learn research and writing strategies that enhance the power of the visual information presented by the photograph. Students will learn how to caption images as well as develop the verbal and writing skills necessary for effective news reporting and proposal writing. CAS 2300 Introduction to Journalism recommended prior to enrolling in this course.

CAS 3091. Art Studies Seminar: Critical Approaches to Modern and Contemporary Art. 3 Credits.
In this seminar course students will develop skills in critical analysis of primary and secondary sources, as well as research and communication skills. Students will learn how to formulate a thesis statement and provide visual and textual evidence to support an argument. The seminar will include peer evaluation in response to written work and oral presentations. This course is offered in the spring semester. It is required for BA students, and is an elective for BFA students with permission by the instructor. Topics, which will vary each semester it is offered, will be focused on one or more of the following: visual arts, including time-based media, such as video, television, and film, performing arts, and literary arts.

CAS 3120. Principles and Theory of Interior Design. 3 Credits.
Through a seminar format, this course explores the underlying principles and themes of the design of the built interior environment. Major developments in the field and contemporary methodology are placed within a social as well as historical context. In-depth research on selected topics provides each student an opportunity to focus on areas of particular interest under the guidance of the instructor. At times this course may be cross-tallied at the graduate level as CAS 6120. Additional work required for graduate level credit is outlined in the course syllabus.

CAS 3205. Baudelaire to Blogs: The Art of Writing About Art. 3 Credits.
Much writing about art occurs not in books or long scholarly articles but in short formats such as critical reviews, written introductions to exhibits, statements, interviews, opinion pieces, and more recently, blog entries. This class will both look at examples of such art-writing (from the early modern era to the present), and undertake the practice of writing short descriptive and critical pieces of the types mentioned above in a workshop setting, making use of area exhibits and resources. The goal will be for students to develop skill and enjoyment in the diverse possibilities for writing about visual art (including one's own), leading to potential publication (online or in print).

CAS 3216. Art as Social Practice. 3 Credits.
Social practice is a genre of artistic production that utilizes a range of strategies to engage diverse audiences within the public sphere: urban interventions; collaborative and participatory art; service dispersal and generosity art; public performance; and Social Media and new media applications. In this course, we will investigate how artists working within the field of Social Practice access the public sphere to shape and develop relations with a range of audiences and publics. What does it mean for artists to create work outside of the gallery and within public space? How might participatory strategies work to change notions of authorship and blur the line between artist and audience? What is the potential of Internet-based protocols as venues for publicly engaged art? To answer these questions, we'll explore the various strategies that characterize Social Practice as well as the theoretical concerns that inform the genre (social theory, relational aesthetics, pluralism) through critical readings, artist projects, guest lectures and classroom experiments.

CAS 3250. Poetics Off The Page. 3 Credits.
This course explores the history and theory of scripted literary texts that reside outside of the traditional venues for printed poetry, namely the pages of codex books. Some of the artists likely to be covered include Ian Hamilton Finlay, Kenneth Goldsmith, David Antin, Richard Prince, the anonymous graffiti poets of May 68, and many more. Students work individually and collaboratively to construct "off-the-page" poetic projects.

CAS 3330. Body and/as Image. 3 Credits.
Twentieth-century art has increasingly seen the artist's body used as both the subject and object of artists' work. Expanding and renewing the age-old tradition of self-portraiture, body and performance artists are part of the tradition of artists moving art out of the gallery, into unexpected spaces and media. Beginning with key artists such as Marcel Duchamp and Jackson Pollock, we will examine the work of artists who have used their bodies to create their art, including Carolee Schneemann, Yoko Ono, Chris Burden, Ana Mendieta, Vito Acconci, Marina Abramovic, Matthew Barney, Yasumasa Morimura, and Mona Hatoum. Representations of the artist's body in a wide range of media, including painting, photography, video, and performance, will be analyzed in relation to the social historical context as well as critical writing by philosophers and thinkers such as Georges Bataille and Gilles Deleuze. This course is designed for students whose work involves the human body. Students research artists or art movements for a paper and project. In some terms this course may be cross-tallied at the undergraduate level as CAS 3330 and at the graduate level as CAS 6330. Additional work is required to earn graduate credit.

CAS 3360. Psychology of Creativity. 3 Credits.
How can we define creativity? Do we always recognize it when we see it? How can we make access to our own creativity more reliable? Artists, designers, and innovative thinkers have always pursued these questions. In the rapidly changing age of information, they have become crucial in all fields. In this course, the psychological and biological foundations of perception through problem-solving and creative work are studied as a means of exploring and developing creativity through readings, practical exercises, and student projects.

CAS 3361. Knowing Your Mind. 3 Credits.
How is it that we come to know things? How do we process this information to know our own way of thinking and to come to terms with an external world? This course will explore several different methods of Western psychology that have developed throughout the twentieth century that explore how the mind works in processing the stimulation from the external world and how this processing is framed by the cultural and social principles and values that inform the subject how to process, understand, and in the end conditions us to think in the manner that we do. Some methodologies we will explore: American Pragmatism, Psychoanalysis, Analytic Psychology and Gestalt Theory. In conjunction with these methodologies, in the latter part of the course we will take up explore how these meanings and values inform our understanding of gender and gender identities.

CAS 3365. Cartoons, Caricature and Covergirls: Race and Gender in American Popular Culture. 3 Credits.
Throughout the 20th century, the imaging of both the sexes and various racial/ethnic groups has heavily influenced the public's perspective of gender relations, racial dynamics, public policy, and even foreign relations. The goal of this course will be to canvass the ongoing shifts in the depictions of men and women in an increasingly diverse culture. As these images are deconstructed, the class will also study the political and social climate in which they were produced. We will investigate whether racialized and gendered images in popular culture reflect historical trends and realities or instead represent stereotypical ideas or fantasies about the nature of social relations in the United States. This course will incorporate political cartoons, comic strips, advertising images, and television/motion pictures to fully explore media-based images and include study trips to the Library of Congress and other collections in Washington, DC.

CAS 3381. The Uncanny in Literature, Film and Art. 3 Credits.
The sensation of the Uncanny has been the subject of debates in criticism since the early days of Romanticism: Is it just a physical response to something creepy, unexpected, or inexplicable? Is it something more exalted, a variation on the Sublime, or the artistic trace of an attempt to represent what can never be represented? To understand how these questions moved from the periphery to the center of ideas about modern art, we will explore Freud's influential theory of the Uncanny, as well as accounts of the fantastic and supernatural in art. To trace some of the forms of the Uncanny, we will look into haunted houses, monsters, doubles, vampires, and ghosts in examples from fiction and film such as: Edgar Allan Poe, The Fall of the House of Usher and The Black Cat; E. T. A. Hoffmann, The Sandman; Henry James, The Turning of the Screw; Bram Stoker, Dracula; Carl Dreyer, Vampyr; Michal Waszynski, The Dybbuk; Jacques Tourneur, Cat People; Peter Greenaway, A Zed and Two Noughts.

CAS 3390. 19th Century Print Culture. 3 Credits.
The printing and publishing industries in Europe and America underwent radical transformations as a result of industrialization in the late 18th and early 19th centuries. Machine presses supplanted hand-presses, and as the century progressed mass literacy created a new demand for different forms of printed material for instruction, education, and entertainment. The making of books became faster, cheaper, and somewhat out of control, and the books themselves registered these changes in their material forms. Text and image worked with and against each other in novel and surprising ways. This course will examine these ruptures and pose critical questions about the changing socio-economic roles of reading and writing throughout the 19th century. Early sessions will cover the hand-press era, from Gutenberg to Blake, and the final session will look forward to the 20th century and the advent of digital technologies. In addition to weekly reading assignments and a short theoretical paper, students will conduct independent research in the Library of Congress and present a developed "case study" seminar paper to the class at the end of the semester. At times this course may be cross-tallied at the graduate level as CAS 6390. Additional work required for graduate level credit is outlined in the course syllabus.

CAS 3400. Introduction to Documentary Film. 3 Credits.
Following John Grierson's definition of the documentary as "the creative treatment of reality," this course will consider documentary as a special type of non-fiction film that is primarily marked by its desire to give a subjective account of the world as opposed to an objective report. In the first half of the semester, we will examine some key theoretical and formal issues surrounding the documentary form. In the second half of the semester, we will pay special attention to the history of documentary film from the1960s as an alternative film practice and consider documentary's special relationship to reality, experience, expression, and social commentary/change. In particular, we will be interested in attempts by filmmakers to explore the limits of non-fiction.

CAS 3582. Fiction Workshop: The Writer and Reader in Narrative. 3 Credits.
There are countless stories to tell, and each can be told in countless ways. This workshop course in short fiction explores how the interest, infinite variety, and art of narrative depend on the nature of the transaction between story-teller and audience. Outstanding examples of the form are examined for their essential elements--plot, characterization, point of view, figurative language, and literary style--and students share exercises extending their command of each. Works studied, from fairy tales and modern classics to contemporary experimental fiction, explore the difficulties and uncertainties of story-telling, the reader's participation in the construction of meaning, and the relation of narrated incidents to lived experience. Students in the course will collaborate on the development of an online magazine of short fiction.

CAS 35`. Theories of Art. 0 Credits.

CAS 3800. Independent Study: Academic Studies. 3 Credits.
This option is appropriate for degree students who want access to independent faculty supervision, lab areas, and supplies for independent projects, and do not need or desire extensive course instruction.

CAS 3900. Internship: Academic Studies. 3 Credits.
For degree students only. Internships can help students develop marketable skills, establish professional contacts, and explore different career options.

CAS 4090. BA Senior Thesis Workshop. 3 Credits.
Offered only in the fall semester, this course will prepare BA students in their final year with the conceptual and methodological framework necessary for successful completion of the senior thesis project in the spring semester. The emphasis will be on developing higher-level academic research and writing skills. Students will make a number of off-site visits to the Library of Congress and other archives in the Washington DC region. Course work will consist of frequent short writing assignments and preliminary work on the senior written thesis project: proposals, outlines, bibliographies, etc. Open only to BA majors in their final year.

CAS 4091. BA Thesis Directed Study. 3 Credits.
Reserved for BA requirement.

CAS 4105. Interior Design Professional Practices. 3 Credits.
This course explores the everyday business, legal and financial considerations of the practicing interior designer. Topics include the formation and operation of an interior design business, and designer/client relationships. Students are also introduced to portfolio preparation and business writing skills. This course is only offered during the Spring semester. At times this course may be cross-tallied at the graduate level as CAS 7100. Additional work is required for graduate credit. Prerequisites: CID 3091 Interior Design Studio IV.

CAS 4200. Business Communications for Designers. 3 Credits.
This course focuses on building business communication skills and materials necessary for success in the field of design. Written, oral, and visual communications skills and best practices will be covered. Designers will brand themselves as a creative professionals through presentation of projects in a professional and compelling manner. Projects will include writing content for resumes, cover letters, introduction and thank you letters, emails, proposals/cost estimates, websites and marketing materials; role playing for phone and in-person interviews; presentations of design work to potential clients; and establishing (or enhancing) a presence on various professional community networking sites. Please note that this is not a studio course, nor are studio-based projects part of the syllabus.

CAS 4205. Creative Writing. 3 Credits.
Creative Writing topic may vary each term it is offered.

CAS 4290. The Object in its Public Space. 3 Credits.
Objects exist in ritual, exhibitionary, civic, and domestic spaces. Drawing on theories of space developed in anthropology, semiotics, performance studies, urban studies, and museum studies, this course explores how spaces shape the meaning, value, and power of objects and how objects transform the spaces which they inhabit. Roland Barthes' ground-breaking semiotic analyses of objects, Carol Duncan's Civilizing Rituals: Inside Public Art Museums, and Barbara Kirshenblatt-Gimblett's extensive writings on display as performance provide key readings. At times this course may be cross-tallied at the graduate level as CAS 4290. Additional work required for graduate level credit is outlined in the course syllabus.

CAS 4330. Politics, Advertising, and Mass Media. 3 Credits.
In contemporary mass media, political ideas and candidates are sold in the same way as commercial products. This course highlights study of current electoral campaigns within the larger context of visual culture, political rhetoric, general and historical theories of argument and persuasion, and the practical considerations of how government, civil society, and consumer culture operate through mass representations. In keeping with the aims of traditional rhetoric, we explore means of guarding against invalid arguments that are convincingly presented, as well as making a better case for your own views. Students in this seminar should expect to deepen their understanding of the use of images and discourse to influence opinion and motivate choice in our time.

CAS 4400. Sex in American Cinema. 3 Credits.

CAS 4430. The Dream Screen - Cinematic Fantasy from The Wizard of Oz to Eternal Sunshine of the Spotless Mind. 3 Credits.
From the earliest era of cinema, the ability of the medium to replicate the hallucinatory experience of dreaming has been exploited in some genres, but the prevailing mode has been realism. Now the paradigm is shifting: motion pictures that explore the interior space of the mind and portray imaginary worlds are popular successes and win critical esteem. This course investigates the artist's ability to invoke worlds that have never existed in waking reality through the use of photographic illusion and explores outstanding cinematic representations of the dream. The larger purpose of the course is to investigate the foundation of psychoanalytic criticism in the analogy of dream and art. To deepen the student's experience, the course also offers training in keeping a dream journal and exploring your own nightly theater of dreams. Readings in Freud, Jung, Rank, Klein, Kristeva, and film theory; films screened include Surrealist classics Un chien andalou and Dreams That Money Can Buy; the experimental films of Maya Deren, Kenneth Anger, Stan Brakhage, and Phil Solomon; Hitchcock's Spellbound; Ingmar Bergman's Wild Strawberries; Richard Linklater's Waking Life.

CAS 4440. Sex in American Cinema. 3 Credits.
From silent-screen sirens to contemporary bromance, the movies have not only reflected Americans' sexual mores, but taught the public what to believe, denounce, and accept. This course examines the historical capacity of American cinema both to represent sexual norms and to subvert the idea of the normal, with particular emphasis on the profound historical and cultural influence of the Hollywood Production Code. Examples for study are screened in the Corcoran auditorium and include representative works from genres such as melodrama, farce, film noir, horror and the western, as well as experimental, independent and adult film. Students undertake a critical paper on an American film as their semester project. In some terms this course may be offered at the undergraduate level as CAS 4440 and at the graduate level as CAS 7440. Additional work is required to earn graduate credit.

CAS 4480. Texts and Readers. 3 Credits.

CAS 4540. Curatorial Seminar. 3 Credits.
Students in this course will research and prepare for an exhibition on selected topic in photography, scheduled to open at the Corcoran Gallery of Art at the end of the spring semester. Students will research the history of the specific topic and particular photographer(s) who may be in the show. Working in teams, they will also learn the hands-on elements of exhibition preparation, and will prepare checklists, wall labels, object labels, sample catalogue entries, press releases, work on exhibition design and layout. They will also learn the basics of museum techniques for gallery design, shipping costs and planning, condition reports, exhibition installation and preparation, shipping, budgeting, public relations, and catalogue publications.

CAS 4621. Postconceptualism. 3 Credits.
Focusing on contemporary art movements and practice, this course considers the connections between artists, their artworks, and the period in which they create the work. Michel Foucault called this cultural outlook the episteme, and the prevalence of Postconceptualism as modus operandi among the newest art stars merits our investigation of contemporary conceptual art theory and its relationship to today's art practices. The course will study purveyors of postconceptual practice, who use "style" as metonymy, where a part is meant to represent the whole, projecting their works as surface without theoretical substance. We will provoke an appreciation of Postconceptualism in both its epistemic and metonymic elements and learn how to address and distinguish between the varying results. Course lectures are supported by assigned readings from a variety of sources, with visual presentations to identify key artists. Critical discussions encourage students to support personal positions in relation to art theories, and off-campus visits provide first-hand observation of contemporary art in context. Students must maintain focused attendance, complete all assigned readings, contribute to in-class and blog discussions, make one presentation, and submit two written essays to receive course credit.

CAS 4910. Internship: BA Required. 3 Credits.
Reserved for BA requirement.

CAS 6120. Principles and Theory of Interior Design. 3 Credits.
Through a seminar format, this course explores the underlying principles and themes of the design of the build interior environment. Major developments in the field and contemporary methodology are placed within a social as well as historical context. In-depth research on selected topics provide each student and opportunity to focus on areas of particular interest under the guidance of the instructor. This course is open to students enrolled in the Masters of Interior Design program; or by permission from the Department Chair. At times this course may be cross-tallied at the undergraduate level as CAS 3120.

CAS 6290. The Object its Public Space. 3 Credits.
Objects exist in ritual, exhibitionary, civic, and domestic spaces. Drawing on theories of space developed in anthropology, semiotics, performance studies, urban studies, and museum studies, this course explores how spaces shape the meaning, value and power of objects and how objects transform the spaces they inhabit. Roland Barthes' ground-breaking semiotic analyses of objects, Carol Duncan's Civilizing Rituals: Inside Public Art Museums, and Barbara Kirshenblatt-Gimblett's extensive writings on display as performance provide key readings. At times this course may be cross-tallied at the undergraduate level as CAS 4290. Students wishing to pursue undergraduate credit should register for the undergraduate section.

CAS 6330. Body and/as Image. 3 Credits.
Twentieth-century art has increasingly seen the artist's body used as both the subject and object of artists' work. Expanding and renewing the age-old tradition of self-portraiture, body and performance artists are part of the tradition of artists moving art out of the gallery, into unexpected spaces and media. Beginning with key artists such as Marcel Duchamp and Jackson Pollock, we will examine the work of artists who have used their bodies to create their art, including Carolee Schneemann, Yoko Ono, Chris Burden, Ana Mendieta, Vito Acconci, Marina Abramovic, Matthew Barney, Yasumasa Morimura, and Mona Hatoum. Representations of the artist's body in a wide range of media, including painting, photography, video, and performance, will be analyzed in relation to the social historical context as well as critical writing by philosophers and thinkers such as Georges Bataille and Gilles Deleuze. This course is designed for students whose work involves the human body. Students research artists or art movements for a paper and project. In some terms this course may be cross-tallied at the undergraduate level as CAS 3330 and at the graduate level as CAS 6330. Additional work is required to earn graduate credit.

CAS 6390. 19th Century Print Culture. 3 Credits.
The printing and publishing industries in Europe and America underwent radical transformations as a result of industrialization in the late 18th and early 19th centuries. Machine presses supplanted hand-presses, and as the century progressed mass literacy created a new demand for different forms of printed material for instruction, education, and entertainment. The making of books became faster, cheaper, and somewhat out of control, and the books themselves registered these changes in their material forms. Text and image worked with and against each other in novel and surprising ways. This course will examine these ruptures and pose critical questions about the changing socio-economic roles of reading and writing throughout the 19th century. Early sessions will cover the hand-press era, from Gutenberg to Blake, and the final session will look forward to the 20th century and the advent of digital technologies. In addition to weekly reading assignments and a short theoretical paper, students will conduct independent research in the Library of Congress and present a developed "case study" seminar paper to the class at the end of the semester. At times this course may be cross-tallied at the undergraduate level as CAS 3390. Students wishing to pursue undergraduate credit should register for the undergraduate section.

CAS 6400. Introduction to Documentary Film. 3 Credits.
Following John Grierson's definition of the documentary as "the creative treatment of reality," this course will consider documentary as a special type of non-fiction film that is primarily marked by its desire to give a subjective account of the world as opposed to an objective report. In the first half of the semester, we will examine some key theoretical and formal issues surrounding the documentary form. In the second half of the semester, we will pay special attention to the history of documentary film from the1960s as an alternative film practice and consider documentary's special relationship to reality, experience, expression, and social commentary/change. In particular, we will be interested in attempts by filmmakers to explore the limits of non-fiction.

CAS 6421. The Birth of Cinema. 3 Credits.
Between the 1890s and the 1920s, moving pictures evolved from a children's diversion to a force that transformed modern life at all levels. As new technology, as industry, and as a medium of mass art, the cinema contributed significantly to the United States' economic and cultural domination of the twentieth century. In this course, we will examine the global history of the silent cinema through outstanding examples, focusing on aesthetic as well as social issues, with particular emphasis on the development of Hollywood and production. We begin with the proto-cinema of zoopraxiscopes and nickelodeons, and conclude with a consideration of the parallels between early cinema and the emerging media of representation in the contemporary world. Graduate students in this course offer in-class critiques of required readings in relevant criticism; and prepare a seminar research project in one of four key topic areas: The Cinema of Attractions; Style and Ideology in National Cinemas; Social and Economic Dimensions of the American Cinema Market; Experimental Traditions and Counter-Cinema.

CAS 6480. Texts and Readers. 3 Credits.

CAS 6550. The Magazine Essay. 3 Credits.
In this graduate-level workshop-style course students research and develop a long form written piece on a topic of their choice. Students explore a variety of reporting and writing approaches through lectures, guest speakers, case studies and practical assignments. Students may use this course to develop the text to accompany their final thesis projects. Prerequisite: Research, Writing and Reporting.

CAS 6800. Directed Studies: Academic Studies. 1-3 Credits.
This option is appropriate for degree students who want access to independent faculty supervision, lab areas, and supplies for independent projects, and do not need or desire extensive course instruction. This option is justified only if 1) the project content cannot be covered in an existing course, 2) the student's department deems it of substantive value to the student's educational goals and interests, and 3) the project work will be done outside of regularly scheduled class time.All directed studies are for credit (one to three credits). Students cannot take more than three credits of directed studies per semester. Students enrolled in directed studies will have access to the facilities and equipment at times arranged by the instructor. To enroll, students must submit a Directed Studies Contract that is available at the Office of the Registrar and obtain written permission from the instructor and the chair or program director of the student's department and when different, the course department. The directed studies instructor will be responsible for working with the student to establish project goals, oversee progress, and determine final course grades. Bachelor's Foundation students and Continuing Education students are not eligible for directed studies. Under certain circumstances, directed studies may be pursued by graduate students by combining participation in an advanced undergraduate course with extra independent assignments at the graduate level, as arranged in advance with the directed studies instructor.

CAS 7100. Interior Design Professional Practice. 3 Credits.
This course explores the everyday business, legal and financial considerations of the practicing interior designer. Topics include the formation and operation of an interior design business, and designer/client relationships. Students are also introduced to portfolio preparation and business writing skills. This course is only offered during the Spring semester. At times this course may be cross-tallied at the undergraduate level as CAS 4105. Additional work is required for graduate credit.

CAS 7205. Creative Writing. 3 Credits.
This course is designed to develop the creative writing skills of those enrolled in it. Attention will be given to the essay, short fiction, and poetry. Work by outstanding exponents of each form will be examined and discussed. Each student will develop a portfolio containing examples of all three forms, with a concentration on one of them. The course will be conducted as a workshop.

CORCORAN ART AND THE BOOK (CBK)

Courses

CBK 5220. Box Elements in Book Arts. 3 Credits.
This class will cover the basic ins and outs for box making. Suitable tools and materials for box construction as well as various box applications will also be discussed. Students will create four archival box constructions as examples of storage and presentation solutions-the drop spine box, a slipcase, a paper box wrapper, and a folding box. Students will also explore using the box as a creative outlet for self- expression. For final project, the class-under instructor guidance-will create a "story box" with the goal being to produce an individual conceptual book object while at the same time finding one's own unique artistic voice. Priority to graduate students of the Art and the Book department; open to other degree students as space is available.

CBK 5750. SMdA: Charting San Miguel de Allende: The Artist's Journal. 3 Credits.
How do we write literature and make art that captures the experience of the places we visit as tourists? What strategies are available beyond the obvious ones? Through writing and the making of visual art, how can we see and record aspects of the daily life of a community that might go unremarked or unknown otherwise? The historic town of San Miguel, Mexico, with its rich history of art and literature, provides an unparalleled opportunity to explore these questions. This winter-session course focuses on the intersection of writing and bookmaking. Through a series of hands-on seminars and workshops, students will learn how to transform the raw materials of their sketchbooks and notebooks into fully realized literary texts in a variety of hand-made book forms. Two major book projects, one collaborative and one independent, will be required. Note: This course carries an additional fee which includes triple occupancy lodging, daily breakfast, materials fee for the duration of the course, and airport transportation. Airfare and tuition are additional, as is an optional excursion. Please contact the department for details.

CBK 6010. Art and the Book Seminar I. 3 Credits.
What is an artists' book and how can it be defined? Hands on in nature, Art and the Book Graduate Seminar I. will focus on Washington, D.C. and exploration of the premiere book and related collections throughout the city. This academic course consists of research topics and discussions revolving around such areas as exploring characteristics of an artists' book, origins of the artists' book itself and defining the future of the book form along with roughly five site visits to numerous museum collections at outstanding institutions like the Library of Congress, the Smithsonian American Art Museum/National Portrait Gallery Library, the National Gallery of Art Library and the National Museum of Women in the Arts. Visiting artists will also be invited to speak in reference to topics inspired by collection excursions when possible. Students will be asked to delve personally deeper by developing a research paper and PowerPoint presentation based on material presented at the various site visits and through class lectures. The last two weeks of this course will consist of in-depth formal presentations where students will present their research papers and multimedia presentations to the group as a whole.

CBK 6020. Art and the Book Studio I. 3 Credits.
Collaborations can serve as an idea generation tool, an expansion of one's own skill set, or a joining of ideas to create a piece that is larger than the sum of its parts. The Art and the Book Studio I. course will explore various forms of collaboration through a series of hands-on projects that range from working with unknown collaborators to pairing with complementary skill sets. The semester will culminate in a final collaborative project where students can experiment and explore as a synergistic unit. Visiting artists will speak about their own experiences with collaborative projects. Priority to graduate students of the Art and the Book department; open to other degree students as space is available.

CBK 6100. Layout & Design of the Book. 3 Credits.
This course provides an opportunity for visual artists from all backgrounds to combine images with text, to sequence existing content, to expand their typographic options, and to explore publishing alternatives beyond hand-made limited editions. It will cover type selection and typesetting, page grid systems and production methods for a variety of layout options, including handmade as well as commercially produced books. We will test several online publishing services, bypassing the limitations of their proprietary software by using InDesign for design and typesetting and exporting the final layouts as PDFs. Image formats, color modes, and color correction will be covered as needed. This course is open to MA/Art and the Book Students.

CBK 6110. Letterpress I: Letterpress Basics From the 1400's to the Digital Age. 3 Credits.
This course provides an introduction to traditional Letterpress applications while also exploring computer and relief printing trends used in the field today. Students will be provided technical instruction in typesetting--from composing stick to quoin key --along with presswork, inking, editioning, and Vandercook press operation schooling. Students will examine such areas as Linocut, Woodcut, and computer photographic processes with the goal being to incorporate these practices with that of traditional typesetting. A collaborative broadside project will be produced in the second half of the semester. Priority to graduate students of the Art and the Book department; open to other degree students as space is available.

CBK 6120. Binding I: Intermediate & Advanced. 3 Credits.
This course will cover advanced techniques in binding while laying a proper foundation in book arts. Both practical and aesthetic decisions will be discussed as more challenging structures such as Coptic binding, portfolio, and flag books to name only a few are created. Independent projects will be produced over the course of the semester in which content of the book will be emphasized. This course will culminate with a final artists' book project where a student will explore any binding of their choosing while making conceptual decisions under a universal theme. Priority to graduate students of the Art and the Book department; open to other degree students as space is available.

CBK 6150. Type and the Book Form. 3 Credits.
Typography for book arts and design. Development of narrative themes through the use of type, image, grid, materials, and multiple page sequencing. The history of typography including the use of technology; terminology and classification. Restricted to MA in Art and the Book degree students; other graduate students with permission of the instructor.

CBK 6210. Letterpress II: Advanced Discoveries in Letterpress. 3 Credits.
Letterpress II. provides an exploratory arena in advanced letterpress techniques with the use of text and image as a fine arts medium. This course will cover conceptual, aesthetic, and practical considerations in print media. Also, an individual book project will be introduced midway through semester that the graduate student will work on as a team experimenting with new treads in Letterpress to produce a book edition. Priority to graduate students of the Art and the Book department; open to other degree students as space is available. Pre-requisite: Letterpress I or permission of the Art and the Book Director.

CBK 6331. Vandercook Relief Fine Art Printing. 3 Credits.
An introduction to fine art relief printing methods on Vandercook presses. Technical instruction in multiple relief printing processes, including reduction cut, multiple block registration, wood block, and collagraph. The use of alternative material printing on letterpress equipment emphasizing the graphic image and fine print quality. Focus on the production of multiple print editions and small books forms using learned techniques. Recommended background: CBK 6110.

CBK 6800. Independent Study: Book Arts. 3 Credits.
This option is appropriate for degree students who want access to independent faculty supervision, lab areas, and supplies for independent projects, and do not need or desire extensive course instruction.

CBK 6900. Art and the Book Internship. 3 Credits.
For degree students only. Internships can help students develop marketable skills, establish professional contacts, and explore different career options.

CBK 7010. Art and the Book Studio II. 3 Credits.
Working with the varied talents and experiences of the Art and the Book student population, this class embarks on the creation of a collaborative book project. What emerges from the unique personality of the Studio II class make-up is a student driven book edition. Beginning with discussions, this class will experiment and hone in on the important issues of theme, content and structure which will establish the book's character. Materials choices lend texture and nuance to the book form development. Production of the collaborative book edition entails creative and disciplined work in such areas as: layout design, typesetting, plate making, papermaking, printing and binding. By completion of the book edition, students will have experienced an ambitious team-building and productive inclusive art experience. For MA in Art and the Book graduate students only.

CBK 7311. Pop-Up Books: Exploration of the Sculptural Book through Paper Engineering. 3 Credits.
This class focuses on non-traditional sculptural book formats and on the design of pop-ups as sculptural book inclusions. Students will learn to engineer a range of pop-up structures, beginning with simple non-adhesive cut-and-fold pop-ups and progressing through a series of more complex glued constructions, including platforms, props, V-folds, and volumes. Emphasis will be on how to integrate the dimensional and mechanical aspects of the pop-up with graphic and illustrative concepts. The class will also explore several sculptural bindings, including accordion books, carousel books, and tunnel books. The carousel book (a nested series of accordions) and the tunnel book (two accordions holding a series of page frames) are theatrical stage-like constructions employing layers of images and text to create dimensional graphic illustrations. Basic bookbinding tools and skills will be discussed, along with the design of jigs and templates for streamlining production in for editions. Slide shows of historical and artist-made books will be presented on each major class topic. Priority to MA Art and the Book students; open to other degree students on a space-available basis.

CBK 7320. Binding II: Leather Bindings. 3 Credits.
This course offers an introduction to the use of leather in Book Arts. Students will focus on traditional techniques for creating both historic and modern book structures. Knife care, paring and application of leather, as well as excellence in book forwarding will be emphasized. Students will sew multi-colored headbands, and be asked to design and execute several books in quarter leather. A discussion and demonstration of inlay/onlay and tooling will offer students a glimpse into the visual opportunities afforded by this exciting medium. Prerequisite: CBK 6120 Binding I.

CBK 7322. Japanese Binding. 3 Credits.
The history and evolution of Japanese bookbinding. Exploration and production of historically important Japanese bookbinding methods, including hand scroll, stab binding variations, accordion books, and ledgers. Techniques such as backing paper or cloth for covers and making traditional book cases are covered.

CBK 7400. Exploration in East/West Papermaking. 3 Credits.
This intermediate/ advanced course is an exposure to traditional and experimental methods of hand papermaking, with an emphasis on papermaking as an expressive art medium. Work will include processing raw fiber, pigmenting pulp, exploring Eastern and Western sheet formation styles, and examining various drying and finishing techniques. In addition, 3-D techniques, including paper casting and vacuum forming will be taught. Throughout the course, the history of paper will be discussed. Prerequisite for this course is 2D Applications in Paper or Dimensional and Color Papermaking. Or permission can be granted by Instructor or Director of the Art and the Book program.

CBK 7800. Art and the Book Pro-Thesis. 3 Credits.
In the Art and the Book program, Thesis for students with a studio focus consists of a cohesive body of work grounded in the book form with a formal exhibition, defense meeting, along with a written paper component that informs the candidate's thesis studio project. For students in the program with an academic focus, an in-depth written paper, defense, and public talk to the college are required to fulfill the requirements of thesis. Students of the Pro-Thesis course will develop a thesis petition and outline that will serve as the guideline for Thesis construction. Students with a studio focus must in the petition also present a comprehensive plan for their studio exhibition to be developed and completed in the Thesis Forum course occurring in the following semester. All petitions must be approved by the Thesis Petition Faculty Committee. Students will choose a paper and exhibition theme/topic and create a mission statement and written document during the expanded research and writing phase of this course. The final Pro-Thesis document will be an academic paper that conforms to the writing standards of the Corcoran graduate programs and that of UMI dissertation publishing, where the final Thesis submission will be published online of the Spring semester. Students in Pro-Thesis will also explore professional development through a personal exploratory process culminating in the creation of a learned artist statement and CV. This class is for Art and the Book students only.

CBK 7900. Art and the Book Thesis Forum. 3 Credits.
In this course, students complete a comprehensive body of work with a written supporting thesis at the professional level exploring a unique book arts-related topic. Each student's thesis should contain a rigorous exploration of theme, under the supervision of a thesis advisor with the goal being to produce a sound body of work or comprehensive written composition. The process will culminate with the display of thesis projects developed over the course of the semester, with students presenting to jurors composed of faculty as well as professionals from the book arts community.

CORCORAN CONTINUING EDUCATION (CCE)

CCE 0860. In My Home. 1.5 Credit.

CCE 0899. Digital Photography Basics. 0 Credits.

CCE 1010. Fundamentals of Graphic Design. 3 Credits.

CCE 1120. Introduction to Painting. 0-1.5 Credits.
This course is for all skill levels. Beginners will learn the basics, and more advanced students will progress on an individual basis. This course covers composition, color, and canvas preparation. Restricted to non-degree students.

CCE 1140. Introduction to Botanical Painting. 0-1.5 Credits.
This course is an introduction to the techniques of transparent watercolor using live plant material. Students will learn to apply paint and render the precise characteristics of specific plants, paying close attention to form, detail and color accuracy. Beginning with a simple plant form, students will move quickly to more complex plant portraits. Those with botanical drawings may proceed immediately to finished paintings. Prior drawing experience is helpful. Restricted to non-degree students.

CCE 1182. Painting Short Course. 0 Credits.
This course covers composition, color theory and canvas preparation and is appropriate for all skill levels. Beginners will learn the basics, and more advanced students will progress on an individual basis. Restricted to non-degree students.

CCE 1183. The Art of Watercolor/Gouache. 0 Credits.
This course emphasizes the control and expression of two water-based media: transparent watercolor and opaque gouache. Subject matter will be still life, landscape and portrait. Color mixing and color expression will be the primary focus of the class. Restricted to non-degree students.

CCE 1185. Non-traditional Watercolors. 0 Credits.
This course introduces students to a fresh approach to using watercolor as a flexible and erasable medium. The class will also cover color mixing, new surfaces for watercolor and techniques for layering imagery. Previous drawing or painting experience recommended. Restricted to non-degree students. Recommended background: Previous drawing or painting experience recommended.

CCE 1186. Figure Painting Short Course. 0 Credits.
Working from a live model each session, students explore how the human body may be represented in paint both realistically and semi-abstractly. Beginning students focus on acquiring technical skills and more advanced students receive guidance in handling compositional and expressive challenges. Students may work in oil or acrylic. Restricted to This course is restricted to non-degree students.

CCE 1188. Landscape Drawing and Painting. 0 Credits.
Drawing as a way of seeing is explored through a series of free hand exercises, thereby developing one's landscape painting abilities. Students of all levels will have the opportunity to hone their hand skills and sharpen their artist's eye in articulating forms in the landscape. With visits to scenic locations and popular panoramic venues, and observing street scenes and garden vistas, students will be instructed in color theory and the principles of good landscape composition. Students may work in their chosen media and studio space will be available for use in case of inclement weather. Open to all levels of experience. Restricted to Course restricted to non-degree students only.

CCE 1200. Introduction to Jewelry I. 0-1.5 Credits.
This course will provide students with the basic skills needed to design and fabricate their own jewelry. Students will become familiar with the safety, use, and maintenance of studio equipment and hand tools. This course will cover piercing, filing, finishing, soldering, forming, and basic embellishment techniques, as well as simple clasps. This course is designed for beginning students or those seeking to sharpen technical skills. Restricted to non-degree students.

CCE 1210. Introduction to Jewelry II. 0-1.5 Credits.
This course will continue to improve on the basic skills and introduce more techniques used in basic jewelry creation. Students will be encouraged to develop their personal design vocabulary and to broaden their definition of jewelry. Topics examined will include more clasps, introduction to wax carving and basic stone setting, and surface treatments. This course is designed for the advanced beginner and intermediate students. Restricted to non-degree students.

CCE 1224. Connections: Chains. 0-1.5 Credits.
In this course, students design and create handmade chains, essential components of many types of jewelry. Students learn design principles of linkage systems and are instructed in several technical processes, including how to fuse and solder links and how to make jump rings, woven chains, and chains with hollow elements. Restricted to non-degree students.

CCE 1253. Introduction to the Wheel. 0-1.5 Credits.
Students will be introduced to using the wheel to create functional pottery. The class will cover wedging, throwing, trimming, and glazing for simple forms. Assignments will explore the poetic presence that results from the character of clay, the manipulation of form, and the qualities of glazed surfaces. Weekly assignments will focus upon bowls and vertical forms with a focused glazing/slipping palette. Restricted to non-degree students. Same as CCE 2253.

CCE 1300. Introduction to Screenprinting. 0-1.5 Credits.
Students will use the latest in water-based ink technology in a variety of techniques for stencil making suited specifically to the screenprinting medium. Substantial independent work is possible for advanced students. Restricted to Non-degree students.

CCE 1370. Book Arts Basics Workshop. 0 Credits.
A demonstration-based course focused on book structure. Basic sewn, glued binding, and box structures. Basic techniques including assembly for a box structure and proper preparation for paper, book board, and book cloth. Proper use of tools and materials. Restricted to Limited to non-degree students.

CCE 1383. Introduction to Lithography. 0 Credits.
Introduction to the lithographic process and instruction in executing a lithograph from a stone. Materials fee. Restricted to non-degree students.

CCE 1388. Plate Lithography. 0 Credits.
An introduction to photo-plate lithography. Students take photo-based images and turn them into black and white and color prints using traditional lithography techniques and image building strategies. Restricted to Limited to non-degree students.

CCE 1420. Introduction to Drawing. 0-1.5 Credits.
This course emphasizes gesture, line, proportion, perspective, mass, volume, value, tone and shading. Working with conté crayon, graphite, pen and ink wash, and an assortment of papers, students will study the figure, still life, and subjects of individual choice. Students are provided with a strong foundation for more advanced classes. Restricted to Non-degree students.

CCE 1422. Academic Drawing: Still Life, Portrait & Figure. 0-1.5 Credits.
This course incorporates traditional methods of studying drawing used by the European art academies for centuries. Structurally, the course consists of several long-term assignments such as still life, portrait, and figure. The emphasis is on tonal drawing, which teaches students to see relationships between the most complex characteristics of the form and corresponding tonal values of the materials used. Restricted to non-degree students.

CCE 1440. Introduction to Botanical Drawing. 0-1.5 Credits.
History, issues, and concepts related to botanical illustration. Study of the major botanical painters and illustrators; seeing and rendering plants and developing a personal style.

CCE 1481. Academic Drawing Short Course. 0 Credits.
This course incorporates traditional methods of studying drawing used by the European art academies for centuries. The course consists of several long-term assignments such as still life, portrait and figure. The emphasis is on tonal drawing and learning to see relationships between the most complex characteristics of the form and corresponding tonal values of the materials. The result is similar to the grisaille technique in painting. Restricted to Course restricted to non-degree students only.

CCE 1485. Figure Drawing Short Course. 0 Credits.
This course will focus on drawing from live models during each session, working primarily with black and white materials. Students will learn how to capture the pose with quick gestures, to develop a quality of line with contours, and to become familiar with proportions by measuring and foreshortening. Short drills lead to long poses and the development of more complete, detailed drawings of the human form. Restricted to non-degree students.

CCE 1487. Portrait Drawing Short Course. 0 Credits.
This course in portrait drawing focuses on learning to draw the basic structure and form of the human head through organization of contours, proportions, and planes. Students develop skills in rendering facial features, explore movement and expression, and attempt to achieve a likeness. Restricted to Non-Degree Students only.

CCE 1488. Drawing the District: Nature. 0 Credits.
This course is designed to help students develop a broad foundation of naturalistic drawing using the unique offerings of Washington, D.C. Students draw nature onsite at places such as the U.S. Botanic Garden and the Smithsonian's National Zoo and Natural History Museum. The course is suitable for both artists with some experience and students wishing to develop a strong portfolio for admission to art school or graduate school. Professionals also can use the course as an opportunity to build on their skills. Restricted to Non-Degree Students only.

CCE 1493. Drawing in the District. 0 Credits.
Students improve their ability to record and capture their visual impressions of the urban landscape using the unique neighborhoods of Washington, D.C. The class meets once per week at locations such as Dupont Circle, Capital Hill, Georgetown, and Embassy Row. Restricted to Limited to non-degree students.

CCE 1585. Colors in Interiors. 0 Credits.
This seminar will provide the student with the opportunity to learn the fundamentals of color application, as well as the skills necessary to refine their design strategy as their design needs change. Restricted to Non-degree students.

CCE 1586. In My Home. 0 Credits.
This course focuses on the basic elements of interior design. A simplified approach to the principles of design in a residential interior allows students the opportunity to explore interior design within the context of their own homes. Restricted to non-degree students.

CCE 1588. Introduction to Interior Design Concepts for Nonprofessionals. 0 Credits.
This course is geared toward the nonprofessional design enthusiast who wants to gain a deeper understanding of interior design. The course covers interior design concepts and topics such as drafting to scale by hand, color and material systems, furniture, space planning, site development, lighting, and sustainability. Students undertake a design project, which involves applying these concepts to a small home's interior and exterior and presenting the results to their peers. Appropriate for those students who are looking to stimulate their love of design in a more structured way, take on future renovation projects, and engage with designers and architects on a higher level. Restricted to Non-Degree Students only.

CCE 1650. Figure Sculpture. 0 Credits.
An exploration of subtractive versus additive methods within the practice of sculpture. Media used includes clay, plaster, metal, wood, and charcoal. Restricted to non-degree students.

CCE 1782. Portraiture Workshop. 0 Credits.
Focus on the mechanism of portraiture, covering subject, lighting, locations, and other elements. Students practice the skills they learn by creating portraits of one another as well as through brief homework assignments. Critiques, both group and individual, are a fundamental part of this course. Restricted to Non-Degree Students Only.

CCE 1785. Dark Room Photography Basics. 0 Credits.
Operating a camera, developing film, and printing photos. A manual 35 mm SLR camera with a working light meter is required. Laboratory fee. Restricted to non-degree students.

CCE 1789. Digital Photography Basics. 0 Credits.
This course develops photographic skills, and teaches students how to enhance pictures on the computer, and make digital prints. The curriculum introduces concepts in digital imaging and features of the digital camera. Students will learn about, and practice, shooting in aperture and shutter priority modes under different lighting conditions. Composition, depth of field, motion, raw file format, storage issues and color management concepts will be discussed. Basic methods of image enhancement using Adobe Photoshop are demonstrated and applied in preparing pictures for printing. Restricted to non-degree students.

CCE 1791. Basic Digital Photography II. 0 Credits.
This course is designed for students with moderate digital camera experience and/or who have completed CCE 1789, Digital Photography Basics. Students should have some experience with using a camera in manual mode and basic familiarity with Photoshop or similar photo editing software. Restricted to Non-Degree Students only.

CCE 1806. Ceramics Workshop: Creating the Teapot. 0 Credits.
An introduction to functional and sculptural teapot designs. Throwing and assembling techniques with emphasis on good craftsmanship. Pottery making techniques and the roles that balance volume, surface texture, negative space, and color have in making complex forms. Restricted to Limited to non-degree students.

CCE 1820. Introduction to Ceramics. 0 Credits.
This course is open to all skill levels. New students learn basic hand-building techniques and also learn to work on the wheel. Intermediate and advanced students focus on expressive development while building technical skills in construction, glazing, and firing. Lectures and demonstrations cover ceramic sculpture and pottery, glaze application, kiln use, and firing methods. Visits to contemporary and historical ceramic exhibitions are incorporated. Critiques address craftsmanship and personal expression. Restricted to Course restricted to non-degree students.

CCE 1825. Introduction to the Wheel. 0-1.5 Credits.
Students will be introduced to using the wheel to create functional pottery. The class will cover wedging, throwing, trimming, and glazing for simple forms. This course will explore the poetic presence that results from the character of clay, the manipulation of form, and the qualities of glazed surfaces. Projects will focus upon bowls and vertical forms with a glazing/slipping palette. Restricted to non-degree students.

CCE 1951. Becoming a Professional Artist. 0 Credits.
Topics include artist statements, grants, studio practice, etiquette, pricing, taxes, and tools available to emerging artists. Students develop a deeper understanding of the nature of the art world. Materials fee. Restricted to non-degree students.

CCE 1961. Pre-College: Figure Painting. 0 Credits.
Students work from observation and experiment with abstraction to learn painting fundamentals and the basics of color theory and composition. Subject matter includes both nude and draped models. Students are introduced to various materials, mediums, and techniques. Group and individual critiques take place throughout the course. Restricted to high school students ages 16 to 18. To enroll visit www.precollege.gwu.edu. Restricted to Limited to high school students ages 16 to18.

CCE 1981. A Week of Photoshop. 0 Credits.
This intensive workshop gives students a solid grounding in the fundamentals of Adobe Photoshop and the confidence to explore more advanced features. Students will learn how to scan and import images and artwork and how to correct and adjust image tone and color. Restricted to Course restricted to non-degree students.

CCE 1984. Web Design for Professionals. 0 Credits.
Using industry-standard Adobe Dreamweaver, this professional development workshop introduces students to the basics of modern web development and design, including best practices; formatting with CSS; understanding Web 2.0; reusing data; using open-source JavaScript libraries; the role of the database in web design, creating forms, using Photoshop to create mouse-overs, optimizing images for the Internet, using AJAX to create widgets and drop-down menus; and much more. Students will critique sites, discuss finding a niche in the huge world of web design, review likely web design trends in the next several years, and discuss project management and customer relations, including explaining the technical and design sides of projects to clients who are otherwise not equipped to evaluate project goals. It is recommended for students with at least two years of professional experience with Photoshop. Restricted to Course restricted to non-degree students.

CCE 2050. Typography I. 3 Credits.

CCE 2101. Special Topics: Painting. 0 Credits.
in-depth study of specialized areas, techniques, movements, and genres of painting. Topics vary by semester. Consult the Schedule of Classes for more details. Materials fee. Restricted to non-degree students. Recommended background: n/a.

CCE 2120. Intermediate Painting. 0-1.5 Credits.
This course will review the fundamentals of painting and focus on individual development of style, technique, and direction. With the instructor's guidance, students will explore their personal visions and examine the historical and contemporary context of individual work. Class critiques and discussions will help students gain a better understanding of the painting process and increase their ability to express visual concepts. Students may work in oil or acrylic paint. This course is for intermediate and advanced students. Restricted to non-degree students. (Same as CCE 1120).

CCE 2122. Abstract Painting. 0-1.5 Credits.
This course explores the concepts and meanings of abstraction and their relevance in today's world. Students will draw on imagery from nature and the visible world, personal experience, ideas, dreams, and the history of abstract painting. No painting or drawing experience required. Restricted to Non-degree students. (Same as CCE 3220).

CCE 2135. Still Life Painting in Oil: Techniques of the Old Masters. 0 Credits.
Students become acquainted with the painting techniques of early 17th Century Europe. Starting with a tonal underpainting, students use transparent glazes to build form, color, luminosity, and drama. The paintings of Caravaggio, Georges de La Tour, Clause Lorraine, and Vermeer are used as guides as students become familiar with the terms chiaroscuro, tenebrism, and sfumato. Subject matter includes still life and landscape. Appropriate for both beginner and intermediate students. Restricted to Non-Degree Students Only.

CCE 2140. Intermediate Botanical Painting in Watercolor. 0-1.5 Credits.
Continuation of CCE 1140. Further study of techniques of transparent watercolor using live plant material. Students will learn to apply paint and render the precise characteristics of specific plants, paying close attention to form, detail, and color accuracy. Beginning with a simple plant form, students will move quickly to more complex plant portraits. Those with botanical drawings may proceed immediately to finished paintings. Restricted to Non-degree students.

CCE 2201. Botany for Illustrators. 1 Credit.

CCE 2220. Intermediate Jewelry. 0-1.5 Credits.
Focusing on individual artistic development as well as more advanced metalworking techniques, this course provides an opportunity for students to integrate their design sense into more conceptual projects. Technical topics to be covered include more advanced surface embellishment techniques, wire construction, fold forming, fusing, and more advanced mechanisms. This course is designed for intermediate students. Restricted to non-degree students.

CCE 2253. Intermediate Wheel Throwing. 0-1.5 Credits.
While being assisted in their efforts to enhance their throwing skills, students will be encouraged to explore a wide range of decorative techniques, both in the forms they produce and texturing and color treatments applied to those forms. Methods useful in the throwing of large forms will also be explored, as will possibilities of combining thrown shapes to create larger vessel or sculptural forms. Prerequisite: CCE 1253: Introduction to the Wheel (old course number CR1250) Prerequisites: CCE 1253: Introduction to the Wheel. (Same as CCE 1253).

CCE 2300. Intermediate Screenprinting. 0 Credits.
Use of water-based ink technology in a variety of techniques for stencil making suited specifically to the screen printing medium. Independent projects as well as those for group critique. For advanced students Restricted to Non-Degree Students Only. (Same as CCE 1300).

CCE 2301. Special Topics: Printmaking. 0 Credits.
In-depth study of a specialized area in the art of printmaking. Consult the Schedule of Classes for more details. Materials fee. Restricted to non-degree students.

CCE 2320. Digital Illustration I. 3 Credits.

CCE 2328. Between Paint and Print. 0-1.5 Credits.
This course is an opportunity for painters to explore the possibilities and potential of integrating screenprinted imagery, textures, and ideas into painting as unique works or as serial projects. Students will explore ways to incorporate printed images directly into the painted surface, working with printing inks, resists, and adhesives to alter and organize the paint. Restricted to non-degree students.

CCE 2341. Woodworking & Furniture Design. 0-1.5 Credits.
This course explores the fundamentals of both traditional and contemporary design. From chairs to tables to a variety of cabinetry, students will have the ability to construct a work of their own design. Over the course of the semester, students will work with the instructor on the design and building of a piece of furniture. Instruction in the usage and techniques of both machine and hand tools are covered in conjunction with the execution of the finished piece. Beginning with sketches, students will explore design and materials, fabricate models, and generate construction drawings, with a goal of fabricating and completing their own project. Restricted to non-degree students.

CCE 2342. Hand Papermaking Techniques. 0 Credits.
Introduction to western papermaking as an art medium. The process of making production paper; manipulation of pulp. Studio techniques, including pulp painting, inclusions, watermarks, and sculptural techniques. Materials fee. Restricted to non-degree students.

CCE 2380. Sculpture in Clay. 3 Credits.

CCE 2401. Special Topics: Drawing. 0 Credits.
In-depth study of a specialized area in the art of drawing. Topics vary by semester. Consult the Schedule of Classes for more details. Materials fee. Restricted to non-degree students.

CCE 2420. Intermediate Drawing. 0-1.5 Credits.
This course further develops drawing skills and explores a wider range of materials related to drawing through still life, landscape, and the model. Students should enter with basic drawing skills. Restricted to non-degree students.

CCE 2440. Intermediate Botanical Drawing. 1.5 Credit.
This course is a continuation of Introduction to Botanical Drawing. In this exploration of the history, issues, and concepts of detailed plant drawings, students will use graphite and colored pencil. The course explores the close observation of form and the use of contemporary drawing sensibilities in the tradition of botanical illustration. Notable historical and contemporary artists of this genre will be discussed. Restricted to Non-degree students.

CCE 2501. Special Topics: Interior Design. 0 Credits.
In-depth study of a specialized area in interior design. Consult the Schedule of Classes for more details. Materials fee. Restricted to non-degree students.

CCE 2600. Medieval Illumination. 0.5 Credits.

CCE 2601. Drawing Cacti & Succulents. 0.5 Credits.
This workshop explores the beauty and subtle color and variety of forms of cacti and Succulents. Open to students of all experience levels the workshop includes basic drawing techniques with a study of values to capture form in pencil, ink, as well as capturing color using pastel pencils. Basic plant anatomy, botanical illustration techniques as well as simple color theory and an exploration of composition principles in both Eastern and Western art traditions will be discussed. A variety of dry media techniques will be demonstrated. Restricted to Departmental approval required to register.

CCE 2625. Introduction to Metal Sculpture. 0-1.5 Credits.
This course is designed for beginning students and will explore welding, cutting, bending, and fastening a variety of metals. Oxyacetylene and MIG welders, cutting saws and shears, and the bending brake will be introduced. Students will construct sculpture projects of their own design. Restricted to non-degree students.

CCE 2635. Intermediate Woodworking & Furniture Design. 0-1.5 Credits.
In this intermediate course students expand on introductory skills and techniques and will construct a work of their own design. Over the course of the semester, students will work with the instructor to design and build a piece of furniture. Instruction in the usage and techniques of both machine and hand tools are covered in conjunction with the execution of the finished piece. Restricted to non-degree students. (Same as CCE 2341).

CCE 2645. Introduction to 3D Printing. 0 Credits.
Set up and use of a 3D printer and overview of 3D modeling software programs that can be used to create and manipulate 3D objects for printing. Students should have a basic knowledge of 3D modeling software and be familiar with Windows operating systems. Laboratory fee. Restricted to non-degree students.

CCE 2701. Special Topics: Photography. 0 Credits.
In-depth study of a specialized area in photography. Consult the Schedule of Classes for more details. Materials fee. Restricted to non-degree students.

CCE 2735. Botanical Photography Workshop. 0.5 Credits.
This two-session workshop emphasizes creative approaches to flower photography, visual composition, managing light, choosing a background, and close-up photography. Participants learn how to use props-such as textured Plexiglas, fabrics, and decorative objects to enhance and capture the beauty of flowers. Restricted to non-degree students.

CCE 2801. Special Topics: Ceramics Studio. 0 Credits.
In-depth study of a specialized area in the art of ceramics. Consult the Schedule of Classes for more details. While not required, some background in wheelthrown ceramics and design is helpful. Materials fee. Restricted to non-degree students.

CCE 2823. Pyro-techniq: Atmospheric Effects/Firing. 0 Credits.
This course is an introduction to multiple experiences of firing techniques from ancient ceramic traditions as an alternative form of expression in contemporary ceramic practice. The class explores the materials and methodologies of pit-firing, sagger-firing, and wood-firing. A wide range of firing temperatures are explored to mirror the development and understanding of firing methods through history. The course requires travel to off-site locations for daylong excursions on weekends to conduct firings. All clay building techniques are encouraged with each firing method, which offer their own set of parameters on ceramic forms and fired expression. Restricted to Course restricted to non-degree students.

CCE 2825. Intermediate Wheel Throwing. 0-1.5 Credits.
This course enhances student throwing skills and encourages exploration of a wide range of decorative techniques related to form and texture in ceramics. Methods useful in the throwing of large forms will also be explored as will possibilities of combining thrown shapes to create larger vessel or sculptural forms. Students should enter with basic pottery and ceramics skills. Restricted to non-degree students. (Same as CCE 1825).

CCE 2901. Special Topics: Art History. 0 Credits.
In-depth study of a specialized area of art history. Consult the Schedule of Classes for more details. Materials fee. Restricted to non-degree students.

CCE 3131. Painting in a Series. 0 Credits.
For intermediate and advanced students interested in producing a coherent and expressive body of work. Students identify core themes in their work, refine drawing and painting skills, and develop focus and organize efforts toward a coherent artistic vision. Laboratory fee. Restricted to non-degree students.

CCE 3200. Advanced Jewelry. 0-1.5 Credits.
This course culminates the general jewelry class offerings and is designed for advanced students. Students design and create a portfolio of work around a central theme or theory using all the skills developed in lower-level courses. Restricted to non-degree students.

CCE 3210. AdvancedPainting:SpecialTopics. 3 Credits.

CCE 3220. Advanced Abstract Painting. 0-1.5 Credits.
Both individual and group critiques will be provided, with emphasis on the development of personal attitudes and approaches to painting. Out-of-class work will be encouraged and critiqued in relation to in-class work. This course is designed for intermediate students. Restricted to Non-degree students.

CCE 3430. Design for Mobile Devices. 1.5 Credit.

CCE 3601. Special Topics: Sculpture. 0 Credits.
In-depth study of a specialized area in the art of sculpture. Consult the Schedule of Classes for more details. Materials fee. Restricted to non-degree students. Recommended background: .

CCE 3635. Advanced Woodworking and Furniture Design. 0-1.5 Credits.
This course explores the fundamentals of both traditional and contemporary design. Students will work with the instructor on the design and building of a piece of furniture. Instruction in the usage and techniques of both machine and hand tools are covered in conjunction with the execution of the finished piece. Beginning with sketches, students will explore design and materials, fabricate models, and generate construction drawings, with a goal of fabricating and completing their own project. This course is designed for students with experience in woodworking and furniture design. Restricted to non-degree students. (Same as CCE 2635).

CCE 3901. Special Topics: Digital Media. 0 Credits.
In-depth study of a specialized area in digital media. Consult the Schedule of Classes for more details. Materials fee. Restricted to non-degree students.

CCE 6110. Letterpress I. 3 Credits.

CORCORAN CERAMICS (CCR)

CCR 1250. Introduction to the Wheel. 1.5 Credit.
Students will be introduced to using the wheel to create functional pottery. The class will cover wedging, throwing, trimming, and glazing for simple forms. Assignments will explore the poetic presence that results from the character of clay, the manipulation of form, and the qualities of glazed surfaces. Weekly assignments will focus upon bowls and vertical forms with a focused glazing/slipping palette. In some terms, this course may be cross-tallied at the undergraduate level as CCR 1250 and at the graduate level as CCR 5250. Additional coursework will be required to earn graduate credit.

CCR 1253. Introduction to the Wheel. 3 Credits.
Students are introduced to using the wheel to create functional pottery. The class covers wedging, throwing, trimming, and glazing for simple forms. Assignments explore the poetic presence that results from the character of clay, the manipulation of form, and the qualities of glazed surfaces. Weekly assignments focus on bowls and vertical forms with a focused glazing/slipping palette. At times this course may be cross-tallied at the intermediate level as CCR 2253. Students who have completed CCR 1253 may wish to register for CCR 2253.

CCR 1305. Introduction to Handbuilding. 1.5 Credit.
Learn the fundamental techniques of hand-building in ceramics, including the pinch, coil, and slab methods, which provide a foundation for understanding the language of pottery and hollow construction. Explore basic vessel formats from utilitarian to sculptural and various glazing and firing techniques.

CCR 1350. Introduction to Ceramic Tile. 1.5 Credit.
Students learn to create ceramic tiles while experimenting with various methods of tile production and surface effects. In addition to understanding the process of glaze mixing, the class explores bisque and glaze firing, bisque slabs, plaster press molds, carving, modeling, slip trailing, scraffito, and stenciling. To complement the studio work, slide lectures show the historic and contemporary uses of tile and pattern in architecture.

CCR 2230. Pyro-techniq: Atmospheric Effects/Firing. 0 Credits.

CCR 2236. Images in Clay. 3 Credits.
Ceramic object-making techniques tie in with drawing, painting, printmaking-this is an intermedia experience for students. Students work with various image-producing techniques which are compatible with ceramics-decals, printing, and painting-to bring the surface image into context with the form of the ceramic object. The class works with oxides and glazes as well as the printed and transferred image. From Majolica to digital imagery, from tile to sculptural object, students create diverse works representing the scope of image-making on clay.

CCR 2250. Intermediate Wheel Throwing. 1.5 Credit.
While being assisted in their efforts to enhance their throwing skills, students will be encouraged to explore a wide range of decorative techniques, both in the forms they produce and texturing and color treatments applied to those forms. Methods useful in the throwing of large forms will also be explored as will possibilities of combining thrown shapes to create larger vessel or sculptural forms. Prerequisite: CCR 1250 Introduction to the Wheel.

CCR 2253. Intermediate Wheel: Poetry of Pottery. 3 Credits.
The intermediate wheel class will delve into beakers, vase's, and pitchers through weekly assignments using the pottery wheel. Just as a poet contemplates the nuances of language, the class will consider the aesthetic vocabulary of volume, material and physical traces. Students will make and use hand-made brushes as one means to investigate the interrelationship of form and surface decoration. The nuance of slip and glaze application will be explored; projects will be fired in a high temperature gas kiln. At times this course may be cross-tallied at the Introductory level as CCR 1253. Students with prior experience may register for CCR 2253 if they have already completed CCR 1253 Introduction to the Wheel. Prerequisite: CCR 1250 or CCR 1253 Introduction to the Wheel; or permission from the department.

CCR 2350. Intermediate Ceramic Tile. 1.5 Credit.
This class further develops the skills learned in CCR 1350: Introduction to Ceramic Tile. Students are expected to design their own specific projects. They will be introduced to a broader range of techniques, types of clays, glazes and firing temperatures as needed. At times this course may be cross-tallied at the introductory level as CCR 1350. Prerequisite: CCR 1350 Intro to Ceramic Tile.

CCR 2380. Sculpture in Clay. 3 Credits.
This course will provide an exploration of methods of clay construction relating to sculptural form and the aesthetic concerns of the sculptural object. A variety of traditional hand building methods and innovative forming techniques will be introduced to challenge and inspire students notion of ceramic sculpture. The production of discreet objects, multiples, and issues dealing with the installation of each will be addressed. The full range of ceramic finishes and firing techniques will be introduced and explored to emphasize the interfacing of ceramic surface and form.

CCR 275. Raku/Pit-Firing Workshop. 1.5 Credit.

CCR 3600. Special Topics: Ceramics. 3 Credits.
Students will explore ways of representing the human form utilizing various hand-building techniques. Pinch, coil, and slab methods will be reinterpreted with the hollow figure/vessel in mind. Gesture studies in clay will form a basis for understanding the connection between the inherent plasticity of the clay and the animation of the body. Sustained figure modeling studies will address more traditional sculptural focus using life models. Surface treatments will include the use of slips, engobes, sgrafitto, as well as glaze and firing options.

CCR 5236. Images in Clay. 3 Credits.
Ceramic object-making techniques tie in with drawing, painting, printmaking-this is an intermedia experience for students. Students work with various image-producing techniques which are compatible with ceramics-decals, printing, and painting-to bring the surface image into context with the form of the ceramic object. The class works with oxides and glazes as well as the printed and transferred image. From Majolica to digital imagery, from tile to sculptural object, students create diverse works representing the scope of image-making on clay.

CCR 5380. Sculpture in Clay. 3 Credits.
This course will provide an exploration of methods of clay construction relating to sculptural form and the aesthetic concerns of the sculptural object. A variety of traditional hand building methods and innovative forming techniques will be introduced to challenge and inspire students notion of ceramic sculpture. The production of discreet objects, multiples, and issues dealing with the installation of each will be addressed. The full range of ceramic finishes and firing techniques will be introduced and explored to emphasize the interfacing of ceramic surface and form.

CCR 5400. Clay Loves Printmaking. 1.5 Credit.

CCR 6600. Special Topics: Ceramics. 3 Credits.
Students will explore ways of representing the human form utilizing various hand-building techniques. Pinch, coil, and slab methods will be reinterpreted with the hollow figure/vessel in mind. Gesture studies in clay will form a basis for understanding the connection between the inherent plasticity of the clay and the animation of the body. Sustained figure modeling studies will address more traditional sculptural focus using life models. Surface treatments will include the use of slips, engobes, sgrafitto, as well as glaze and firing options.

CCR 6850. Directed Studies: Ceramics. 1.5 Credit.

CORCORAN DESIGN (CDE)

CDE 1090. Design Fundamentals I. 3 Credits.
An introduction to the visual components that serve as fundamental principles in the field of design. The study, classification, and application of Gestalt theories of perception, color systems for designers, and pattern making. Design methodology, processes, and language; the critique process; project workflow; professional practices and presentation; and digital software and hand craft tools. Students create 2D and 3D forms and learn how to use materials in design projects.

CDE 1091. Design Fundamentals II. 3 Credits.
In Design Fundamentals II, students utilize and deepen the skills they acquired in Design Fundamentals 1. Course projects focus on visual relationships of form and image; type and grid structures; and scale. Visual communication and visual hierarchy are concepts integrated in course projects. Students will be engaged in a series of projects that address more advanced 2D and 3D concepts of abstract forms and their professional applications. Students will learn about the cultural and functional meaning of materials and finishes, while continuing to hone their digital software tools and hand craft skills. Pre-requisite: A grade of "C" or higher in CDE 1090 Design Fundamentals I.

CDE 1250. Frame By Frame Animation. 3 Credits.
This course introduces students to the principles and workflow for frame-by-frame animation with still images.Through wire framing and drawing flip books, students will learn basic principles of animation. Students will learn how to combine claymation and hand crafted techniques with digital production tools. Student will learn animation methods and processes, along with workflow and production. Critique process and animation terminology is introduced and developed with course content and projects.

CDE 2090. Design Studio I. 3 Credits.
Course content focuses on visual hierarchy, principles of composition, design principles, and intro to Semiotics. Typography, form, image, space, and the grid are explored through projects. Students learn an iterative design process to explore and develop concepts. This course requires a high level of execution through precise craftsmanship.

CDE 2091. Design Studio II. 3 Credits.
This course explores brand identity systems and programs. Students learn an iterative design process to develop a cohesive and comprehensive branding program. The developed brand identity will be applied to various media: print, motion, and web. Prerequisite: A grade of "C" or better in GD2090 Sophomore Design Studio I; or Department Chair's approval.

CDE 3800. Independent Study: DM/GD. 3 Credits.
This option is appropriate for degree students who want access to independent faculty supervision, lab areas, and supplies for independent projects, and do not need or desire extensive course instruction.

CDE 3900. Internship: DM/GD. 3 Credits.
For degree students only. Internships can help students develop marketable skills, establish professional contacts, and explore different career options.

CDE 4170. Professional Practices for Designers. 3 Credits.
This course explores targeted résumé and portfolio development in addition to the everyday business considerations of the practicing designer. Topics include personal goal assessment, strengths vs. weaknesses, the formation and operation of a design business, and designer/client relationships. Refining a professional portfolio and reviewing projects is emphasized. This course is geared towards students who are about to enter the design job market. Prerequisites: CDM 3091 Digital Media Design Junior Studio II or CGD 3091 Graphic Design Junior Studio II or CID 3091 Interior Design Junior Studio II.

CORCORAN DIGITAL MEDIA DESIGN (CDM)

CDM 0841. Web Design for Professionals. 0 Credits.
Using industry-standard Adobe Dreamweaver, this professional development workshop introduces students to the basics of modern web development and design, including best practices; formatting with CSS; understanding Web 2.0; reusing data; using open-source JavaScript libraries; the role of the database in web design, creating forms, using Photoshop to create mouse-overs, optimizing images for the Internet, using AJAX to create widgets and drop-down menus; and much more. Students will critique sites, discuss finding a niche in the huge world of web design, review likely web design trends in the next several years, and discuss project management and customer relations, including explaining the technical and design sides of projects to clients who are otherwise not equipped to evaluate project goals. Pre-requisite: Atleast two years professional experience with Photoshop.

CDM 0880. Digital Video Basics Workshop. 0 Credits.
Learn to plan, shoot and edit a video production using the latest DV technology. This intensive course offers the student hands-on training in digital movie making and editing techniques using Final Cut Pro. Basic script writing and tools for lighting, editing, and acquiring audio/video will be covered. Prior Mac OSX experience preferred.

CDM 1200. Digital Design I. 3 Credits.
An introduction to design fundamentals and digital software tools. The use and application of type and images to design projects; image making; methods, processes, visual hierarchy, and visual communication strategies; and professional practices, project workflow, and the critique process. Students learn to use professional design industry digital software tools, including Adobe Photoshop, Illustrator, and InDesign.

CDM 1201. Digital Design Fundamentals. 1.5 Credit.
This course introduces the fundamentals of digital design using Adobe Illustrator, InDesign, and Photoshop taught within the context of contemporary professional design. Students will learn to navigate these three essential graphic design programs and to use the tools and functions necessary for professional design work, both as individual software programs and in combination with one another. Upon completion of this course, students will have a solid understanding of how to use Illustrator, InDesign and Photoshop to create typography, layouts and images. We strongly recommend that students who do not have prior design experience also enroll in CGD 1011: Principles of Graphic Design.

CDM 1241. Web Design Fundamentals. 1.5 Credit.
In this hands-on course, students will explore the technical and design fundamentals of creating a website. Students learn how to hand-code Web pages with HTML and CSS, to format text, incorporate images, build tables and create links, as well as how to use Photoshop to prepare images for the web. Through lectures, demonstrations and critiques students will be introduced the elements of good web design, the basics of user interface , and recommended standards. Students will design and build a simple website that implements each of the skills and techniques covered in the course. Each student will be required to host and upload their website. Students enrolling in this class must have at least 2 years of experience using a Macintosh computer to save, find and open files. They must also be familiar with browsing the web.

CDM 1500. Introduction to VectorWorks. 1.5 Credit.
Introduction to the practice of architectural drawing and detailing through the use of VectorWorks, an industry-standard CAD software for Exhibition Design, Theater Design, Landscape Design, and increasingly used by Architects. Through this course students will learn the basics of orthogonal projections (Plan, Elevation, Section) while learning to use and navigate the interface of VectorWorks.

CDM 2230. Page Layout for Print and Interactive Design. 3 Credits.
This course focuses on Adobe InDesign's layout and typesetting tools for print and interactive design. Course content covers page layout, grid systems, typography, styles, tables and forms, color space, file formats, resolution sizes for print and interactive documents. Project and software workflow is included in course projects. Pre-requisite: CDM 1200 Digital Design I or CDE 1XXX Communication Design.

CDM 2280. Interactive Web Design I. 3 Credits.
This course offers a technical and conceptual introduction to web design. Topics covered include visual design; the fundamentals of website structure and navigation; accessibility and usability; writing HTML and CSS; and content management systems. Projects examine the web as a platform for both client-driven and self-published work.

CDM 2300. Motion Graphics I: AfterEffects. 3 Credits.
Motion graphics and visual effects for animation, digital video, and film using Adobe After Effects. Visual storytelling through kinetic sequencing, using images, type, and sound. Students learn to create and communicate with pre-visualization tools such as storyboards and style frames before animating in the timeline. Asset management, timeline work flow, keyframes, sound, compositing techniques, basic keying, effects, lighting, and camera use. Projects cover all facets of motion design and narrative storytelling from conceptual design to final production. Prerequisites: CDE 1090 or CDM 1200.

CDM 2320. Digital Illustration I for Designers. 3 Credits.
Digital illustration for print and web. Application of traditional illustration to digital media, using primarily Adobe Photoshop and Illustrator. Focus on concept development and personal style. Critiques consider composition, lighting, content, meaning, and other constructive criteria.

CDM 2420. Sound Design and Editing. 3 Credits.

CDM 3090. Digital Media Design Studio III. 3 Credits.
Mood boards, storyboards, style frames, video editing, narrative structure, animation, and motion graphics for the network television industry. Design and animation methodology, processes, language, and the critique process. Project workflow, professional presentation, and professional practices for designers and animators are integrated into course projects. The semester long course project is a network ID package that includes a 10 second open, bump in, bump out, lower thirds, and in-show transitions . Adobe After Effects and handcraft tools. Prerequisite: CDE 2091. Restricted to undergraduate Digital Media Design majors.

CDM 3091. Digital Media Design Studio IV. 3 Credits.
In this advanced level course, students will learn and develop skill sets in research, script writing, and voice-overs.Course projects include creating mood boards, storyboards, style frames, video editing, narrative structure, animation, and motion graphics. Students will learn design and animation methodology, processes, language, and the critique process. Project workflow, professional presentation, and professional practices for designers and animators are integrated into course projects. Course projects include a Network Promo animation and a kinetic infographic. Students will expand their skill sets with Adobe After Effects and handcraft tools in course projects. At the end of the semester, students will obtain experience in professional animation projects and skill sets, while understanding on-the-job expectations for a fast-paced professional animation studio in the network television and film industry. This course is for Undergraduate Digital Media Design majors only. Prerequisite: A grade of "C" or better in CDM 3090 Digital Media Design Junior Studio III; or Department Chair's approval.

CDM 3280. Interactive Web Design II. 3 Credits.
In this course, students learn to design for dynamic systems. Building on the foundation of Interactive Web Design I, students use tools such as JavaScript, PHP, and SQL in to create pages that communicate up-to-the-minute information. Pre-requisite: CDM 2280 Interactive Web Design I.

CDM 3300. Motion Graphics II: AfterEffects. 3 Credits.
Animation and motion graphics using Adobe After Effects. Kinetic sequence projects include narrative animation and type in motion. Students develop advanced level storyboards and style frames as pre-visualization tools. Projects incorporate sound and audio files as tone and storytelling elements. Project workflow emphasizes narrative exploration, pacing, timing, and scene transitions. Projects encompass all facets of motion design and narrative storytelling from conceptual design to final production. Prerequisites: CDM 2300.

CDM 3311. Animation I: Cinema 4D. 3 Credits.
3D animation using Cinema 4D software. 3D space, scale, perspective, modeling, lighting, camera use, textures, and rendering. Students learn 3D animation processes, methods, and workflow as they design and produce small- and large-scale objects in 3D environments. Course content and projects focus on Cinema 4D integration with Adobe Illustration and Adobe Photoshop.

CDM 3312. Animation II: Cinema 4D. 3 Credits.
Intermediate course in 3D animation using Cinema 4D software. Skill sets, project workflow, and production in 3D animation, including 3D space, modeling, lighting, camera use, and textures. Animation processes, methods, and workflow while creating large scale projects using the software. Introduction of more advanced subjects of character rigging and animation, Dynamics, BodyPaint, Particles and MoGraph, with an exploration of the integration between Cinema 4D and After Effects. Prerequisites: CDM 3311.

CDM 3320. Digital Illustration II for Designers. 3 Credits.
The visual communication art of illustration. Students apply drawings to visual story development by composing graphics, concept art, covers, and other application techniques for a variety of media for print and web. Adobe Photoshop with Adobe Illustrator. Prerequisite: CDM 2320.

CDM 3410. Entertainment Design: Movie Key Art. 3 Credits.
This course introduces the fundamental basics of Movie Key Art for the purpose of movie marketingcampaigns, which includes movie posters, promotional merchandise, dvd packaging, outdoor and Internet advertising.Topics that will be covered include the history of Movie Key Art, marketing strategy with ideation andbranding, as well as typeface development and using Adobe Creative Suite software at an advanced level. Through the use ofAdobe Photoshop, Illustrator and Indesign, the process of Key Art Design for movie advertising will be handled stepby step. Establishing pay rates and professional practice in the design industry will be discussed in this course.Course projects will focus on individual and team collaboration for a real world Studio Experience.Pre-requisite: CDE 2091 Sophomore Design Studio II and CGD 2060 Typography II.

CDM 3420. Sound Design. 3 Credits.
This course introduces students to audio recording, mixing and mastering skills, as well as creative application of post-production techniques on campus, in the workplace, and at home. Focused on teaching audio recording and post-production mixing basics, this course also concentrates on the history of recording & recording technologies; recording personnel & duties; legal aspects of sound production and design, and the role of the creative process in the world of constantly emerging multimedia and communication technologies. This class will feature hands-on recording and digital editing in real-world scenarios using a variety of equipment & techniques.

CDM 3430. Design for Mobile Devices. 3 Credits.
Handheld, touchscreen devices as a new medium for telling stories, enhancing communication, and creating relationships. Projects combine text, images, sound, video, and interactivity. Prototyping, visual publishing tools, and HTML/CSS/JavaScript. Adobe Digital Publishing Suite (DPS) and Adobe InDesign. Prerequisites: CDE 2091 and CGD 2060.

CDM 3440. Web Applications: Google, Smart Phones, Drupal, Joomla. 3 Credits.
In this two-part course, learn how to leverage tools used to create mobile and online applications for businesses and organizations. Part 1 focuses on basic iPhone and Google apps. Part 2 covers Drupal, Joomla and Wordpress implementation, including which platform works best for a particular business or organizational model. Prerequisites: CDM 2280 Interactive Web Design I, CDM 1200 Digital Design I, or CFN 1000 Communication Design.

CDM 4090. Digital Media Design Thesis I. 3 Credits.
The senior thesis project includes conducting research, writing a thesis paper, interviewing a motion designer or animation professional, writing a script, and designing a thesis animation. Discussion and critique of motion design and animation's role in contemporary culture, commerce, and social identity. This is the culminating project for the B.F.A. in digital media design. Prerequisite: CDM 3091. Restricted to BFA in digital media design candidates.

CDM 4091. Digital Media Design Thesis II. 3 Credits.
Digital Media Design Senior Thesis is comprised of three components: written paper, interview of digital media design professional, and final multi-media installation. Students finalize the written thesis paper on a design-related topic in the digital media design field. Then, students interview a prominent practitioner in the field of Digital Media Design. As the third component of Digital Media Design Senior Thesis, students translate their thesis paper into a multi-media installation which can be either a rich media interactive experience or a linear or non-linear motion/video narrative. Upon completion, the thesis projects are presented in a special museum exhibition. This course is for BFA/Digital Media Design only. Prerequisite: A grade of "C" or better in CDM 4090 Digital Media Design Thesis I or CDM 4000 Digital Media Design IV; or Department Chair's approval.

CDM 4300. Motion Graphics III: After Effects. 3 Credits.
Students enrolled in this course will learn techniques and apply professional methods for digital filmmaking, video production and visual effects. Advanced course projects include storytelling with a green screen and digital compositing. This course builds upon projects from CDM 3300 Motion Graphics II. Topics covered include process and project workflow for large-scale projects, narrative storytelling, and best professional practices. Students develop advanced level storyboards and style frames as pre-visualization tools. Projects incorporate sound and audio files as a tool, tone, and storytelling element.Project workflow emphasizes narrative exploration, pacing, timing, and scene transitions. Critiques are integrated into course projects. Students will learn and develop professional verbal communication skills as they develop their creative and technological skill sets. Prerequisites: CDM 3300 Motion Graphics II.

CDM 4301. Motion Graphics IV. 3 Credits.
Students enrolled in this course will learn techniques and apply professional methods for digital filmmaking, video production and visual effects. Advanced course projects include storytelling with camera tracking, green screen, and digital compositing. This course builds upon projects from CDM 4300 Motion Graphics III. Topics covered include process and project workflow for large-scale projects, narrative storytelling, and best professional practices. Students develop advanced levelstoryboards and style frames as pre-visualization tools. Projects incorporate sound and audio files as a tool, tone, and storytelling element. Project workflow emphasizes narrative exploration, pacing, timing, and scene transitions. Critiques are integrated into course projects. Students will learn and develop professional verbal communication skills as they develop their creative and technological skill sets. Prerequisites: CDM 4300 Motion Graphics III.

CDM 4311. Time-based Media and Animation III. 3 Credits.
This is an advanced course in 3D animation using Cinema 4D software. Students will learn advanced skill sets, project workflow, and production in 3D animation, which includes: 3D space, modeling, lighting, camera use, and textures. Students will learn animation processes, methods, and workflow while designing and producing a single, high quality animation short, graphics package, commercial campaign, or other equally complex portfolio piece. Students will explore the high level subjects of scripting and expressions, while delving deeper into the capabilities of the core foundations of the software as it relates to texture painting and UVs, Organic Modeling, high quality renders, project optimization, and production processes as they relate to real world expectations. Prerequisites: CDM 3312.

CDM 4330. Interaction Design. 3 Credits.
Design - says Elizabeth Coleman - is the art of organizing the world of things to maximum effect. How does this instinct for structure and consequences speak to a practice in interactive media? This course explores ways of shaping experiences and creating meaning in interfaces and on the web. Subjects include user-centered design, information architecture, design documentation, and art direction.Pre-requisites: CDE 2091Sophomore Design Studio II and CGD 2060 Typography II.

CORCORAN ART EDUCATION (CED)

CED 0920. Continuing Research. 1 Credit.

CED 2000. Foundations in Art Education. 3 Credits.
This is the introduction to the subject of Art Education for every student considering the BFA/MAT5 degree program. It is also open to non-majors. We will read and discuss major historical and contemporary concepts of learning, perception, and artistic experience that form the framework for diverse approaches to art education in practice in schools, museums, and community-based institutions today. Students will integrate and compare their own artistic experiences through systematic self-reflection to deeply understand the creative learning process in themselves as a basis for developing experience-based art education. Integrating theory and praxis, this course establishes critical thinking skills for addressing the four main components of art education: interpretation/meaning-making, criticism/aesthetic discernment, studio/production, and historical understanding. The course includes visits to art education venues around the metropolitan area (some outside class time), frequent short written assignments, and oral presentation exercises. Students receive guided support in starting the required core reading program for the Art Education concentration. Prerequisite: CAS 1110 Writing I (can be taken concurrently), or permission of the instructor. Required as prerequisite for all other Art Education courses.

CED 3005. Teaching Art to Young Adults: Post-Secondary. 3 Credits.
This course is an elective addition to complete the Art Education degree program's sequence focusing on major phases of visual and aesthetic learning throughout life. This course covers the theory and practice of art pedagogy for transitional young adults, whether in formal college programs or informal circumstances. We cover widely varying developmental benchmarks in this cohort, both individuals with extensive art training and those without prior exposure, in terms of creativity, interaction with the social environment, self-understanding and expression, and technical skill. For many emergent adults, the completion of schooling and greater independence presents the first opportunity to explore artistic experience, or to do so in a self-directed environment. Emphasis is on organized learning experiences in art production, with additional attention to the important outlets for self-guided and independent art experiences at this age. At times this course may be cross-tallied at the graduate level as CED 6005. Additional work required for graduate level credit is outlined in the course syllabus. Prerequisite: CED 2000 Foundation in Art Education or CED 5000 Graduate Art Education Core, plus one additional ED course, or permission of Department.

CED 3010. Art and Learners to Age 12. 3 Credits.
This course focuses on the theory and practice of art education programs for children of elementary and middle school age, both in the school setting and beyond. We cover developmental advances in this cohort in terms of creativity, interaction with the social environment, self-understanding and expression, the dynamics and independent and group activity, and technical skill. The course considers the role of art for young learners, both as an aspect of school experience and as a separate track. Emphasis is on organized learning experiences in art, with additional attention to the important outlets for self-guided and independent art experiences at this age. This course is cross-tallied at the undergraduate level as CED 3010 and at the graduate level as CED 6010. Prerequisite: CED 2000 Foundation in Art Education, or CED 5000 Graduate Art Education Core, or permission of Department.

CED 3015. Art and Adolescents. 3 Credits.
This course starts from an understanding of the essential developmental advances of the teen years and moves to the design and implementation of a wide range of visual art experiences for young people in transition from childhood to adulthood. The class will review a variety of existing materials and formats to discover the educational approaches underlying different lessons and programs. We trace age-appropriate creative activity, social and cultural interaction, identity formation through art, the dynamics of group activity, and an increasingly divergent range of technical skill in this cohort. The course considers art education for adolescents whether in school, a museum, community programs, or increasingly, as an independent learner. This course is cross-tallied at the undergraduate level as CED 3015, and at the graduate level as CED 6015. Students enrolled for graduate credit complete additional work at an advanced level and are graded according to the Graduate Grade Standard (see Student Handbook). Offered for credit only, Continuing Education students need department approval to enroll. Prerequisite: CED 2000 Foundation in Art Education, or CED 5000 Graduate Art Education Core, or permission of Department.

CED 3020. Development, Behavior, and Learning. 3 Credits.
This course introduces core concepts of developmental psychology essential to future educators. Students will gain knowledge about different approaches in the field regarding the relationship between generally predictable stages of human development and the capacity of individuals to learn creatively. The course will emphasize the development of young people, their behavior and mental growth from birth through adolescence, but is not limited to those years. The class models a variety of learning strategies relevant to its subject and useful to students in their later work. Short written assignments, group learning exercises, informal oral presentations, and tests/quizzes. This course is cross-tallied at the undergraduate level as CED 3020 and at the graduate level as CED 6020. This course starts from an understanding of the essential developmental advances of the teen years and moves to the design and implementation of a wide range of visual art experiences for young people in transition from childhood to adulthood. The class will review a variety of existing materials and formats to discover the educational approaches underlying different lessons and programs. We trace age-appropriate creative activity, social and cultural interaction, identity formation through art, the dynamics of group activity, and an increasingly divergent range of technical skill in this cohort. The course considers art education for adolescents whether in school, a museum, community programs, or increasingly, as an independent learner. This course is cross-tallied at the undergraduate level as CED 3015, and at the graduate level as CED 6015. Additional work is required to earn graduate credit. Offered for credit only, Continuing Education students need department approval to enroll. Prerequisite: CED 2000 Foundation in Art Education, or CED 5000 Graduate Art Education Core, completed or concurrent; or Department permission.

CED 3030. Sociology of Family. 3 Credits.
The study of family dynamics in today's society begins with understanding of basic necessary functions such as domestic living, working, earning, educating the young, and sustaining the well-being of all. In addition, we consider the influence of family patterns and values on the lives of all its members, both within the family unit and beyond. This course surveys traditional and evolving forms of the "nuclear" family, multi-generational interactions, the extended and the informal family (among other types), especially in their impact on young people raised in a wide variety of family environments. Assignments include analysis of typical family behaviors and educational programming designed for family groups, especially in the visual arts and related subjects. This course is cross-tallied at the undergraduate level as CED 3030 and at the graduate level as CED 6030. Prerequisite: CED 3020/CED 6020 Development, Behavior, and Learning; or permission of the department.

CED 3100. Art in the Museum and Community Organizations. 3 Credits.
A comprehensive survey of approaches to informal art education as practiced in museums, community centers, educational support facilities and varied social settings. This course is based on direct observation and systematic review of diverse methodologies, to provide an informed framework for integrated art education, whether as a collaboration between schools and alternative sites, or developed separate from formal schooling. Expertise of the Corcoran's museum educators is emphasized. This course is cross-tallied at the undergraduate level as CED 3100 and at the graduate level as CED 6100. Prerequisite: CED 3020/6020 Development, Behavior, and Learning, or permission of department.

CED 3150. Classroom and Activity Management. 3 Credits.
During this semester, students learn to plan and present lessons for youth in schools or other educational settings. Skills to be emphasized include the development of educational activities to fulfill specific curricular or group goals, identification and adaptation of exemplary existing educational resources, responsive flexibility to varied group needs, group management techniques, and basic assessment methods for both student performance and program success. This course is often integrated with simultaneous Field Experience. This course is cross-tallied at the undergraduate level as CED 3150 and at the graduate level as CED 6150. Prerequisite:CED 3020/6020 Development, Behavior, and Learning, CED 3010/6010 Art and Learners to Age 12, or CED 3015/CED 6015 Art and Adolescents, completed or concurrent; or permission of department.

CED 4000. Development: Birth to Adolescence. 3 Credits.
This course provides an in-depth investigation of human development from infancy to adolescence. A sequel to the broad developmental theories and concepts that were introduced in CED 3020/6020, this course encourages students to explore firsthand the writings and perspectives of key developmental theorists. In addition, students are asked to critically review case studies and comparative research on cognitive, perceptual, and emotional development of young people and to investigate practical applications of theoretical constructs as they pertain to the field of art education. Normal and abnormal developmental profiles are covered, with emphasis on differentiations that teachers are likely to encounter within the general population, or in a mainstream classroom and activity setting. At times this course may be cross-tallied at the graduate level as CED 6000. Additional work required for graduate level credit is outlined in the course syllabus. Prerequisites: CED 3020/CED 6020 Development, Behavior, and Learning, or instructor's permission.

CED 4010. Contemporary Issues: Education Policy and Visual Art. 3 Credits.
This is an interdisciplinary investigation of current affairs concerning the interaction of cultural politics, governmental trends, and broad developments in educational philosophy in the public arena. Topics change in response to emerging issues of public concern, often including the interaction of local, regional, and national attitudes to art, the impact of educational reform efforts, the role of art education as social acculturation, and appropriate funding levels for both art and education. This course is cross-tallied at the undergraduate level as CED 4010 and at the graduate level as CED 7010. Students enrolled for graduate credit complete additional work at an advanced level and are graded according to the Graduate Grade Standard (see Student Handbook). Required for BFA/MAT5 and MAT.

CED 4040. Math in Art/Art in Math. 3 Credits.
One of two courses available to advanced students that reinforce their general knowledge of fundamental principles and processes of math and science. This provides a basis for integration of artistic learning with core academics in schools and for thematic development of educational activities that bridge traditional divisions between alternative modes of thought and intellectual experience. Students prepare original art education activities for both formal and informal educational settings which utilize and reinforce mathematical concepts of number, pattern, form, etc. This course is cross-tallied at the undergraduate level as CED 4040 and at the graduate level as CED 6040. Students enrolled for graduate credit complete additional work at an advanced level and are graded according to the Graduate Grade Standard (see Student Handbook). Offered for credit only, Continuing Education students need department approval to enroll.

CED 4050. Art Science: Developing Creativity. 3 Credits.
One of two courses available to advanced students that reinforce their general knowledge of fundamental principles and processes of math and science. This provides a basis for integration of art education with core academics in schools and for thematic development of educational activities that bridge traditional divisions between alternative modes of thought and intellectual experience. The semester includes a multidisciplinary consideration of intellectual creativity as it is understood and practiced in the arenas of art and science. Specific topics vary with the interests of faculty and students. Students prepare original art education activities for both formal and informal educational settings, incorporating concepts from the course. This course is cross-tallied at the undergraduate level as CED 3050 and at the graduate level as CED 6050. Students enrolled for graduate credit complete additional work at an advanced level and are graded according to the Graduate Grade Standard (see Student Handbook).

CED 4060. Digital Media for Educators. 3 Credits.
In this hands-on course, students learn the rudiments of educational technology for presentation, as well as how to search and assess existing multi-media educational teaching resources in art, adapt existing visual resources for new programs and audiences, and create simple artistic projects for students on the computer using widely available basic desktop publishing software. This course is offered at the undergraduate level as CED 4060 and at the graduate level as CED 6060. Students enrolled for graduate credit complete additional work at an advanced level and are graded according to the Graduate Grade Standard (see Student Handbook).

CED 5000. Graduate Art Education Core. 3 Credits.
For students with a solid grounding in studio art and art history, this course serves as a starting point for the study of pedagogy and educational practice. An intensive class reading of the core literature of the field introduces major historical and contemporary concepts of learning, perception and artistic experience that comprise the framework for diverse approaches to art education schools, museums and alternative settings today. During visits to art education venues around the metropolitan area, members of the class learn to discover the underlying goals and approaches imbedded in excellent art education programs, and will critique the advantages and disadvantages of contrasting methods for differing learners and situations. Integrating theory and praxis, this course establishes critical skills for the four main domains of art education: Interpretation/Meaning-making, Criticism/Aesthetic Discernment, Studio/Production and Historical Understanding. Students plan and carry-out a variety of original educational exercises. Enrollment restricted to 1st year MAT students.

CED 5070. Education Pro-Seminar I. 0.5 Credits.
Pro-seminar in Art Education provides a summary review of academic disciplines pertinent to research in the field, with a practical guide to the scope and methods of different disciplines which frequently overlap. The first semester is more theoretical and is intended to assist each student in skills for forming clear research questions, assessing the merits of existing research and determining corresponding implementation steps for their own extended research projects in art education. The second semester focuses topic selection, preliminary reseach, and proposal preparation for the Art Education thesis. A total of 1 credit in Education Pro-Seminar is required for the MAT and BFA/MAT in Art Education. Students must enroll in CED 5070 and CED 5071 sequentially and grades will be assigned upon completion of the second semester of enrollment.

CED 5071. Education Pro-seminar II. 0.5 Credits.
Pro-seminar in Art Education provides a summary review of academic disciplines pertinent to research in the field, with a practical guide to the scope and methods of different disciplines which frequently overlap. The first semester is more theoretical and is intended to assist each student in skills for forming clear research questions, assessing the merits of existing research, and determining corresponding implementation steps for their own extended research projects in art education. The second semester focuses on topic selection, preliminary reseach, and proposal preparation for the Art Education thesis. A total of 1 credit in Education Pro-Seminar is required for the MAT and BFA/MAT in Art Education. Students must enroll in CED 5070 and CED 5071 sequentially and grades will be assigned upon completion of the second semester of enrollment. Prerequisite: CED 5070 Education Pro-seminar I.

CED 5072. Education Pro-Seminar I. 1 Credit.
Pro-seminar in Art Education provides a summary review of academic disciplines pertinent to research in the field, with a practical guide to the scope and methods of different disciplines which frequently overlap. The first semester is more theoretical and is intended to assist each student in skills for forming clear research questions, assessing the merits of existing research and determining corresponding implementation steps for their own extended research projects in art education. The second semester focuses topic selection, preliminary reseach, and proposal preparation for the Art Education thesis. Effective Fall 2012, a total of 2 credits in Education Pro-Seminar is required for the MAT and BFA/MAT in Art Education. Students must enroll in CED 5072 and CED 5073 sequentially and grades will be assigned upon completion of the second semester of enrollment.

CED 5073. Education Pro-Seminar II. 1 Credit.
Pro-seminar in Art Education provides a summary review of academic disciplines pertinent to research in the field, with a practical guide to the scope and methods of different disciplines which frequently overlap. The first semester is more theoretical and is intended to assist each student in skills for forming clear research questions, assessing the merits of existing research and determining corresponding implementation steps for their own extended research projects in art education. The second semester focuses topic selection, preliminary reseach, and proposal preparation for the Art Education thesis. Effective Fall 2012, a total of 2 credits in Education Pro-Seminar is required for the MAT and BFA/MAT in Art Education. Students must enroll in CED 5072 and CED 5073 sequentially and grades will be assigned upon completion of the second semester of enrollment.

CED 5100. Evaluation, Program Assessment, and Criteria of Quality. 3 Credits.
This course examines program assessment and evaluation with a focus on the independent criteria of quality in the art world. The design and implementation of assessment tools in an authentic manner that is intrinsically connected to the context of the art work being both produced and viewed in an educational setting is one that must take into account the nature of art evaluation, critical analysis, content issues, audience, and technical skill. This course allows students to build a vocabulary within which to evaluate both an individual's understanding of a learning activity as well as to plan a program that addresses the unique needs of learners in a creative environment. Assignments will require both assessment and evaluation at the program level as well as the development of criteria and tools for use with individual learners. Projects may coincide with students' Field Experience. Students will have the ability to create and implement cohesive tools, from traditional methods of testing to alternative assessment, with which to critically examine both teaching and learning and to use the results of their study to adapt curricula to learners in a variety of settings.

CED 5610. Special Topics: Art & Lifelong Learning. 3 Credits.

CED 5620. Special Topics: Art Across the Curriculum. 3 Credits.
The Art Education program offers a rotating series of advanced seminars in education, designed to apply theory and practice to the most timely issues emerging in the field as they relate changing trends in art pedagogy in particular. This semester, Special Topics: Art Across the Curriculum responds to both trends in the era of nation-wide school reform and a recognition of the dynamic relationship between visual culture and formal learning. Students will investigate existing models of art instruction applied to curricular units in subjects such as history, social studies, language arts, math, and science to determine their strengths and limitations. Then, in teams and individually, students will plan lesson units, design resource materials, and practice teaching their own cross-disciplinary lessons. The course will consider resources and approaches appropriate to both school settings and non-traditional educational sites in the community. Prerequisite: Four CED courses or permission of the department.

CED 5630. Special Topics: Art, Cultural and Character Education. 3 Credits.
At the graduate level, the MAT Art Education program offers a rotating series of advanced seminars in education, designed to apply theory and practice to the most timely issues emerging in the field as they relate changing trends in art pedagogy in particular. This special topics course will bring together two areas of recent curricular expansion in order to focus specifically on the potential for the visual arts to provide a framework for important areas of attitudinal education: 1) cultural understanding among diverse local communities and across the globe, and 2) personal development in terms of ethics, decision-making, and participation in civil society. This course will be divided between a systematic review of strong examples of materials available to educators, their similarities and differences, and weekly sessions devoted to the creation on cutting-edge lesson units by student teams. Prerequisite: Four courses or permission of the department.

CED 5680. Studio-Based Teaching & Learning. 3 Credits.
At the graduate level, the Art Education Department offers a rotating series of advanced seminars in education designed to apply theory and practice to the most timely issues emerging in the field as they relate changing trends in art pedagogy in particular. This special topics course explores teaching, learning and curriculum planning across content areas and levels of learner experience through in-depth exploration of one visual art discipline (printmaking, ceramics, photography, digital media, sculpture, painting or drawing, etc). Students will design and teach lessons and a curriculum unit/materials based on their studio experiences in class using methods and materials appropriate for PreK-12, community and museum settings. The selected medium/media changes each semester. Prerequisite: Four Education courses or permission of the Department.

CED 5682. Community-Based Teaching & Learning. 3 Credits.
In this advanced special topics course students will study theories of transformative learning and service learning as it applies in an intergenerational community setting through art study and art making. Students explore teaching, learning, and curriculum planning for learners across the lifespan through the development and implementation of a specific community/public arts project in tandem with members of that community and in some cases with creative collaboration/experience sharing with a partner institution(s). Each stakeholder (students, faculty and community members) has an equal role in planning and implementing the project. Students will study community/public art, service learning and transformative learning theory, how to write effective project proposals, community-based art curriculum, conduct visual research (plans/mock ups/sketches), and documentation of the process/project.

CED 5690. Summer Teaching Institute. 3 Credits.
To be announced.

CED 5700. Art Therapy Orientation for Educators. 3 Credits.
This course introduces classic concepts and current practices of Art Therapy which will enrich the educational work of art instructors, and familiarize them with a related profession, its goals and methods. NOTE: This is not a training course to prepare art therapists for future practice. Readings will include the books of Robert Coles and other masters in the field. Assignments include interactive exercises, reading discussions, and short and mid-length written essays.This course will include on-site observation of model art therapy techniques by professionals inside or outside of class time. Prerequisite: Four CED courses or permission of department head required.

CED 5900. Art Education Field Experience. 1 Credit.
One semester of short, coordinated part-time practicum rotations, assisting experienced educators in classrooms and cultural institutions, while observing varied teaching and learning strategies and student responses to different activities and educational methods. Students in this course write observational critiques and meet together regularly with the supervising professor to discuss their experiences. Offered in the Spring for BFA/MAT5 and MAT students only.

CED 6000. Development: Birth to Adolescence. 3 Credits.
This course provides an in-depth investigation of human development from infancy to adolescence. A sequel to the broad developmental theories and concepts that were introduced in CED 3020/6020, this course encourages students to explore first-hand the writings and perspectives of key developmental theorists. In addition, students are asked to critically review case studies and comparative research on cognitive, perceptual and emotional development of young people and to investigate practical applications of theoretical constructs as they pertain to the field of art education. Normal and abnormal developmental profiles are covered, with emphasis on differentiations that teachers are likely to encountered within the general population, or in a mainstream classroom and activity setting. At times this course may be cross-tallied at the undergraduate level as ED4000. Students wishing to pursue undergraduate credit should register for the undergraduate section. Prerequisites: CED 3020/CED 6020 Development, Behavior, and Learning, or instructor's permission.

CED 6010. Art and Learners to Age 12. 3 Credits.
This course focuses on the theory and practice of art education programs for children of elementary and middle school age, both in the school setting and beyond. We cover developmental advances in this cohort in terms of creativity, interaction with the social environment, self-understanding and expression, the dynamics and independent and group activity, and technical skill. The course considers the role of art for young learners both as an aspect of school experience and as a separate track. Emphasis is on organized learning experiences in art, with additional attention to the important outlets for self-guided and independent art experiences at this age. This course is cross-tallied at the undergraduate level as CED 3010 and at the graduate level as CED 6010. Students enrolled for graduate credit complete additional work at an advanced level and are graded according to the Graduate Grade Standard (see Student Handbook). Prerequisite: CED 2000 Foundation in Art Education, or CED 5000 Graduate Art Education Core, or permission of Department. Required for MAT degree.

CED 6015. Art and Adolescents. 3 Credits.
This course starts from an understanding of the essential developmental advances of the teen years and moves to the design and implementation of a wide range of visual art experiences for young people in transition from childhood to adulthood. The class will review a variety of existing materials and formats to discover the educational approaches underlying different lessons and programs. We trace age-appropriate creative activity, social and cultural interaction, identity formation through art, the dynamics of group activity, and an increasingly divergent range of technical skill in this cohort. The course considers art education for adolescents whether in school, a museum, community programs, or increasingly, as an independent learner. This course is cross-tallied at the undergraduate level as CED 3015, and at the graduate level as CED 6015. Students enrolled for graduate credit complete additional work at an advanced level and are graded according to the Graduate Grade Standard (see Student Handbook). Offered for credit only, Continuing Education students need department approval to enroll. Prerequisite: CED 2000 Foundation in Art Education, or CED 5000 Graduate Art Education Core, or permission of department.

CED 6020. Development, Behavior, and Learning. 3 Credits.
This course introduces core concepts of developmental psychology essential to future educators. Students will gain knowledge about different approaches in the field regarding the relationship between generally predictable stages of human development and the capacity of individuals to learn creatively. The course will emphasize the development of young people, their behavior and mental growth from birth through adolescence, but is not limited to those years. The class models a variety of learning strategies relevant to its subject and useful to students in their later work. Short written assignments, group learning exercises, informal oral presentations and tests/quizzes. This course is cross-tallied at the undergraduate level as CED 3020 and at the graduate level as CED 6020. This course starts from an understanding of the essential developmental advances of the teen years and moves to the design and implementation of a wide range of visual art experiences for young people in transition from childhood to adulthood. The class will review a variety of existing materials and formats to discover the educational approaches underlying different lessons and programs. We trace age-appropriate creative activity, social and cultural interaction, identity formation through art, the dynamics of group activity, and an increasingly divergent range of technical skill in this cohort. The course considers art education for adolescents whether in school, a museum, community programs, or increasingly, as an independent learner. This course is cross-tallied at the undergraduate level as CED 3015, and at the graduate level as CED 6015. Students enrolled for graduate credit complete additional work at an advanced level and are graded according to the Graduate Grade Standard (see Student Handbook). Offered for credit only, Continuing Education students need department approval to enroll. Prerequisite: CED 2000 Foundation in Art Education, CED 5000 Graduate Art Education Core.

CED 6030. Sociology of the Family. 3 Credits.
The study of family dynamics in today's society begins with understanding of basic necessary functions such as domestic living, working, earning, educating the young, and sustaining the well-being of all. In addition, we consider the influence of family patterns and values on the lives of all its members, both within the family unit and beyond. This course surveys traditional and evolving forms of the "nuclear" family, multi-generational interactions, the extended and the informal family (among other types), especially in their impact on young people raised in a wide variety of family environments. Assignments include analysis of typical family behaviors and educational programming designed for family groups, especially in the visual arts and related subjects. This course is cross-tallied at the undergraduate level as CED 3030 and at the graduate level as CED 6030. Students enrolled for graduate credit complete additional work at an advanced level and are graded according to the Graduate Grade Standard (see Student Handbook). Prerequisite: CED 3020/CED 6020 Development, Behavior, and Learning; or permission of the department.

CED 6040. Math in Art/Art in Math. 3 Credits.

CED 6050. Art Science: Developing Creativity. 3 Credits.
One of two courses available to advanced students that reinforce their general knowledge of fundamental principles and processes of math and science. This provides a basis for integration of art education with core academics in schools and for thematic development of educational activities that bridge traditional divisions between alternative modes of thought and intellectual experience. The semester includes a multidisciplinary consideration of intellectual creativity as it is understood and practiced in the arenas of art and science. Specific topics vary with the interests of faculty and students. Students prepare original art education activities for both formal and informal educational settings, incorporating concepts from the course. This course is cross-tallied at the undergraduate level as CED 3050 and at the graduate level as CED 6050. Students enrolled for graduate credit complete additional work at an advanced level and are graded according to the Graduate Grade Standard (see Student Handbook).

CED 6060. Digital Media for Educators. 3 Credits.
In this hands-on course, students learn the rudiments of educational technology for presentation, learn to search and assess existing multi-media educational teaching resources in art, adapt existing visual resources for new programs and audiences, and create simple artistic projects for students on the computer using widely available basic desktop publishing software. This course is offered at the undergraduate level as CED 4060 and at the graduate level as CED 6060. Students enrolled for graduate credit complete additional work at an advanced level and are graded according to the Graduate Grade Standard (see Student Handbook).

CED 6100. Art in the Museum and Community Organizations. 3 Credits.
A comprehensive survey of approaches to informal art education as practiced in museums, community centers, educational support facilities and varied social settings. This course is based on direct observation and systematic review of diverse methodologies, to provide an informed framework for integrated art education, whether as a collaboration between schools and alternative sites, or developed separate from formal schooling. Expertise of the Corcoran's museum educators is emphasized. This course is cross-tallied at the undergraduate level as CED 3100 and at the graduate level as CED 6100. Students enrolled for graduate credit complete additional work at an advanced level and are graded according to the Graduate Grade Standard (see Student Handbook). Prerequisite: CED 3020/6020 Development, Behavior, and Learning.

CED 6113. Museum Teaching Applications. 3 Credits.
In this course students learn to use the museum, its collections, exhibitions and expert personnel as a resource for their teaching. Students apply instructional principles based on the Understanding by Design framework, Discipline Based Art Education, and the Art for Life/Issues-Based curricular structure to create curriculum units for historical, modern and contemporary art topics, art works and artifacts.

CED 6150. Classroom and Activity Management. 3 Credits.
In during this semester, students learn to plan and present lessons for youth in schools or other educational settings. Skills to be emphasized include the development of educational activities to fulfill specific curricular or group goals, identification and adaptation of exemplary existing educational resources, responsive flexibility to varied group needs, group management techniques, and basic assessment methods for both student performance and program success. This course is often integrated with simultaneous Field Experience. This course is cross-tallied at the undergraduate level as CED 3150 and at the graduate level as CED 6150. Students enrolled for graduate credit complete additional work at an advanced level and are graded according to the Graduate Grade Standard (see Student Handbook). Prerequisite: CED 3020/6020 Development, Behavior, and Learning, CED 3010/6010 Art and Learners to Age 12, or CED 3015/CED 6015 Art and Adolescents, completed or concurrent; or permission of department.

CED 6800. Independent Study: Art Education. 3 Credits.
This option is appropriate for degree students who want access to independent faculty supervision, lab areas, and supplies for independent projects, and do not need or desire extensive course instruction.

CED 6900. Student Teaching in Art I. 3 Credits.
The most extensive educational practicum experience for students at the graduate level. Each student selects a single intensive supervised assignment as a student educator in a school, museum or community organization. An individualized syllabus provides a framework for planning and implementing art education lessons in this setting, formally and informally evaluating these activities in educational terms, and reflecting upon the experience from the perspective of an artist/educator. All interns during the same semester meet intermittently to critique and support each other's educational initiatives. A total of 6 credits is needed to fulfill the Student Teaching in Art requirement. Students must enroll in CED 6900 and CED 6901 which may be taken concurrently or sequentially as approved by an advisor and grades will be assigned upon completion of the second semester of enrollment.

CED 6901. Student Teaching in Art II. 3 Credits.
The most extensive educational practicum experience for students at the graduate level. Each student selects a single intensive supervised assignment as a student educator in a school, museum or community organization. An individualized syllabus provides a framework for planning and implementing art education lessons in this setting, formally and informally evaluating these activities in educational terms, and reflecting upon the experience from the perspective of an artist/educator. All interns during the same semester meet intermittently to critique and support each other's educational initiatives. A total of 6 credits is needed to fulfill the Student Teaching in Art requirement. Students must enroll in CED 6900 and CED 6901 which may be taken concurrently or sequentially as approved by an advisor and grades will be assigned upon completion of the second semester of enrollment. Prerequisite: CED 6900 Student Teaching in Art I.

CED 6906. Student Teaching in Art. 3 Credits.

CED 6910. Art Education Internship I. 3 Credits.
The most extensive educational practicum experience for students at the graduate level. Each student selects a single intensive supervised assignment as a student educator in a school, museum or community organization. An individualized syllabus provides a framework for planning and implementing art education lessons in this setting, formally and informally evaluating these activities in educational terms, and reflecting upon the experience from the perspective of an artist/educator. All interns during the same semester meet intermittently to critique and support each other's educational initiatives. A total of 6 credits is needed to fulfill the Art Education Internship requirement. Students must enroll in CED 6910 and CED 6911 which may be taken concurrently or sequentially as approved by an advisor and grades will be assigned upon completion of the second semester of enrollment.

CED 6911. Internship: Art Education II. 3 Credits.
The most extensive educational practicum experience for students at the graduate level. Each student selects a single intensive supervised assignment as a student educator in a school, museum or community organization. An individualized syllabus provides a framework for planning and implementing art education lessons in this setting, formally and informally evaluating these activities in educational terms, and reflecting upon the experience from the perspective of an artist/educator. All interns during the same semester meet intermittently to critique and support each other's educational initiatives. A total of 6 credits is needed to fulfill the Art Education Internship requirement. Students must enroll in CED 6910 and CED 6911 which may be taken concurrently or sequentially as approved by an advisor and grades will be assigned upon completion of the second semester of enrollment. Prerequisite: CED 6910 Art Education Internship I.

CED 7000. Integrated Art Education. 3 Credits.
For graduate students with a solid grounding in educational theory and practice, this course serves as a starting point for the study of pedagogy and educational practice relating specifically to art and art institutions. An intensive class reading of the core literature of the field introduces major historical and contemporary concepts of creativity, visual learning, perception and artistic experience that comprise the framework for diverse approaches to art education schools, museums and alternative settings today. During visits to art education venues around the metropolitan area, members of the class learn to discover the underlying goals and approaches imbedded in diverse art education programs, and will critique the advantages and disadvantages of contrasting methods for differing learners and situations. Integrating theory and praxis, this course establishes critical skills for the four main domains of art education: Interpretation/Meaning-making, Criticism/Aesthetic Discernment, Studio/Production and Historical Understanding. Students plan and carry-out a variety of original educational exercises.

CED 7010. Contemp Issues: Educ Policy/Visual Art. 3 Credits.
his is an interdisciplinary investigation of current affairs concerning the interaction of cultural politics, governmental trends and broad developments in educational philosophy in the public arena. Topics change in response to emerging issues of public concern, often including the interaction of local, regional and national attitudes to art, the impact of educational reform efforts, the role of art education as social acculturation, and appropriate funding levels for both art and education. This course is cross-tallied at the undergraduate level as CED 4010 and at the graduate level as CED 7010. Students enrolled for graduate credit complete additional work at an advanced level and are graded according to the Graduate Grade Standard (see Student Handbook). Offered for credit only, Continuing Education students need department approval to enroll.

CED 7100. Art and Special Education. 3 Credits.
This advanced course probes three distinct, but interrelated issues: Differentiated curriculum planning and instruction adaptive to highly varied levels of ability and disability within the same class or learning group; the specific challenges presented to both learner and educator by common physical and learning disabilities; and the special role of visual learning and artistic self-expression for individuals who are challenged by significant disabilities and special gifts in the context of schooling and prevalent educational expectations in our society. Current professional and legal standards for educational access of people with disabilities will be covered.

CED 7900. Education Thesis I. 3 Credits.
The thesis in art education is equips future or practicing teachers to engage in systematic research projects during their careers. The thesis may be completed within a wide range of subject areas, using the appropriate methods of information gathering and analysis of results for the approved thesis question. Interdisciplinary projects are encouraged. Each thesis student works with an advisor from the MAT program faculty and one or more secondary readers, usually over two semesters. Particulars of the Education Thesis are published in the "Thesis Advisory" of the Art Education program. A total of 6 credits in Education Thesis are required for the MA in Art Education. Students must enroll in CED 7900 and CED 7901, and have the option to complete both in one semester or over the course of two semesters as approved by an advisor.

CED 7901. Education Thesis II. 3 Credits.
The thesis in art education equips future or practicing teachers to engage in systematic research projects during their careers. The thesis may be completed within a wide range of subject areas, using the appropriate methods of information gathering and analysis of results for the approved thesis question. Interdisciplinary projects are encouraged. Each thesis student works with an advisor from the MAT program faculty and one or more secondary readers, usually over two semesters. Particulars of the Education Thesis are published in the "Thesis Advisory" of the Art Education program. A total of 6 credits in Education Thesis are required for the MAT in Art Education. Students must enroll in CED 7900 and CED 7901, and have the option to complete both in one semester or over the course of two semesters as approved by an advisor. Pre-requisite: CED 7900 Education Thesis I.

CED 7950. Praxis Thesis. 3 Credits.
The thesis project for finishing MA/Art Ed students provides the student with an oportunity to demonstrate their educational leadership skills, pedagogical expertise and creative, artistic capabilities within the scope of a studio-based or educational researh project. The process of writing the praxis thesis is intended to further professional growth through inqiry, reflection and integration and may with approval be combined with the stido capstone project. The praxis thesis may take one of three forms: independent study project, portfolio option, site-based inquiry option. Each thesis student works with an advisor from the Art Education program faculty and one or more Fine Art faculty members or approved outside experts. Note: MA in Art Education students may opt to substitute the Education Thesis for the Praxis Thesis, if they complete Proseminar (0 credits) as preparation.

CED 7951. Studio Capstone II. 3 Credits.

CORCORAN EXHIBITION DESIGN (CEX)

CEX 6001. Introduction to Vectorworks. 1 Credit.
This course, offered to non-degree and degree students in the MA/Exhibition Design program, provides an introduction to the 2-D and 3-D environments of Vectorworks. Students will learn the principles of architectural drafting, orthogonal projection, basic 3-D modeling and rendering, and efficient workflow in this software.

CEX 6010. Core Studio: Introduction to Exhibition Planning and Design. 3 Credits.
Introduction to the process of planning and designing effective interpretive exhibitions. The final project and presentation is a conceptual interpretive exhibition design that identifies the target audiences and their needs and that develops interpretive goals and objectives, theme and subthemes, the overall visitor experience, schematic plans and drawings, and graphic design and typography typicals. Field trips and guest speakers bring real-world experience to the course. Restricted to MA in Exhibition Design degree candidates; students in the Certificate in Exhibit Design may be admitted upon request.

CEX 6011. Core Studio: Introduction to Tools & Methods of Visual Representation. 3 Credits.
This course will introduce students to tools and methods used for graphic design, drafting, and model-making for the purposes of exhibition development and design. Students will learn the essentials of graphic design through practice in Adobe Photoshop, Illustrator and InDesign. Students will document exhibition elevations and floor plans using Vectorworks. Students will practice the techniques of model-making for use in design development and final presentation of exhibition design concepts. Restricted to MA Exhibition Design Students.

CEX 6020. Core Studio: Advanced Exhibition Design & Planning: Museum Environments. 3 Credits.
With instruction of designers from the National Gallery of Art, students learn about the design of a large-scale comprehensive exhibition. Conceptual thinking, creative problem solving, and attaining project goals. Students further their skills in articulating and presenting design solutions within contexts that may include challenging architectural issues, universal design principals, and complex client requirements. Organization, clarity of thought and communication, drawing, and model making are stressed. Specific topics may vary. Restricted to MA Exhibition Design Students only; Certificate in Exhibit Design by permission only. Prerequisites: CEX 6010.

CEX 6021. Core Studio: Advanced Exhibition Design & Planning: Non-Museum Environments. 3 Credits.
For students interested in exploring exhibition design in non-traditional environments. By engaging in a real-world project students learn conceptual thinking, creative problem solving, and how to attain project goals. Students further their skills in articulating and presenting design solutions within contexts that may include challenging architectural issues, universal design principals, and complex client requirements. Organization, clarity of thought and communication, drawing, and model making are stressed. Specific topics may vary. Restricted to MA Exhibition Design Students Only; Certificate in Exhibit Design students by permission. Prerequisites: CEX 6010.

CEX 6050. Advanced 3D Modeling and Rendering: Vectorworks. 3 Credits.
Architectural and exhibition design modeling and rendering in the virtual 3D environment of Vectorworks. Students build and document construction-ready virtual structures and environments, with textures, lighting, and image props to generate photorealistic renderings. The final project is a design package that includes renderings and construction drawings for a gallery exhibition or installation. Prerequisites: CEX 1500 or demonstrated skill through portfolio review.

CEX 6100. Lighting Exhibitions. 3 Credits.
Museum lighting design, including such issues as conservation of objects, identification of lamps and fixtures, strategies for controlling lighting effects, and the safe handling of electric equipment.

CEX 6110. Materials, Finishes and Methods for Exhibition Design. 3 Credits.
The range of building and finishing materials available for the design and construction of museum exhibitions and architectural interiors. Design and fabrication of exhibit components, based on considerations of design intent, function, aesthetics, and the visitor experience, as well as ADA guidelines, security, operations, and maintenance. Basics of organizing and preparing construction documents and specifications.

CEX 6120. Core Studio: Advanced Tools & Methods of Visual Representation. 3 Credits.
Advanced instruction in the principles and fundamentals of computer-aided design, representation, presentation, and analysis. Development of skills with digital tools to communicate the design intent to a variety of project stakeholders. Systems of the design process, including analytical, expressive, syntactical, and spatial language. Prerequisites: CEX6011.

CEX 6210. Special Topics in Exhibition Design. 3 Credits.
Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details.

CEX 6800. Independent Study: Exhibition Design. 1-3 Credits.
For degree students only. Enrollment requires prior permission. Restricted to Instructor Permission Required.

CEX 6900. Exhibition Design Internship. 3 Credits.
For degree students only. Enrollment requires prior permission. Restricted to Instructor Permission Required.

CEX 7010. Exhibition Design Studio III: Visual Storytelling. 3 Credits.
Learning through real-world exhibition projects. Further advancement of student skills in planning, programming, developing, and designing a museum exhibition. Students gain experience in developing an exhibition concept package suitable to promote, raise funds, and acquire artifacts for an exhibition in a museum venue in the Washington metropolitan area. Definition of the exhibition mission, teaching points and goals, theme and storyline within the conceptual design. Prerequisites: CEX 6020 or CEX 6021.

CEX 7011. Exhibition Design Studio III: Media and Technology for Audience Engagement. 3 Credits.
Learning through real-world exhibition projects. Explore how digital media is used in museums, as experience and as information delivery. Understand the various forms that digital media takes from simple touch screens and linear video to visitor guided interactive projections. New software tools, applying them to increasingly more complex and demanding scenarios. Augmenting an exhibit item on a local device, activating an exhibit area with projection and motion information graphics, and finally using the visitor as a component of the museum experience. Restricted to MA in Exhibition Design degree candidates; students in the Certificate in Exhibition Design may be admitted upon request. Prerequisites: CEX 6020 and CEX 6021.

CEX 7100. Museum Management and Operations. 3 Credits.
Arts institutional management, including curatorial and collections management as well as legal and financial considerations. Strategic and tactical planning, programming, fundraising, board relations, and outcomes assessment. The roles and relationships of departments such as visitor services, development, finance, education, marketing, communications, curatorial, and collections management.

CEX 7120. Construction and Detailing for Exhibition Design. 3 Credits.
The materials, documentation, and construction techniques used by exhibition designers and fabricators. How design decisions can influence manufacturing efficiency and cost. Drawing skills for reverse engineering of typical exhibit structures. Compilation of a final design or construction documentation package with exhibit media keys and requisite components to communicate and control the design during fabrication.

CEX 7200. Curatorial Studies for Exhibition Designers. 3 Credits.
Overview of curatorial practice in institutions that vary in size, scale, and scope. Traditional and non-traditional curatorial practice, including collections management, research, exhibition planning, public programs, and educational outreach. Specific focus may vary.

CEX 7220. Conservation and Art Handling: The Art of Exhibition Mount Making. 3 Credits.
In this blended learning course, each student will combine a research project investigating mount making techniques and their relationship with museum standards for conservation and art handling with hands-on experience in brass mount-making. Students will research mount making techniques that reflect understanding of museum object conservation and display. Students will visit exhibitions and go behind the scenes to meet conservators, mount-makers, designers and other museum professionals. Students will also participate in hands-on workshop component to learn the basics of brass mount-making for museum objects and artifacts. Students will work independently towards a final written paper and presentation, along with a physical example of mount making techniques.

CEX 7800. Exhibition Design Capstone/Thesis Part 1. 3 Credits.
The equivalent of the programming phase of a professional exhibition design project, Part 1 of the Capstone/Thesis lays the critical foundation for an exhibition proposal by defining its mission, interpretive goals, and content. Students develop a design concept, based on precedent research, that serves as the guideline for the Capstone/Thesis to be completed in the following semester. The format of the final pro-thesis document is an academic research paper with concept design sketches, plans, and drawings. Prerequisites: CEX 7010 or CEX 7011. Restricted to MA in Exhibition Design students; pre-thesis assessment is required prior to registration.

CEX 7900. Exhibition Design Capstone/Thesis Part 2. 3 Credits.
The student is expected to work at a professional level in completing a comprehensive exhibition design proposal. The process culminates in a public review of the project with jurors drawn from the faculty and the professional design community. Restricted to MA in Exhibition Design degree candidates. Prerequisite: CEX 7800.

CORCORAN FINE ART (CFA)

CFA 1090. Fine Art Fundamentals I: Drawing. 3 Credits.
Drawing is the fundamental language of visual communication and an essential skill for all visual artists. In this course, you will improve your drawing skills through exercises in mark making, perspective, and line, with assignments also focusing on value, form and mass, and composition. Students will do gesture and contour drawings as well as fully developed drawings; frequent individual and group critiques foster both feedback and your own ability to express your point of view. Classes will include demonstrations, drawing the life model and still lifes, and exposure to the history and contemporary practice of drawing. First-year drawing is required of all prospective Fine Art majors and serves as the prerequisite for more advanced drawing, illustration, and animation courses.

CFA 1091. Fine Art Fundamentals II: Painting. 3 Credits.
First-year painting focuses on materials, techniques, and historical precedents as means to begin to develop your personal imagery, content, and techniques. Classes devoted to a rigorous, hands-on learning process provide a context for the expression and development of individual goals, from realism to abstraction to animation. Working on several paintings during the semester, students will experiment with both traditional and new methods. Discussions on the history of painting, along with faculty-moderated critiques begin to address the rich context in which the contemporary painter participates. Fundamentals of Fine Art: Painting is a prerequisite for taking intermediate and advanced painting courses.

CFA 1092. Fine Art Fundamentals II: Sculpture. 3 Credits.
This fundamental course in 3-D form and thinking introduces students to a wide variety of techniques, fabrication strategies, and conceptual approaches to form and space. Basic carpentry and welding skills will be taught, along with methods of making simple connections, cutting and bending, modeling, , mold making and casting. Through demonstrations and research students will be exposed to contemporary methods of fabrication and their uses in contemporary art. Class and individual projects will be critiqued by the instructor and fellow students, with an emphasis on experimentation and the development of project management skills. Fundamentals of Fine Art: Sculpture is a prerequisite for more advanced courses in sculpture, installation, and performance.

CFA 1215. Color Across Media: Symbolism and Science. 3 Credits.
How artists have used color has changed enormously over the last century. This course will examine the main theories which they employed, experimented with, and what they abandoned, as well as some of the science involved. We will study several approaches to color, from traditional views about its spiritual aspects, symbolism and scientific properties of specific colors, including both subtractive (physical) and additive (light) color, to Postmodern practices of chance, systems, cultural contexts and commercial color charts. These approaches will be studied by a variety of means, from photo expeditions, to extensive paint mixing, to computer exercises, to experiments in chance. Studies will include color in cultural contexts; color as mood, temperature, value and space; chromatic gray; color interaction, and some paint-by-number games. Basic familiarity with Adobe Photoshop is helpful.

CFA 2090. Fine Art Studio I. 3 Credits.
Students are challenged and encouraged, individually and collaboratively, to employ resourcefulness, critical thinking and creativity to identify, analyze, understand and resolve problems related to contemporary art practice, production and theory. To facilitate this approach, broad problems are presented by a team of faculty that examine the creative appetite and move on to investigation and development of strategies for making art. Required for FA majors.

CFA 2091. Fine Art Studio II. 3 Credits.
The second semester of the fine art studio sequence. Students are challenged and encouraged, individually and collaboratively, to employ resourcefulness, critical thinking and creativity to identify, analyze, understand and resolve problems related to contemporary art practice, production and theory. To facilitate this approach, broad problems are presented by a team of faculty that examine the creative appetite and move on to investigation and development of strategies for making art. Required for FA majors.

CFA 2122. Medium and Materials Workshop: Time-Based Media. 3 Credits.
Medium and Materials workshops are required for BFA Fine Art students but may be used as electives for other programs. As the threshold for media production software and hardware drops, visual artists increasingly have the opportunity to work with time-based, trans-disciplinary tools. Even artists working primarily in traditional media are extending their understanding of their practice as they explore their subjects in time. This course will expose students to a broad range of works: from conventional film and video, to video installation, performance documentation, generative and interactive works. Students will get hands-on experience with a variety of commercial and open source tools, as they create and present projects throughout the semester.

CFA 2123. Medium and Materials Workshop: The Object in its Environment. 3 Credits.
Medium and Materials workshops are required for BFA Fine Art students but may be used as electives for other programs. This course focuses on the relationship of the created object with its environment relationships to space and time via the production of sculptural objects involving a variety of materials and processes including (but not limited to) fiber textiles leather plastics wood metals and appropriation of existing objects, placing them in a contemporary context to include practices such as installation, performance fashion, and addresses issues of site sensitivity or specificity, sustainability and environmental design. This is achieved through studio work (investigation, discovery and making) demonstrations, lectures, research and discussion.

CFA 2124. Medium and Materials Workshop: Painting Basics for Fine Art. 3 Credits.
Medium and Materials workshops are required for BFA Fine Art students but may be used as electives for other programs. This course introduces historical and contemporary approaches to painting. Students will explore the language of images-developing an awareness of the roles of visual judgement (the objective view), and intuition (the subjective response) in making our creative decisions. We will address issues of form, process and content in painting. Students will experiment with a variety of materials and surfaces appropriate for painting in watercolor, acrylic, and oil. We will also explore a wide range of subjects and sources - with the goal of building a broad visual language of exploration, discovery, and self expression. Material demonstrations, class readings and discussions, and individual and group critiques will take place throughout the semester. Intended for, but not limited to, Sophomore BFA/FA majors.

CFA 2125. Medium and Materials Workshop: Printmaking. 3 Credits.
An introduction to the use of a variety of printmaking media, connecting their use to the mainstream of contemporary artistic practice. Etching, lithography, screen print, and relief printing. Printmaking's multi-faceted relationships to photography, sculpture, painting, and other media.

CFA 2126. Medium and Materials Workshop: Ceramic Practice, Earth to Stone. 3 Credits.
This course will provide a comprehensive introduction into the materials and methods essential to ceramic practice. Clay forming techniques in all areas of hollow construction will be introduced and explored, including hand building, wheel throwing, extrusion, and casting in the creation of clay forms. A basic introduction to the range of clays, and clay bodies will facilitate the students understanding of the suitable methodologies in which to manifest their ideas in clay. The use of slips, engobes, and glazes will explore the role of surface treatments in the context of the skin and bones of ceramic objects. The final process of firing will be investigated and explored with the student being introduced to multiple firing techniques and the basic operations of an electric kiln.

CFA 2200. Intermediate Drawing. 3 Credits.
This course expands on the concept of drawing to include a wide variety of conventional and unconventional materials and techniques. Students will approach drawing both technically and conceptually. Drawing projects will focus on both traditional and prepared surfaces. Students will discover fresh approaches and open up new possibilities for personal expression. Class meetings will emphasize drawing as a sustained effort, with time allotted for demonstrations, discussions, and critiques.

CFA 2201. Drawing Strategies and Practice. 3 Credits.
Why do artists draw today? How are contemporary artists using drawing to conceptualize, to commemorate, to record, or to recall? Drawing is currently an end in itself, as well as a means to project the information that supports all art-making processes. Drawing can be imitative, descriptive, interpretive, and imaginative. The act of drawing can require only the most primitive of media-charcoal made from wood and fire, or pigment of earth mixed with water-and it can take advantage of technology such as photography and digital imaging. This course encourages your understanding of the basis of spatial perception; the value of immediacy in recording; your body's physical-action component in drawing; the rich trove of mark-making we can tap into. Students use a wide range of materials with a creative variety of substrates or surfaces. Projects are observation-based and expand through concept and narrative. All styles and techniques are appropriate for exploration and development. Where can you take drawing? At times this course may be cross-tallied at the undergraduate level as CFA 2201 and at the graduate level as CFA 5201. Additional work is required to earn graduate credit. Prerequisite: CFN 1040 Foundation Drawing, or instructor permission.

CFA 2202. Introduction to Illustration. 3 Credits.
Through lectures and assignments, students will be introduced to concepts and history, and will experience and be exposed to the multiple facets of illustration. Familiarity with the work of historical and contemporary illustrators will help students gain a greater appreciation of where illustration has come from, where it is going, and how their work might fit into the timeline. The diverse avenues to which illustration work applies will be demonstrated. The course emphasizes the importance and significance of creating works of art that have both parameters(size, media, aspect, color, etc.) and deadlines, two things that set "illustration" work apart from many other disciplines of art-making.Students will effectively brainstorm ideas and visual solutions to creatively fulfill project requirements. Students will be able to research both online and through print media the subject of their illustrations and gather quality reference material to aid in the production of final illustrations. Assignments are intended to simulate projects that illustrators might encounter in real-world working situations and give the student an understanding of the relationship between illustrators and art directors. This course helps students develop an understanding of the importance of following directions, meeting deadlines, and succinctly and effectively conveying concepts visually.

CFA 2210. Intermediate Painting I for Fine Art. 3 Credits.
This course will review fundamental painting approaches and introduce further experimentation and development of formal, technical, and conceptual aspects of painting. We will explore both current and historical painting practices, and investigate the concepts of observation, representation, abstraction, and conceptual thought as sources for our work. Discussion regarding scale, supports, surface preparation, color, and the manipulation of paint as materials and their impact on content and expression will be explored. Students will be encouraged to work from self direction and self motivation, and will begin to develop a personal language of content and expression. Prerequisite: CFA 2124 Medium and Materials Workshop: Painting I Basics for Fine Arts, or CFA 1220 Beyond Basics: Painting for Fine Art.

CFA 2270. In Stitches. 3 Credits.
This course explores the use of the stitch - by hand or machine, knitted or crocheted - as a drawing tool and as a method of creating dimension. It covers historical and contemporary uses in quilting and embroidery, and examines some of their socio-political implications. A variety of techniques will be investigated, including applique, piecing, the use of stippling, trapunto, free motion quilting/embroidery and basic knitting and chrochet stitches. A variety of tools, materials and threads will be studied that include needles, thimbles, fabric stabilizers, batting, embroidery floss and yarn. Completed samples will demonstrate understanding of various techniques, and one final project will exhibit creative use of them. Intended for, but not limited to Sophomore BFA/FA majors.

CFA 2305. Digital Art I for Fine Art & Photography. 3 Credits.
Students explore the capabilities of powerful programs to manipulate, aggregate and translate digital images and video footage. The course covers editing, proofing, and printing images; provides instruction in basic enhancement to digital photography; develops skill in digital image-making to produce high-quality large scale prints. Students apply the techniques of computer drawing, painting, digitizing, and animation to computer-generated images or images from external sources such as photography, video, and scanners. Images and text are combined to create large-scale compositions. This class is designed for students with photography and fine arts background. In some terms this course may be cross-tallied at a more advanced level as CDM 3200. Students in CDM 3200 deal with more complex image making, and printing challenges, building on CDM 2200 Digital Art I. Prerequisites: CFN 1000 Communication Design, CDM 1200 Digital Art I, or CFA 2122 Medium/Materials: Time-Based Media.

CFA 2700. San Miguel/The Cult of the Hand: Craft, Ritual and Performance. 3 Credits.
This course is offered as a full spring semester course, which includes travel to San Miguel during spring break. Please note that airfare and accomodations incur additional fees outside of the course tuition. Please contact Bob Devers, rdevers@corcoran.org, Coordinator of Study Away programs with questions.This course is an interdisciplinary exploration, which introduces the traditions and culture of many genres of Mexican folk craft media. Through an immersion into the cultural, historical and artistic practices of these traditions, students will gain an understanding and appreciation of the diversity of cultural and artistic expressions of Mexican artisans. Students will have multiple hands-on experiences with a variety of mediums including papel-picado (cut-paper), papier-mâché, mask making, puppetry, talavera tiles and Zapotec textiles. This course will include tours of local museums, historic buildings and visits to artist's studios to experience demonstrations by local artists. The town of San Miguel will serve as the main stage for witnessing the profound confluence of art, culture and beauty that is Mexico.

CFA 3090. Fine Art Studio III. 3 Credits.
Fine Art Studio III curriculum is constructed with an emphasis on the development of your individual creative process and studio production. Of equal significance is the student's first-hand understanding of areas of critical importance to the fabric of contemporary art that will be studied through the various assignments. These content areas will be explored in depth in Seminar providing the necessary background for your investigations. Seminar will act to enrich your understanding of all Studio III Assignments. Third year is a year built around assignments called "contracts" that provide a framework by which you can begin to create a vital and productive individualized studio practice. The contracts bridge faculty-directed studio projects with independent self-directed art making and emphasize the research of ideas, exploration of medium and materials, and the development of process and production over the course of the year. Formal instruction will include brief lectures and specialized demos with an emphasis on feedback on your work in progress through individual studio meetings as well as feedback on your completed work through formal group critiques. This semester your faculty will be working with each of you towards better articulation and implementation of your goals arising from your studio investigations. During the course of the year, you will be guided through a variety of art making and writing projects that operate through two distinct, but intertwined, art making approaches: expansion of your current studio practice into new and unknown areas and focused studio work. It is important to discover new tools, techniques and areas of conceptual investigation in an effort to expand both your knowledge base and your individualized studio practice. No less important, however, is the focused movement necessary for your commitment to the production of completed, well-realized art works and bodies of work. Methods for locating areas of inspiration will be studied collectively in this course. Your Third Year Studio course is a time for beginning the self-directed practices that are necessary for a studio artist beyond the framework of the academy.

CFA 3091. Fine Art Studio IV. 3 Credits.
Reserved for BFA/FA requirement. Corequisite: CFA 3121 Fine Art Seminar II. Prerequisite: CFA 3090 Fine Art Studio III.

CFA 3120. Fine Art Seminar I. 3 Credits.
Fine Art Seminar I is a companion course to Fine Art Studio III, offering students an opportunity to delve deeply into the concepts, historical context, materials, and processes that relate to the contract assignments and to the independent art making you will be engaged in this year. The Seminar will center on skills related to your work but will differ substantially from your studio class in both content and organization. Its goal is to support your development as an artist, and to challenge you to see your work and the work of your peers in a critical way. Fine Art Seminar I sessions will be led by one or more of the Seminar faculty team members, on a rotating basis. The content of these Seminars will vary according to the contract and may include lectures, presentations, and group activities such as written or experiential activities or group discussions that relate to and supplement the Fine Art Studio curriculum. Additionally, students will be asked to give presentations that relate to this work. Visiting artists and field trips will also be a major component of Seminar.

CFA 3121. Fine Art Seminar II. 3 Credits.
Fine Art Seminar II is a companion course to Fine Art Studio III, offering students an opportunity to delve deeply into the areas of conceptual investigation, historical context, materials, and processes that relate to Studio contract assignments and to the independent art making you will be engaged in this year. The Seminar will center on skills related to your work but will differ substantially from your Studio class in both content and organization. Its goal is to support your development as an artist, and to challenge you to see your work and the work of your peers in a critical way. Fine Art Seminar II sessions will be lead by one or more of the Seminar faculty team members, on a rotating basis. The content of these Seminars will vary according to the contract and may include lectures, presentations, and group activities such as written or experiential activities or group discussions that relate to and supplement the Fine Art Studio curriculum. On occasion, students will be asked to give presentations that relate to this work. Visiting artist lectures and field trips to Museums and other sites of interest will also be a major component of Seminar.

CFA 3210. Advanced Painting: Special Topics. 3 Credits.
This course will review fundamental painting approaches and introduce further experimentationand development of formal, technical, and conceptual aspects of painting. We will explore bothcurrent and historical painting practices, and investigate the concepts of observation,representation, abstraction, and conceptual thought as sources for our work. Discussionregarding scale, supports, surface preparation, color, and the manipulation of paint as materialsand their impact on content and expression will be explored. Students will be encouraged to workfrom self-direction and self-motivation, and will begin to develop a personal language of contentand expression. Prerequisite: CFA 2124 Medium and Materials Workshop: Painting I Basics forFine Arts, or CFA 1220 Beyond Basics: Painting for Fine Art.

CFA 3240. Wear, Strut, Occupy. 3 Credits.
Explore notions of costuming, fashion, sculpture, performance, and wearer/performer. Our reasons to wear anything are varied and manifold: to conceal, reveal camouflage or disguise; for protection or to project power or threat; for the purpose of modesty or exhibitionism; to communicate an idea or establish identity, to enhance or impede movement, to express beauty, to impress or to shock. This course approaches the broadest possible definition of clothing and adornment as a vehicle to explore the relationship between the individual, the material and the environment. For their projects students may make use of traditional construction materials, methods and processes, such as patternmaking and sewing, but also can consider manipulating metal, wood, plastics, found objects, and natural materials.

CFA 3305. Digital Art II for Fine Art & Photography. 3 Credits.
Students explore the capabilities of powerful programs to manipulate, aggregate and translate digital images and video footage. The course covers editing, proofing, and printing images; provides instruction in basic enhancement to digital photography; develops skill in digital image-making to produce high-quality large scale prints. Students apply the techniques of computer drawing, painting, digitizing, and animation to computer-generated images or images from external sources such as photography, video, and scanners. Images and text are combined to create large-scale compositions. This class is designed for students with photography and fine arts background. In some terms this course may be cross-tallied at an introductory level as CDM 2200. Students in CDM 3200 deal with more complex image making, and printing challenges, building on CDM 2200 Digital Art I. Prerequisites.

CFA 3306. Performative Media. 3 Credits.
The class introduces students to the creative process of producing perfomance-based media works, installations, staging and time-based video. Students work with narrative and theoretical texts to study and develop works inspired by theater, cinema, TV culture and mass media. The class will focus on research, development and production of projects on a larger scale with process, evolution and decision-making as part of their creation.

CFA 3331. Fold, Tear, Build. 3 Credits.
As paper is less used to transmit information, interest in its creative potential as an art medium increases. Beginning with rudimentary objects, and concluding with elaborate pop ups, we will examine a wide range of paper objects and design, from quickly produced to intricate with painstaking detail, and using anywhere from simple techniques of folding, cutting, gluing and collage to digitally printed, these objects can have a variety of applications including character design, urban art, fine art, graphic design, illustration, animation and film. Starting with making basic volumes, students can extrapolate their own forms and designs for a variety of purposes. The second half of the semester concentrates on the pop up with its myriad of floating and moving forms. Students will learn the basic "engines" for mobilizing a 3-D effect from paper, including V-folds and parallel folds, upon whcih more elaborate forms can be built. Projects range from test pop ups of the basic forms, through large prototypes culminating in a large one-page display of a student's choice of subject, involving drawing, painting and/or photographic imagery. Students learn precise craft skills and organizing efficient sequences of assembly. A laser cutter may be used to save labor. Intended for any level following freshman year. Formerly titled, Paper Craft: Objects Pop Ups.

CFA 3511. Public/Spectacle: Contemporary Performance from Pop Culture to Social Practice. 3 Credits.
This class introduces students to performance art forms that create social spaces while addressing larger challenges facing society, all with an eye on pop culture and social media. Students will work on projects in D.I.Y production of popular forms, from making their own art bands, music videos and brand identities to creating collaborative artworks which address real-life problems and seek solutions in actual (and virtual) communities. This class provides a forum for students to engage with the full range of appropriations of pop culture spectacle in the field of art - from inventing a persona to creating a social movement.

CFA 3512. Illustration: Witness Art. 3 Credits.

CFA 3710. Ladakh: Ancient Culture in Modern Times. 3 Credits.
Ladakh, a high-altitude desert beyond the peaks of the Himalaya, offers few resources in an extreme climate. Yet, it has been the home of a thriving agricultural society for more than a thousand years. In this course, you will explore the coping skills and attitudes that allow the people of Ladakh to survive and prosper in peace and harmony under the harshest of circumstances. We will examine community and family structures and the role of ancient localized knowledge, as well as Buddhist traditions to learn whether Ladakh is prepared to meet the challenges of increasing westernization without losing its ecological balance and social harmony. We will read and discuss a text on Ladakhi culture and development issues, watch and discuss videos and a movie, and get a primer on Buddhist philosophy.All students are required to write a report about the experience, contribute writing and artwork for a book, and participate in a White Halls show in the Fall semester.After registration, students will be required to arrange and pay for a current passport, Indian tourist visa, and travel health insurance. Prerequisites: instructor's permission and reference letter.

CFA 3800. Directed Studies: Fine Art. 1-3 Credits.
This option is appropriate for degree students who want access to independent faculty supervision, lab areas, and supplies for independent projects, and do not need or desire extensive course instruction.

CFA 3900. Internship: Fine Art. 1 Credit.
For degree students only. Internships can help students develop marketable skills, establish professional contacts, and explore different career options.

CFA 4090. Fine Art Thesis I. 3 Credits.
Reserved for BFA/FA requirement. Prerequisite: CFA 3091 Fine Art Junior Studio II.

CFA 4091. Fine Art Thesis II. 3 Credits.
Reserved for BFA/FA requirement.

CFA 4170. Professional Practices for Fine Artists. 3 Credits.
No artist, however famous or successful, had a clear path to succeed from the beginning. Successful artists learn to maximize opportunities and resources available to them, navigating his or her way at every turn. There is not one single approach; a strategy with lots of planning and variables must be created and examined. Artists will develop a resume and artist statement, research and write grants, practice applying for residencies, and participate in information gathering sessions with art spaces. The instructor will create opportunities for students to meet gallery directors, curators and professional artists in the DC area. These meetings will provide substantive time to discuss practical issues and concerns that will add to a post-school plan.Writing and reading assignments will be two papers including writing a grant application and creating a personal post-college plan plus one exam. Completion of this course will result in a deeper understanding of the specific tools available to emerging artists and the nature of the art world in general. For BFA Fine Art majors only. Prerequisite: CFA 3091 Fine Art Studio IV.

CFA 4210. Advanced Painting Studio. 3 Credits.
In this advanced painting studio students will begin a cohesive body of work or fully develop one in progress. They will fine-tune image making skills on work with live models, projected images, or special projects, with emphasis on professional execution. History suggests that Van Eyck made the first oil painting medium, Rubens, Vermeer, and others helped to perfect it. Using the secret formulas and techniques of the Masters, students will learn how to use Maroger medium also known as miracle medium. Students will also explore imprimatura, underpainting and glazing, mixing and drying properties, opacities and characteristics of colors and media, and the production of effects with different brushes and painting tools. Finally, they will master these techniques and adapt them to their vision in forming expressive strategies in oil or acrylics.

CFA 4310. Art Outside the Gallery. 3 Credits.
This course will introduce students to creating site specific and installation art while emphasizing public art, the non-profit art world, pop-up and D.I.Y. galleries. Class time will be divided between studio time, research, and field visits. Field visits include studio visits with local artist, opening receptions, art fairs and festivals, as well as visits to public art locations throughout the DC area. This is a studio intensive class focusing on a cumulative project/exhibition that the students will facilitate on their own or as a class from proposal thru to exhibition installation. Students will gain experience with public art proposals and finding/creating alternative art spaces.

CFA 4311. Installation Art. 3 Credits.
This advanced level fine arts sculpture course focuses on the genera of installation sculpture through the lens of site specificity, architecture, media, and landscape. Through instructor directed research, engagement in artistic practice and theoretical exploration the students will attain a better understanding of the theories, practices, artists and historical contexts within the field of installation art. Students are encouraged to explore beyond traditional art exhibition sites in order to understand how/why the content of work cannot be separated from its context.

CFA 5013. Graduate Cross-Media Studio. 3 Credits.
Students explore areas of personal studio strength in combination with less familiar methods and materials. Through a series of class projects, students identify potent themes in their work and and explore aspects of these themes using new strategies and processes. Upon successful completion of the course students demonstrate a more vibrant visual vocabulary along with an understanding of process in relation to stated goals. The importance of play and risk-taking in all aspects of art making is emphasized and alternative approaches for critique and self-assessment are introduced as each student's most successful projects are singled out for further development. Contemporary artists using cross-media will be introduced and discussed, and selected readings will be assigned. This course is graded on the graduate standard only.

CFA 5020. Graduate Collaborative Studio. 1.5 Credit.

CFA 5201. Drawing Strategies and Practice. 3 Credits.
Why do artists draw today? How are contemporary artists using drawing to conceptualize, to commemorate, to record, or to recall? Drawing is currently an end in itself, as well as a means to project the information that supports all art-making processes. Drawing can be imitative, descriptive, interpretive, and imaginative. The act of drawing can require only the most primitive of media-charcoal made from wood and fire, or pigment of earth mixed with water-and it can take advantage of technology such as photography and digital imaging. This course encourages your understanding of the basis of spatial perception; the value of immediacy in recording; your body's physical-action component in drawing; the rich trove of mark-making we can tap into. Students use a wide range of materials with a creative variety of substrates or surfaces. Projects are observation-based and expand through concept and narrative. All styles and techniques are appropriate for exploration and development. Where can you take drawing?At times this course may be cross-tallied at the undergraduate level as CFA 2201 and at the graduate level as CFA 5201. Additional work is required to earn graduate credit.

CFA 5202. Introduction to Illustration. 3 Credits.
Through lectures and assignments, students will be introduced to concepts and history, and will experience and be exposed to the multiple facets of illustration. Familiarity with the work of historical and contemporary illustrators will help students gain a greater appreciation of where illustration has come from, where it is going, and how their work might fit into the timeline. The diverse avenues to which illustration work applies will be demonstrated. The course emphasizes the importance and significance of creating works of art that have both parameters(size, media, aspect, color, etc.) and deadlines, two things that set "illustration" work apart from many other disciplines of art-making.Students will effectively brainstorm ideas and visual solutions to creatively fulfill project requirements. Students will be able to research both online and through print media the subject of their illustrations and gather quality reference material to aid in the production of final illustrations. Assignments are intended to simulate projects that illustrators might encounter in real-world working situations and give the student an understanding of the relationship between illustrators and art directors. This course helps students develop an understanding of the importance of following directions, meeting deadlines, and succinctly and effectively conveying concepts visually.

CFA 5210. Inter. Painting for Fine Art. 3 Credits.

CFA 5270. In Stitches. 3 Credits.
This course explores the use of the stitch - by hand or machine, knitted or crocheted - as a drawing tool and as a method of creating dimension. It covers historical and contemporary uses in quilting and embroidery, and examines some of their socio-political implications. A variety of techniques will be investigated, including applique, piecing, the use of stippling, trapunto, free motion quilting/embroidery and basic knitting and chrochet stitches. A variety of tools, materials and threads will be studied that include needles, thimbles, fabric stabilizers, batting, embroidery floss and yarn. Completed samples will demonstrate understanding of various techniques, and one final project will exhibit creative use of them. Intended for, but not limited to Sophomore BFA/FA majors.

CFA 5305. Digital Art I for Fine Art & Photography. 3 Credits.
Students explore the capabilities of powerful programs to manipulate, aggregate and translate digital images and video footage. The course covers editing, proofing, and printing images; provides instruction in basic enhancement to digital photography; develops skill in digital image-making to produce high-quality large scale prints. Students apply the techniques of computer drawing, painting, digitizing, and animation to computer-generated images or images from external sources such as photography, video, and scanners. Images and text are combined to create large-scale compositions. This class is designed for students with photography and fine arts background. In some terms this course may be cross-tallied at a more advanced level as CDM 3200. Students in DM 3200 deal with more complex image making, and printing challenges, building on CDM 2200 Digital Art I.

CFA 6210. Advanced Painting: Special Topics. 3 Credits.
Special Topics in Advanced Painting.

CFA 6240. Wear, Strut, Occupy. 3 Credits.
Explore notions of costuming, fashion, sculpture, performance, and wearer/performer. Our reasons to wear anything are varied and manifold: to conceal, reveal camouflage or disguise; for protection or to project power or threat; for the purpose of modesty or exhibitionism; to communicate an idea or establish identity, to enhance or impede movement, to express beauty, to impress or to shock. This course approaches the broadest possible definition of clothing and adornment as a vehicle to explore the relationship between the individual, the material and the environment. For their projects students may make use of traditional construction materials, methods and processes, such as patternmaking and sewing, but also can consider manipulating metal, wood, plastics, found objects, and natural materials.Graduate students identify and research a topic related to the course material, and present their research to the class and any other intested parties. They also submit written and visual support for their research for review. Graduate students will adhere to level-appropriate standards regarding content, execution, and finish of their projects.

CFA 6331. Fold, Tear, Build. 3 Credits.
As paper is less used to transmit information, interest in its creative potential as an art medium increases. Beginning with rudimentary objects, and concluding with elaborate pop ups, we will examine a wide range of paper objects and design, from quickly produced to intricate with painstaking detail, and using anywhere from simple techniques of folding, cutting, gluing and collage to digitally printed, these objects can have a variety of applications including character design, urban art, fine art, graphic design, illustration, animation and film. Starting with making basic volumes, students can extrapolate their own forms and designs for a variety of purposes. The second half of the semester concentrates on the pop up with its myriad of floating and moving forms. Students will learn the basic "engines" for mobilizing a 3-D effect from paper, including V-folds and parallel folds, upon whcih more elaborate forms can be built. Projects range from test pop ups of the basic forms, through large prototypes culminating in a large one-page display of a student's choice of subject, involving drawing, painting and/or photographic imagery. Students learn precise craft skills and organizing efficient sequences of assembly. A laser cutter may be used to save labor. Intended for any level following freshman year. Formerly titled, Paper Craft: Objects Pop Ups.

CFA 6511. Public/Spectacle: Contemporary Performance from Pop Culture to Social Practice. 3 Credits.
This class introduces students to performance art forms that create social spaces while addressing larger challenges facing society, all with an eye on pop culture and social media. Students will work on projects in D.I.Y production of popular forms, from making their own art bands, music videos and brand identities to creating collaborative artworks which address real-life problems and seek solutions in actual (and virtual) communities. This class provides a forum for students to engage with the full range of appropriations of pop culture spectacle in the field of art - from inventing a persona to creating a social movement.

CFA 6512. Illustration: Witness Art. 3 Credits.

CFA 6710. Ladakh:Ancient Culture in Modern Times. 3 Credits.
Ladakh, a high-altitude desert beyond the peaks of the Himalaya, offers few resources in an extreme climate. Yet it has been the home of a thriving agricultural society for over a thousand years. In this course you will explore the coping skills and attitudes that allow the people of Ladakh to survive and prosper in peace and harmony under the harshest of circumstances. We will examine community and family structures, the role of ancient localized knowledge, as well as Buddhist traditions to learn whether Ladakh is prepared to meet the challenges of increasing westernization without losing its ecological balance and social harmony. This experience presents abundant opportunities for intensive graduate level research in areas including indigenous architecture, textiles, design and object study, sustainable design as well as craft culture, teaching methodologies, narrative studies, photography, and cultural studies. Students will read and discuss a text on Ladakhi culture and development issues, watch and discuss videos and a movie, and get a basic introduction to Buddhist philosophy.Students are required to write a 25-page research paper on a topic pertaining to their respective area of study (proposal to be approved by their respective Department Heads), keep a visual notebook with sketches and photography, present their work in an exhibit at the White Halls gallery, and contribute writing and images to a group book project.After registration, students will be required to arrange and pay for a current passport, Indian tourist visa, and travel health insurance.Prerequisites: instructor's permission and reference letter.

CFA 6800. Independent Study: Fine Art. 1-3 Credits.
This option is appropriate for degree students who want access to independent faculty supervision, lab areas, and supplies for independent projects, and do not need or desire extensive course instruction.

CFA 7210. Advanced Painting Studio. 3 Credits.
Students in this course will begin a cohesive body of work or fully develop one in progress. They will fine-tune image making skills on work with live models, projected images, or special projects, with emphasis on professional execution. Using The Secret Formulas and Techniques of the Masters students will learn how to use Maroger Medium also known as Miracle Medium, history suggests that Van Eyck made the first oil painting medium, Rubens, Vermeer, and others helped to perfect it. Additionally, students will explore imprimatura, underpainting and glazing, mixing and drying properties, opacities and characteristics of colors and media, and the production of effects with different brushes and painting tools. Finally, they will perfect techniques and adapt them to vision in forming expressive strategies in oil or acrylics. For all skill levels, but some drawing is recommended. A few beginning and intermediate flourish with the Advanced students. Beginning students should register for CPT 3200 and advanced students may register for CPT 4200 if they have met the prerequisite.

CFA 7310. Art Outside the Gallery. 3 Credits.
This course will introduce students to creating site specific and installation art while emphasizing public art, the non-profit art world, pop-up and D.I.Y. galleries. Class time will be divided between studio time, research, and field visits. Field visits include studio visits with local artist, opening receptions, art fairs and festivals, as well as visits to public art locations throughout the DC area. This is a studio intensive class focusing on a cumulative project/exhibition that the students will facilitate on their own or as a class from proposal thru to exhibition installation. Students will gain experience with public art proposals and finding/creating alternative art spaces.

CFA 7311. Installation Art. 3 Credits.
This advanced level fine arts sculpture course focuses on the genera of installation sculpture through the lens of site specificity, architecture, media, and landscape. Through instructor directed research, engagement in artistic practice and theoretical exploration the students will attain a better understanding of the theories, practices, artists and historical contexts within the field of installation art. Students are encouraged to explore beyond traditional art exhibition sites in order to understand how/why the content of work cannot be separated from its context.

CFA 7950. Studio Capstone I. 3 Credits.
A culminating focused studio project, starting with an individualized artistic plan or statement of objectives, which builds upon the artistic interests and technical strengths which the student has acquired while in the Masters program. Cross-media, innovative, and experimental projects are encouraged. The Capstone leads to participation in a student exhibition at the Corcoran, a demonstration/presentation, and/or a digitized documentation of the project open to the entire College community. Students are free to choose whether their own learning and artistic goals will be best met by treating the Capstone as a freestanding achievement or combine it, with approval, with the Thesis or Praxis Thesis. A total of 6 credits in Studio Capstone are required for the MA in Art Education. Students must enroll in CFA 7950 and CFA 7951 which may be taken concurrently or sequentially as approved by an advisor and grades will be assigned upon completion of the second semester of enrollment.

CFA 7951. Studio Capstone II. 3 Credits.
A culminating focused studio project, starting with an individualized artistic plan or statement of objectives, which builds upon the artistic interests and technical strengths which the student has acquired while in the Masters program. Cross-media, innovative, and experimental projects are encouraged. The Capstone leads to participation in a student exhibition at the Corcoran, a demonstration/presentation, and/or a digitized documentation of the project open to the entire College community. Students are free to choose whether their own learning and artistic goals will be best met by treating the Capstone as a freestanding achievement or combine it, with approval, with the Thesis or Praxis Thesis. A total of 6 credits in Studio Capstone are required for the MA in Art Education. Students must enroll in CFA 7950 and CFA 7951 which may be taken concurrently or sequentially as approved by an advisor and grades will be assigned upon completion of the second semester of enrollment.

CORCORAN FIRST YEAR FOUNDATION (CFN)

CFN 1000. Communication Design. 3 Credits.
This course will examine digital design techniques and concepts that are relevant to all majors. Students will learn the basics of visual communication, typography, and design by utilizing Adobe Photoshop to create a series of projects that will result in the creation of their own basic website. Students will learn how to scan, import, and create artwork and how to correct and adjust image tone and color. Students will also use Photoshop's many selection and editing tools and will be introduced to layers, channels, color palettes, and scripted actions. By going through lessons ranging from image retouching to title banner and button creation and simple time-based animation, students will assemble and produce a simple website which will showcase a portfolio of their own work. In addition to the projects above, students will be introduced to the theories and practices of visual communications and graphic design through a series of lectures and demonstrations. Other Adobe CS software such as InDesign will be touched on as well.

CFN 102. Drawing I Core. 3,4.5 Credits.

CFN 103. Drawing Core. 4.5 Credits.

CFN 1090. First Year Studio I. 3 Credits.
The First Year Studio course is a two-semester sequence structured as a themed, shared experience that focuses on cross-disciplinary approaches to art making and the creative process. All first-year students participate in a rotating class structure that allows for the development of an iterative art-making experience beneficial to artists, designers, and photographers alike. Working in small groups, students study with a variety of faculty across departments, explore and experience a variety of methods and materials, and are introduced to the conceptual framework of the artist in today's society. Class projects will address how artists and designers communicate to an audience, collaborate with others, and manage multi-step projects. They also will foster the development of a culture of constructive criticism and foreground the role of spontaneity and improvisation in the process of art making. Through this course, designed as a two-semester sequence, First Year students will explore all levels of artistic engagement, from the exploration of self identity to the exploration of the artist in the broader community. Successful completion of both First Year Studio courses is required for entry into major-specific studio courses in second year.

CFN 1091. First Year Studio II. 3 Credits.
The First Year Studio course is a two-semester sequence structured as a themed, shared experience that focuses on cross-disciplinary approaches to art making and the creative process. All first-year students participate in a rotating class structure that allows for the development of an iterative art-making experience beneficial to artists, designers, and photographers alike. Working in small groups, students study with a variety of faculty across departments, explore and experience a variety of methods and materials, and are introduced to the conceptual framework of the artist in today's society. Class projects will address how artists and designers communicate to an audience, collaborate with others, and manage multi-step projects. They also will foster the development of a culture of constructive criticism and foreground the role of spontaneity and improvisation in the process of art making. Through this course, designed as a two-semester sequence, First Year students will explore all levels of artistic engagement, from the exploration of self identity to the exploration of the artist in the broader community. Successful completion of both First Year Studio courses is required for entry into major-specific studio courses in second year.

CFN 112. Design Core. 3 Credits.

CFN 113. Design Core. 3 Credits.

CFN 135. Ideas, Resources, and Materials. 1.5,3 Credit.

CFN 136. Resources II. 3 Credits.

CFN 150. Fine Art I. 3 Credits.

CFN 5000. Graduate Studio Foundation. 3 Credits.
This multi-media course introduces future educators to working with art materials, traditional and unconventional, commonly used in the studio components of art education programs in schools, museums and community organizations. The emphasis is on members of the class gaining profficiency through their own art making. Studio porjects are designed for adults with prior studio experience. Instruction and critique will be at the graduate level, with discussion of educational implications for educational program development kept secondary to the primary studio experience. Note: This is not a course in which students practice techniques tailored to beginners, amateurs or children. Enrollment restricted to 1st year MAT students.

CORCORAN GRAPHIC DESIGN (CGD)

CGD 1010. Fundamentals of Graphic Design. 3 Credits.
This course is an introduction to the visual components that serve as fundamental principles in the field of Design. Projects include the study, classification, and application of Gestalt theories of perception; color systems for designers; and pattern design. Course projects focus on visual relationships of form, image, type and grid structures.Students will be engaged in a series of projects that address 2D and 3D abstract forms and theirprofessional applications. Students will learn design methodology and processes, design language, and the critique process for designers. These design methods and processes will help students observe, understand, and articulate their intuitive visual decision-making skills. Professional practices for designers, project workflow, and professional presentation are integrated into course projects. Digital software tools and hand craft tools are learned and applied to course projects.Requirements: a working knowledge of OSX and Illustrator, InDesign, and Photoshop. Prerequisite: CDM 1200 Digital Design I.

CGD 2000. Design Studio I for CE/AFA. 3 Credits.
This course expands on the lessons learned in Design Concepts by covering design principles such as Visual Hierarchy, Principles of Composition, and Semantics. Typography, form, image, motion, space, and the grid are explored through projects. Students learn an iterative design process to explore concepts and ideas. This course requires a high level of execution through precise craftsmanship. Pre-requisites: CFN 1000 Communication Design, CDM 1200 Digital Design I, CDE 1000 Design Concepts, or CGD 1010 Fundamentals of Graphic Design. Formerly "Graphic Design Core II".

CGD 2050. Typography I. 3 Credits.
This course introduces students to one of the most integral components of visual communication- typefaces and their letter forms. Topics covered include typographic vocabulary, terminology, history, technology, classification, measurement, and syntax. Students will be introduced to typographic history, nationality, and technology. Students will learn visual hierarchy and the grid as organizing principle and system. Pre-requisites: CFN 1000 Communication Design or CDM 1200 Digital Design I, CDE 1000 Design Concepts or CGD 1010 Fundamentals of Graphic Design. In some terms this course may be cross-tallied at the undergraduate level as CGD 2050 and at the graduate level as CGD 6350. Students enrolled at the graduate level will complete additional assignments to earn graduate credit.

CGD 2060. Typography II. 3 Credits.
This is an intermediate studio course in typography. Topics covered include typographic vocabulary, terminology, history, technology, classification, measurement, and syntax. Projects explore audience, structure/syntax, content/meaning, visual hierarchy, and aesthetics in message building for visual communications. Students will further their knowledge of typographic history, nationality, technology, and the grid as organizing principle and system. Prerequisite: A grade of "C" or better in CGD 2050 Typography I, and CDE 2090 Sophomore Design Studio or CGD 2000 Design Studio I (CE/AFA).

CGD 3050. Typography III. 3 Credits.
This is a course in advanced typography. Topics covered include typographic vocabulary, terminology, history, technology, classification, measurement, and syntax. Projects will cover advanced visual hierarchy, sequence, narrative tools, and the grid as organizing principle and system. Students will explore typography as legible and expressive communication within cultural context. Students will further their knowledge of typographic history, nationality, and technology. Media utilized will include print and motion. Prerequisite: A grade of "C" or better in CGD 2060 Typography II, and CDE 2091 Design Sophomore Studio; or Department Chair's approval.

CGD 3060. Typography IV. 3 Credits.
This is a course in advanced typography. Projects will cover advanced visual hierarchy, sequence, kinetic type, narrative tools, and the grid as organizing principle and system. Students will explore typography as legible and expressive communication within cultural context. Letterform ideation will be investigated. Media utilized will include print and motion.Prerequisite: A grade of "C" or better in CGD 3050 Typography III , CGD 3090 Graphic Design Junior Studio or CDM 3090 Digital Media Design Junior Studio; or Department Chair's approval.

CGD 3070. Typography in Motion. 3 Credits.
This course focuses on advanced experimental typography for animation and motion graphics. Projects will focus on narrative, storyboarding, style frames, kinetic sequence, transitions, and workflow. Students will explore typography as legible and expressive communication within cultural context. Methods and iterative processes for experimental typeface design will be explored and developed. Prerequisite: A grade of "C" or better in CGD 3050 Typography III, CGD 3090 Graphic Design Junior Studio I or CDM 3090 Digital Media Design Junior Studio I; or Department Chair's approval.

CGD 3090. Graphic Design Studio III. 3 Credits.
In this advanced level course, students focus on interactive and interaction design. Course projects immerse studentsin interactive web design, and mobile apps design for smart phones and tablet devices. Students learn, employ, and engage in systems design, user experience, user interface design, user interaction, and responsive design.Student learn to use mobile devices (smart phones/tablet devices) and computers as digital tools to communicate designed messages and visual content. Student learn advanced design process which includes: iterative concept development, wire framing, prototyping, design development, craft, details, production, and coding. Software and coding used in course projects include Adobe Digital Publishing Suite (DPS), HTML, and CSS. Students will develop professional oral presentation skills by participating in weekly critiques. Project workflow, professional presentation, and professional practices for designers are integrated into course projects. At the end of the semester, students will obtain experience in professional design projects and skill sets, while understanding on-the-job expectations for a fast-paced professional design studio. This course is for Undergraduate Graphic Design majors only. Prerequisite: A grade of "C" or better in CDE 2091 Sophomore Design Studio II; or Department Chair's approval.

CGD 3091. Graphic Design Studio IV. 3 Credits.
In this advanced level course, students will focus on design as instrument for social change. The semester long course project is Design Ignites Change. The project focuses on a social change or a social awareness issue. Students will learn and develop skill sets in research, messaging, strategy, mood boards, branding, identity, production, and implementation. The project components include print design, interactive design, motion design, and social media. Students will learn advanced design processes and create a cohesive brand package as they workwith numerous project components and phases. The design process includes: iterative concept development, design development, craft, details, and production. Students will develop professional oral presentation skills by participating in weekly critiques. Project workflow, professional presentation, and professional practices for designers are integrated into course projects. At the end of the semester, students will obtain experience in professional design projects and skill sets, while understanding on-the-job expectations for a fast-paced professional design studio. This course is for Undergraduate Graphic Design majors only. Prerequisite: A grade of "C" or better in CGD 3090 Graphic Design Junior Studio III; or Department Chair's approval.

CGD 3960. Design Lab. 3 Credits.
This course offers a select group of undergraduate junior and senior graphic design students the unique opportunity to design and oversee production of projects for the Corcoran Gallery of Art and College of Art Design. Design Lab serves as an in-house design studio as students gain experience interacting with clients, managing deadlines, understanding and working within the limitations of their projects, and scheduling timelines. Elements of the design process covered in the course include writing design briefs and contracts, conceptual and design development phases, producing print-ready artwork, and fabrication coordination and supervision. Permission of department required for enrollment.

CGD 3961. Design Lab II. 3 Credits.
To be announced.

CGD 4090. Graphic Design Thesis I. 3 Credits.
Graphic Design Senior Thesis is comprised of three components: written paper, interview of a design professional, and a final graphic design thesis project. In this course, students select a topic related to the field of Design, develop a thesis statement and written paper through a research and writing phase. Graphic Design briefs pertaining to the development of the written thesis and paper are explored during the semester. This course is for BFA/Graphic Design only. Prerequisite: A grade of "C" or better in CGD 3091 Graphic Design Studio IV; or Department Chair's approval.

CGD 4091. Graphic Design Thesis II. 3 Credits.
Graphic Design Senior Thesis is comprised of three components: written paper, interview of a design professional, and a final graphic design thesis project. Students finalize the written thesis paper on a design-related topic. Then, students interview a prominent practitioner in the field of Design. As the third component of Graphic Design Senior Thesis, students translate their thesis paper into a graphic design thesis project. Upon completion, the thesis projects are presented in a special museum exhibition. This course is for BFA/Graphic Design only. Prerequisite: A grade of "C" or better in CGD 4090 Graphic Design Thesis I; or Department Chair's approval.

CGD 4120. Environmental Design. 3 Credits.

CORCORAN INTERIOR DESIGN (CID)

CID 0850. Color in Interiors. 0 Credits.
Preparing a cohesive color palette in the home is a challenging task, particularly when rooms are renovated over a period of time. This seminar will provide the student with the opportunity to learn the fundamentals of color application, as well as the skills necessary to refine their design strategy as their design needs change.

CID 0860. In My Home. 0 Credits.
For the aspiring non-professional, this course focuses on the basic elements of interior design. A simplified approach to the principles of design in a residential interor allows continuing education students the opportunity to explore interior design within the context of their own homes. This course is offered for non-credit only, and is recommended for those whose interest in interior design is limited to the decoration of their own homes.

CID 1000. Introduction to Interior Design. 3 Credits.
This introductory course provides students with an overview of the elements that comprise the practice of interior design. Studio assignments promote theoretical and analytical problem-solving skills. Students will learn the rudiments of the use of materials and finishes, interior construction, drafting and rendering, space planning, and color theory. This course is recommended for students considering interior design as a profession. This course may be cross-tallied as ID5000 at the graduate level for MA in Interior Design program prerequisites. Additional work is required for graduate level credit.

CID 1200. Stand on the Right, Walk on the Left: Human Response to the Urban Environment. 3 Credits.
This course explores the dynamics of people and space, how they interact with each other, and how this informs the way we design. Students will be immersed in a collaborative, interactive studio experience which will involve: instructor-led or self-guided expeditions in and around the city during class time; observation, data-collection, and thoughtful documentation of findings; conceptual sketching; and model making. An increased curiosity and awareness of our surroundings and the way we interact with our environment will lead to an introductory exploration of human factors including; scale, anthropometrics, ergonomics, universal design, and cultural contexts. Students will also engage in the study of texts and films which explore the basic frameworks of design at its core, and will be asked to react to the readings/viewings. Students will use photography and social media tools such as Pinterest and Instagram to explore and document observations in their own environment using the rich, dynamic setting of Washington DC. The final product of this studio will be a photo-documentary, inspired buy Jane Fulton Suri's "Thoughtless Acts," which probes ideas and asks questions similar to those we will be exploring in the course.

CID 1210. Elements & Principles of Interior Design. 3 Credits.
This introductory interior design studio focuses on the fundamental elements and principles of interior design.The studio explores the elements and principles of design as tools to create, manipulate, and affect interior environments. Specifically, the course explores point, line, plane, form, shape, color, texture, light, proportion, scale, balance, harmony, unity and variety, rhythm andemphasis in relation to 3D space. Students translate the elements and principles to 2D visual presentation strategies through the creation of physical and digital design boards. The elements and principles of design are explored in relation to architectural drawing as communication, 2D visual presentation, and 3D spatial experience.

CID 1250. Drawing for Interior Design. 1.5 Credit.
Architecture and Interior Design professionals use drawings to communicate ideas and designs to their clients. This course will introduce students to the skills of hand drawing and sketching of architectural interiors. The basics of orthogonal projections such as plan, section, elevation, and simple perspectives will be taught in this course.

CID 2000. Introduction to Perspective and Interior Rendering. 3 Credits.
This course provides an introduction to linear, two-, and three-point perspectives, and rendering of interior space (and elements within that space) in various media. Students will learn to observe, analyze, interpret, and reproduce what they see. Special attention will be paid to the expressive use of color, the interrelationships of forms, and the placement of the human figure in an interior space. It is recommended that students take this coures in a different semester than CID 2100, Color Theory for Interiors.

CID 2050. Representation/Documentation. 3 Credits.
Through a series of projects including drawing and model making, students will gain valuable skills in documenting visual culture, developing tools for representing design concepts. This studio course provides an in-depth study of the conventions of plan, section and elevation as they relate to visual experience. Problems expand the students' ability to translate between two-dimensional exercises and three-dimensional visual experience. This course is only offered during the Fall semester. This course may be cross-tallied as CID 5150 at the graduate level for MA in Interior Design program prerequisites.

CID 2090. Interior Design Studio I. 3 Credits.
In this course, students utilize the elements and principals of design and human factor considerations to explore the design of a compact space. Students learn an iterative design process to explore and develop concepts. The course provides continued emphasis on presentation, hand drafting, and translation of concepts to 3D spatial experiences. This course requires a high level of execution through precise craftsmanship.

CID 2091. Interior Design Studio II. 3 Credits.
In this course, students explore branding in relation to spatial environments. This approach to interior design focuses on the manipulation of space, the selection of furniture, finishes, and materials, and graphics development to create a unique experience and identity. The developed brand identity will be applied to the interior design, as well as presentation materials in a comprehensive and cohesive manor. This studio provides an introduction to commercial space planning, building codes, and ADA guidelines. Prerequisite: A grade of "C" or better in CID 2090 Interior Design Studio II; or Department Chair's approval.

CID 2100. Color Theory for Interiors. 3 Credits.

CID 3050. Interior Design Digital Applications I. 3 Credits.
This course focuses on the foundations of AutoCAD and basic drafting skills. Students learn the basics of computer-assisted drafting techniques, including basic drawing, dimensioning, layering, and various commands for drawing and document output. Prerequisite: CID 1000.

CID 3060. Revit I. 3 Credits.
Upon the completion of this course, students will be proficient in building information modeling (BIM). BIM creates coordinated, consistent, computable information that is used for design decision making, high-quality visual presentation production, construction documents, performance prediction, cost estimating, construction planning, and, eventually, for managing and operating a facility. Mirroring the real world of buildings and interiors, Revit Architecture helps students accurately capture their design concepts. The software will bridge students' visions from concept to reality through innovative design, accurate documentation, and efficient construction. Integrated bidirectional associativity helps ensure that any change to students' project information is reflected throughout the students' models, while parametric components offer an open, graphical system for conceptualizing and expressing detailed design intent. Course concepts will facilitate more precise conceptual design, which will enhance client understanding while supporting more efficient and sustainable production, construction, and fabrication. At times this course may be cross-tallied at the graduate level as CID 6060. Additional work is required to earn graduate credit. Prerequisite: CID 1000 Introduction to Interior Design.

CID 3090. Interior Design Studio III. 3 Credits.
This studio class pursues the aesthetic and technical principles of more complex and larger-scale residential and contract projects. Conceptual thinking, creative problem solving, and attaining project goals are stressed. Students work at a more advanced level in articulating and presenting design solutions. Drawing, model-making, and other presentation skills are stressed. Prerequisite: CDE 2091 Interior Design Sophomore Studio II.

CID 3091. Interior Design Studio IV. 3 Credits.
This course focuses on the design issues implicit in commercial spaces, including office, hospitality, retail, medical and institutional. Students will become acquainted with the organizational, social, physical, psychological, and cultural factors integral to the design of such spaces. Students will focus on one of the building project types and prepare a comprehensive design solution for a professional critique. Prerequisite: CID 3090 Interior Design Studio III.

CID 3100. Interior Lighting Design. 3 Credits.
This course provides an introduction to the effects of light on interior space, as well as to various lighting products and lighting systems. Students will learn about the lighting challenges for interior spaces and how to effectively meet them. The course teaches the basics of lighting layout, lighting terminology, and the lighting designer's role in the interior design process. Within the studio structure, students are expected to produce a complete lighting package, including a fixture schedule and reflected ceiling plan. At times this course may be cross-tallied at the graduate level as CID 6100. Additional work required for graduate level credit is outlined in the course syllabus. Prerequisite: CIR 1000 or CID 1000 Introduction to Interior Design, or permission of Department Chair. The textbook, Interior Lighting for Designers by Gary Gordon and Jim Nuckolls (either third or fourth edition), will be necessary for the first class.

CID 3110. Materials, Methods, and Finishes. 3 Credits.
This course surveys the major materials available to designers and architects, including their structure, properties, potential expressive qualities, and their use. Students learn how to integrate materials into the design and construction of interior spaces. The course familiarizes students with the selection of appropriate materials for various uses based on function, aesthetics, safety, comfort, and maintenance. During the course of this class, students will gain an understanding of construction documents including both drawings and specifications. At times this course may be cross-tallied at the graduate level as CID 6110. Additional work required for graduate level credit is outlined in the course syllabus. This course is only offered during the Fall semester. Prerequisite: CID 1000 Introduction to Interior Design. It is also recommended that CID 3050 Autocad I or CID 6060 Revit I is completed prior to enrolling in this course.

CID 3900. Interior Design Internship. 3 Credits.
Internships can help students develop marketable skills, establish professional contacts, and explore different career options. A good internship should offerthe student career-related experience in a setting where the student may learnabout professional practice in their field. While some administrative tasks arenecessary, these should be minimal with most of the work focusing on skillbuildingor educational opportunities. Continuing Education students are noteligible to receive credit for internships.Students are responsible for locating and securing individual internships, withthe assistance and approval of their department chair. To receive credit foran internship, the student needs to complete an internship contract and theappropriate registration form. The internship contract is the agreement betweenthe internship provider, the Corcoran, and the student; all three must be signed.Undergraduate StudentsTo be eligible to earn academic credit for an internship, students must havecompleted their Foundation Year or have earned equivalent credits (30).While students are free to do multiple internships while enrolled at the Corcoran,students cannot take more than one internship per semester. A 45-60 hour internship is equivalent to 1.5 credits and a 90-120 hour internship isequivalent to 3 credits.The student must receive signed approval from his or her department chairbefore he or she will be allowed to register for internship credit. The departmentchair's signature must appear on both the contract and the registration form orthe internship registration will not be processed. The contract must be turned into the Office of Student Affairs before the internship start date. The registrationor add/drop form must be submitted to the Registrar's Office before the add/drop deadline of the semester the student is seeking credit. Late contracts willnot be accepted and credit will not be given.In order to receive a grade for the internship the student is required to submita mid-semester evaluation and final evaluation of the internship experience.The internship provider is required to submit a final evaluation of the student'sperformance with a recommendation for a grade (pass/fail) no later than 10working days prior to the end of the semester. The student's department chair is responsible for reviewing the student and employer evaluations andsubmitting the final grade to the Registrar's Office.

CID 4060. Advanced Revit. 3 Credits.
This class expands upon the fundamental skills learned in Revit I, allowing students to produce independent projects that reflect the full scope of tools and techniques available to Revit users. At times this course may be cross-tallied at the graduate level as CID 7060. Additional work is required to earn graduate credit. Prerequisite: CID 3060 Revit I.

CID 4090. Interior Design Thesis I. 3 Credits.
Interior Design Senior Thesis is comprised of three components: a written paper, interview of a design professional, and a final interior design thesis project. In this course, students select a topic related to the field of Interior Design, develop a thesis statement and written paper through a research and writing phase. Interior Design project concepts pertaining to the development of the written thesis and paper are explored during the semester. This course is for BFA/Interior Design only. Prerequisite: A grade of "C" or better in CID 3091 Interior Design Studio IV; or Department Chair's approval.

CID 4091. Interior Design Thesis II. 3 Credits.
Interior Design Senior Thesis is comprised of three components: a written paper, interview of a design professional, and a final interior design thesis project. Students finalize the written thesis paper on a design-related topic. Then, students interview a prominent practitioner in the field of Interior Design. As the third component of Interior Design Senior Thesis, students translate their thesis paper into a interior design thesis project. Upon completion, the thesis projects are presented in a special museum exhibition. This course is for BFA/Interior Design only. Prerequisite: A grade of "C" or better in CID 4090 Interior Design Senior Thesis I; or Department Chair's approval. Prerequisite: CID 4090 Interior Design Thesis I.

CID 4600. Selected Topics in Interior Design. 3 Credits.
Through a changing selection of design studios with instructors drawn from the professional design community, this studio will offer a broad range of topics from which students may choose during their course of study. The shifting nature of the subject matter of this studio intentionally allows for topical issues in the design community to be addressed. Topic varies each time it is offered.

CID 5000. Introduction to Interior Design. 3 Credits.
This introductory course provides students with an overview of the elements that comprise the practice of interior design. Studio assignments promote theoretical and analytical problem-solving skills. Students will learn the rudiments of the use of materials and finishes, interior construction, drafting and rendering, space planning, and color theory. This course is recommended for students considering interior design as a profession. This course may be cross-tallied as CID 1000 at the undergraduate level.

CID 5100. Color Theory for Interiors. 3 Credits.
The use of color and interaction of color and light are essential elements of interior design. Through in-depth study of color sequences and primary, secondary and tertiary relationships, students will explore the effects of color on design concept and application. Using various media including painting, textiles and finishes, students will explore issues of color interaction. Throughout this studio class, students will work toward developing their own unique aesthetic as artists and designers. It is recommended that students take this coures in a different semester than CID 2000, Introduction to Perspective and Interior Rendering.

CID 5110. Perspective and Interior Rendering. 3 Credits.
This course provides an introduction to linear, two-, and three-point perspectives, and rendering of interior space (and elements within that space) in various media. Students will learn to observe, analyze, interpret, and reproduce what they see. Special attention will be paid to the expressive use of color, the interrelationships of forms, and the placement of the human figure in an interior space. It is recommended that students take this coures in a different semester than CID 2100, Color Theory for Interiors.

CID 5150. Representation/Documentation. 3 Credits.
Through a series of projects including drawing and model making, students will gain valuable skills in documenting visual culture, developing tools for representing design concepts. This studio course provides an in-depth study of the conventions of plan, section and elevation as they relate to visual experience. Problems expand the students' ability to translate between two-dimensional exercises and three-dimensional visual experience. This course is only offered during the Fall semester. This course may be cross-tallied at the undergraduate level as CID 2050.

CID 5200. Intro to Digital Presentation and Techniques. 3 Credits.
This class will explore the possibilities for creating, manipulating images, and transforming ideas using computer software. Students will learn basic tools and techniques along with the overall concepts of scanning and digitizing images, rendering elevations and perspectives and creating presentation boards and templates for the Interior Design and Exhibition Design profession. The course will introduce a variety of software from the Adobe Creative Suite. Students will experience enough knowledge to aid them in their future classes. Additional lab time is encouraged for class assignments and individual projects. CID 5000 Intro to Interior Design completion recommended prior to enrollment in this course but not required.

CID 6000. Interior Design Summer Studio. 3 Credits.
This course exposes the student to the studio environment for learning and exploring varioustopics related to design of the built environment. Through an intensive two-week series ofassignments, the student will be exposed to fundamental topics and skills requisite of theinterior design discipline. The program will model the ideals of studio culture, including regularpresentation, critique, and peer-review of ongoing and final work. The course will introducestudents to a design-thinking methodology with experiences in both analog and digital media inthe representation of interior design ideas.

CID 6010. Interior Design Studio I. 3 Credits.
Studio 1 introduces the fundamental conventions and principles of interior design, visual and verbal communication, formal analysis, and design process. Students will develop an awareness of spatial composition, perceptual sequence, basic program, and simple building systems related to the built environment.

CID 6020. Interior Design Studio II. 3 Credits.
Building on the foundation of CID Studio 1, this course will further student understanding of thefundamental conventions and principles of interior design. Emphasis will be placed on issues of specific program, site, or typology with a focus on understanding design standards and regulations. Through the completion of a series of projects, students will develop a deeper understanding of more complex spatial and anthropometric considerations. Additionally, students will be introduced to material and color systems.

CID 6050. Interior Design Digital Applications I. 3 Credits.
This course introduces digital applications as they relate to an interior design process. Students are introduced to the drawing methods of drafting and annotation in the examination of digital visualization as it relates to analysis and synthesis. Assignments concentrate on fundamental concepts of digital representation, including the creation of measured drawings, layer management, and various output formats.Formerly titled: AutoCAD II.

CID 6060. Interior Design Digital Applications II. 3 Credits.
Information modeling for an interior design process. Three-dimensional visualization, digital rendering, and the development of construction documents. Concept models, accurate documentation, and efficient construction. Prerequisites: CID 6050.

CID 6100. Interior Lighting Design. 3 Credits.
This course provides an introduction to the effects of light on interior space, as well as to various lighting products and lighting systems. Students will learn about the lighting challenges for interior spaces and how to effectively meet them. The course teaches the basics of lighting layout, lighting terminology, and the lighting designer's role in the interior design process. Within the studio structure, students are expected to produce a complete lighting package, including a fixture schedule and reflected ceiling plan. Prerequisite: CID 1000 Introduction to Interior Design, or permission of Department Chair. The textbook will be necessary for the first class. "Interior Lighting for Designers" by Gary Gordon and Jim Nuckolls. Either the 3rd or 4th Edition are fine. At times this course may be cross-tallied at the undergraduate level as CID 3100. Students wishing to pursue undergraduate credit should register for the undergraduate section. This course is only offered during the Fall semester.

CID 6110. Materials, Methods, and Finishes. 3 Credits.
This course surveys the major materials available to designers and architects, including their structure, properties, potential expressive qualities, and their use. Students learn how to integrate materials into the design and construction of interior spaces. The course familiarizes students with the selection of appropriate materials for various uses based on function, aesthetics, safety, comfort, and maintenance. During the course of this class, students will gain an understanding of construction documents including both drawings and specifications. At times this course may be cross-tallied at the graduate level as CID 6110. Additional work required for graduate level credit is outlined in the course syllabus. This course is only offered during the Fall semester. Prerequisite: CID 1000 Introduction to Interior Design. It is also recommended that CID 3050 Autocad I or CID 6060 Revit I is completed prior to enrolling in this course.

CID 6250. Portfolio and Resume Design. 3 Credits.
This course will introduce students to Portfolio and Resume Design. It will focus on developing a "brand" for each student, which is represented on their resume, portfolio, business cards, and other material that may be used during a job search. The purpose of this "brand" will be to set the students apart from other aspiring designers entering the job market to aid them in obtaining a job. Students will incorporate work from previous studios and classes that they have completed to include in the portfolio. The final deliverables will be a professional resume, cover letter and portfolio. Prerequisites: CID 6050 AutoCAD II or CID 6060 Revit I, and a minimum of 2 Interior Design Studios.

CID 6800. Directed Studies: Interior Design. 3 Credits.
This option is appropriate for degree students who want access to independent faculty supervision, lab areas, and supplies for independent projects, and do not need or desire extensive course instruction. This option is justified only if 1) the project content cannot be covered in an existing course, 2) the student's department deems it of substantive value to the student's educational goals and interests, and 3) the project work will be done outside of regularly scheduled class time.All directed studies are for credit (one to three credits). Students cannot take more than three credits of directed studies per semester. Students enrolled in directed studies will have access to the facilities and equipment at times arranged by the instructor. To enroll, students must submit a Directed Studies Contract that is available at the Office of the Registrar and obtain written permission from the instructor and the chair or program director of the student's department and when different, the course department. The directed studies instructor will be responsible for working with the student to establish project goals, oversee progress, and determine final course grades. Bachelor's Foundation students and Continuing Education students are not eligible for directed studies. Under certain circumstances, directed studies may be pursued by graduate students by combining participation in an advanced undergraduate course with extra independent assignments at the graduate level, as arranged in advance with the directed studies instructor.

CID 6900. Internship: Interior Design. 3 Credits.
For degree students only. Internships can help students develop marketable skills, establish professional contacts, and explore different career options.

CID 7010. Interior Design Studio III. 3 Credits.
Studio 3 concentrates on the application of building systems and spatial identity as they relate to the interior environment. Students explore specific design contexts and examine the relationships between site, program, and method. A comprehensive project will account for lighting, material specification, FFE, building systems, and sustainable building methods. Refined methods of representation, documentation, and communication will be explored including the conventions of construction documents.

CID 7020. Interior Design Studio IV. 3 Credits.
In Studio IV, students coordinate their design process with input from multiple disciplines. Students conduct specialized research and develop personal philosophies to execute a comprehensive design project. Integration of lighting, FFE, building systems, and sustainable building methods are essential components of the final project. Students will be required to establish a refined method of communicating their design intent through an advanced concentration on representational techniques.

CID 7060. Interior Design Digital Applications III. 3 Credits.
The use of digital design technology to convey advanced design concepts. Methods of representation explored using digital modeling, rendering, and fabrication. The relationship between virtual and physical models.

CID 7100. Construction and Detailing. 3 Credits.
Detailing skills are central to the success of any interior design process. This course allows students to understand the methodology and practice of designing and drawing interior construction details in a built environment. Intensive study of the integration of materials will leave students with confidence in their ability to contribute to the preparation of technical drawings, and to provide drawing references for fabrication of design concepts. Pre-requisite(s): CID 3050 AutoCAD I, or permission of Department Chair. This course is only offered during the Spring semester.

CID 7200. Advanced Lighting Applications. 3 Credits.
In this hands-on advanced lighting studio students will gain practical experience with lighting drawings, fixture/lamp specifications and fixture installations. The course is project oriented with students working in teams on a range of projects such as lighting design concept development working from images to three dimensional spaces, and developing RCP light plans and specifications. The teams will then create working fixtures using found or everyday objects, create flashlight spaces, and participate in a Festival of Lights under the directions of the instructor. Prerequisite: CID 6100 Lighting Design or by permission of the Department Chair.

CID 7310. Advanced Digital Graphics. 3 Credits.
This course is intended to expand upon students' understanding of the fundamentals of computer-aided design through exploration of digital media. These explorations include systems of analysis, meaning of media, expression, syntactical, and spatial language. Students will focus on both two-dimensional graphic techniques/concepts and 3D modeling and image making techniques/concepts. Prerequisites: CDM 1200 Digital Design I (or equivalent experience), and CID 3050 AutoCAD I, CID 6060 AutoCAD II or CID 6060 Revit.

CID 7600. Selected Topics in Interior Design. 3 Credits.
Through a changing selection of design studios with instructors drawn from the professional design community, this studio will offer a broad range of topics from which students may choose during their course of study. The shifting nature of the subject matter of this studio intentionally allows for topical issues in the design community to be addressed. Topic varies each time it is offered. Limited to MA Interior Design candidates only.

CID 7800. Interior Design Pro-Thesis Seminar. 3 Credits.
Through a combination of research, writing and pre-design studies, students will formulate a thesis proposal for the final semester of study in the Master of Arts in Interior Design program. During this preparatory semester, students will document their research and experiences under the supervision of the instructor. This course is open to students enrolled in the Master of Arts in Interior Design program who have completed CID 7010 Interior Design Studio III; or by permission from the Department Chair. This course is only offered during the Fall semester.

CID 7900. Interior Design Thesis. 3 Credits.
The student is expected to work at a professional level in completing a comprehensive design project. Each student will undertake a rigorous exploration of a project of his or her own design and development, under the supervision of a thesis advisor. The process will culminate in a public review of the project with jurors drawn from the faculty as well as the professional design community. This course is only offered during the Spring semester.

CORCORAN PHOTOGRAPHY (CPH)

CPH 0899. Digital Photography Basics. 0 Credits.
This short non-credit course is designed for digital camera newcomers who want to develop photographic skills, enhance pictures on the computer, and make digital prints. The curriculum introduces students to concepts in digital imaging and features of the digital camera. Students will learn about and practice shooting in aperture and shutter priority modes under different lighting conditions. Composition, depth of field, motion, raw file format, storage issues and color management concepts will be discussed. Basic methods of image enhancement using Adobe Photoshop are demonstrated and applied in preparing pictures for printing. Assignments will be reviewed on technical and aesthetic criteria.

CPH 1090. Photography Fundamentals I: Light Studies and Optical Culture. 3 Credits.
Light and optics are the fundamental elements of photographic media and of contemporary media culture. This Foundation year course introduces students to the formal characteristics of light and lenses by surveying a variety of image-making practices, from primitive photographic devices to digital photography and video. Through a combination of classroom talks and hands-on projects, students will encounter principles of black-and-white and color photography, as well as learning camera controls that open up a wide range of expressive possibilities. Historical antecedents, contemporary practices, and strategies of critical interpretation will be discussed in relation to specific assignments throughout the semester.

CPH 1091. Photo Fund II: Techniques/Practice. 3 Credits.
This film-based course for prospective photography majors and others interested in furthering their photography abilities extends students' existing camera and darkroom skills through a thorough assessment of individual image-making abilities. Students will learn advanced methods for making black-and-white negatives and prints, including controls for exposing and developing, as well as encountering new film formats and types. Practical instruction is accompanied by assignments that explore different genres and allow students to develop their own personal approaches.

CPH 2090. Photography/Photojournalism Studio I. 3 Credits.
Students explore personal sources of image making, strategies for editing, and different ways of seeing while refining their technical abilities. Assignments provide a structure for individual expression and interpretation while developing an awareness of photographic traditions, including photojournalism and documentary modes, and of the current state of contemporary practices. Students develop confidence and rigor in their approaches within an atmosphere of exploration and risk-taking. Fine-art photography and photojournalism students meet together and participate in frequent group and individual critiques, which promote intensive dialogue and proficiency in critical thinking.

CPH 2091. Photography Studio II. 3 Credits.
Students explore personal sources of image making, strategies for editing, and different ways of seeing while continuing to refine their technical abilities. This course continues the progression from Photography Studio I, but concentrates on discovering the sources of the student's impulse to make art and on developing a process for finding ways to express these sources using the photographic medium. For Fine Art Photography majors only. Pre-requisite: CPH 2090 Photography Studio I.

CPH 2100. Media Lab I. 3 Credits.
Required of Fine Art Photography and Photojournalism majors and elective for other BFA and BA students. This course extends the traditional use and control of photographic materials into the digital realm, exploring the scanning of negatives, the use of the digital darkroom for editing and tonal control, and the comparison of different output devices and materials available to the photographer. Discussions also include the integration of digital tools with traditional approaches to photography as well as non-traditional approaches, such as multimedia and animation. Issues dealing with presentation and the choice of archival inks and papers are covered. The goal is to familiarize students with the digital tools and materials, so as to allow freedom of personal expression and an awareness of the integration of technique, medium, and content. Formerly titled "Digital Photography for PH/PJ". Prerequisite: CPH 1000 Technique and Practice, or permission of instructor.

CPH 2110. Color Photography. 3 Credits.
This class introduces the student to the materials, techniques, and aesthetics of making color photographs using traditional chemical materials. Initially, the class will explore the use of a variety of transparency materials; however, the emphasis of the class will be on making prints from color negatives. The prints will be produced using enlargers with color filtration and an automatic roller-transport color processor. The aesthetics of color photography will be examined through group critiques and discussions of work by contemporary color photographers. Prerequisite: CPH 1000 Technique and Practice, CPH 1200 Introduction to Photography, or permission of the instructor.

CPH 2301. Digital Photography for Fine Art. 3 Credits.
This course is specifically designed for Fine Art and other non photographic majors who want to learn the fundamentals of digital photography. The class will cover all aspects of digital photography from proper use of cameras, how to properly scan both film and flatwork and how to use Adobe Photoshop CS 6 and Adobe Bridge CS 6 to edit and organize their work. There will be an emphasis on making fine prints using state of the art ink jet printers up to 44 inches wide. Students will be encouraged to explore how their photography fits into the content of their other work as well as how photographs can stand on their own. Current issues in photography will be explored through classroom discussions and critiques. There are no prerequisites and the class assumes no previous experience.

CPH 2350. The Extended Image. 3 Credits.
This course is for anyone interested in non-traditional photography, as well as for artists working in other media who wish to expand their use of photographic imagery. Students will learn to break away from the "classic" print by exploring the likes of soft focus, camera movement, pinhole and toy cameras, hand-applied color, paint-on developer, print toning, flashlight drawing, photograms, magazine lift, Polaroid transfer, photo collage, and blueprints, among other techniques. Emphasis (where possible) will be on simple, inexpensive, and nontoxic techniques and materials. Pre-requisite: CPH 1000 Photography Technique and Practice, CPH 1200 Introduction to Photography; or instructor's approval. Portfolio review may be required.

CPH 3050. Media Lab II. 3 Credits.
This course introduces students already familiar with still photography to time-based media, including video and audio. Over the course of the semester students will script, shoot/record, edit, and present projects including a silent video, a sound piece or audio package, and a video with audio. The history of time-based media will be examined and its influence traced through pop culture, art history, and conceptual and technical analyses. Basic techniques in Final Cut Pro and audio software will be covered. This course fulfills a PH and PJ major requirement, is open to all BFA majors and other degree students by permission of the instructor, and is a prerequisite for more advanced video classes. Prerequisite: CPH 1000 Technique and Practice or CPH 1200 Introduction to Photography. Formerly "Digital Video for PH/PJ" and "Media Lab".

CPH 3070. Studio and Location Lighting for Photographers. 3 Credits.
For PH/PJ majors only. This course examines qualities of light and explores creating and controlling light in a variety of photographic situations for desired outcomes, e.g., natural daylight supplemented with strobe light, studio lighting using single and multiple light set-ups, and on-location lighting. Various lighting methods are explored through three-dimensional still life's and portraits made in the studio and for assignments. Students are asked to keep a lighting journal of their techniques and progress. Prerequisite(s): CPH 2090 Photography Studio I or CPJ 2090 Photojournalism Studio I.

CPH 3090. Photography Studio III. 3 Credits.
The fine art photography major's third year is spent exploring the connections between ideas and photo-based techniques; between process and content. These explorations are the basis for discussions, assignments, field trips, and critiques. Students also study theory and criticism, with related assignments designed to promote a better understanding of the critical process. Students are encouraged to develop their own voices and to take responsibility for their own ideas through various strategies for the sequencing, construction, presentation, and existence of their work in different contexts (gallery wall, books, installation, video projections, internet, etc) and through self-assigned projects, which often become the nucleus of the students' senior-year thesis work. Prerequisite: CPH 2091 Photo Studio II.

CPH 3091. Photography Studio IV. 3 Credits.
This course continues the objectives of PH3090 Photography Studio III, with an emphasis on synthesizing the research and experimentation of that course to develop a student's ability to work in a self-directed fashion. Prerequisite: PH3090 Photo Studio III.

CPH 3120. Photography/Photojournalism Seminar I. 3 Credits.
This departmental seminar reflects on and reinforces issues of topical concern to photographers and photojournalists, as an adjunct to students' studio coursework. Topics will vary from year to year and when possible will be based on museum exhibitions, publications, and contemporary culture and events.

CPH 3200. Advanced Black and White Printing. 3 Credits.
This intensive darkroom course allows students to pursue work of their own choosing while learning advanced controls for black-and-white printing. The emphasis is on gaining the skills to make your prints look exactly as you want them to. Topics to be covered include local and overall contrast controls, toning for impact and for archival quaility, masking and differential exposure, multiple printing, choices of paper tonality and surface, and the differences between condenser and cold-light printing. Students will work with their own negatives, which should be developed outside of class time. Prerequisite: CPH 1000 Photo Technique and Practice, CPH 2200 Intermediate Photography, or permission of the instructor.

CPH 3260. Advanced Digital Photography. 3 Credits.
This course is for students who know the basics of digital imaging, printing, and workflow and want to increase their skills and competencies in these areas in a workshop environment. Students will learn more refined and subtle approaches to editing and printing their photographs, develop a personal workflow process that is efficient and confidence-building, and benefit from individual and group critiques of their personal projects. The emphasis will be on exploring the creative possibilities of the digital darkroom, on integrating advanced digital techniques and approaches so that they serve the content of the image and the intentions of the image-maker, and on making high quality prints from both digital originals and scanned film. The class will be taught in an up-to-date digital lab using Adobe's latest Creative Suite version of PhotoShop and a choice of printers and film and flatbed scanners. Among the subjects covered are varieties of ink-jet printers and papers, color profiles and color management, test printing and proofing, advanced scanning and re-sampling, and creating master files. Students will also learn contemporary ideas about digital asset management (DAM). Prerequisite: CPH 2100 Media Lab 1, or permission of instructor.

CPH 3400. El Salvador Studio: International Experience/ Transnational Identity. 3 Credits.
With some two million Salvadorans living in the U.S.-500,000 of them in the greater Washington, D.C., area-the people of El Salvador offer a lens into issues of migration and cultural identity that are central to much contemporary art and photography. El Salvador: International Experience/ Transnational Identity, a seminar/studio and study-away course peers into this lens. Through readings, guest speakers, documentaries, first-hand experiences, interviewing artists and the study of an important art collection of Salvadoran art, students learn about the history and culture of El Salvador and its diaspora communities in the U.S., become mentors and ambassadors of culture, and probe the artist's role in the mediation of one's sense of self and place in a global/local context.During the seminar, students develop research and interviewing skills and learn to work collaboratively. With the assistance of the Corcoran's Public Education department, and in partnership with Salvadoran students and cultural figures, students will help develop an interdisciplinary outreach program to be used in schools and museums in Washington DC and in El Salvador that links art to contemporary life. Open to juniors and seniors, as well as graduate students from all Corcoran programs. Pre-requisite for CPH 3401 El Salvador/ Travel: International Experience/Transnational Identity.

CPH 3401. El Salvador/Travel: Internationall Experience/ Transnational. 3 Credits.
The travel component of the course provides an opportunity for cultural exchange and for the application of an integrated model of art and social practice in a global/local context. By in situ exploration, conducting video interviews of artists and key cultural figures, and by leading educator workshops for youth, Corcoran students partner with students in El Salvador, empower young people, provide new models of engagement, and together construct a visual document of the artistic scene of the 1980s in El Salvador and its relevance to the current, transnational, cultural milieu. Travel expenses for CPH 3401 are additional. Pre-requisite: CPH 3400/6400 or permission by the instructor.

CPH 3450. Pre-Digital Alternative Process. 3 Credits.
This workshop-style course allows students to investigate new and personal directions using alternative photographic processes such as albumen, salted paper, gum bichromate, platinum/ palladium, and mordançage, leading to a fully realized portfolio, book, or other personal project. The course explores the creation of large-format digital negatives. Field trips include a visit to a Daguerreotype studio in New York City. Invention, experimentation, and risk will be strongly encouraged in this intermediate to advanced level class. Students will be required to provide their own chemistry and supplies for their final project. Prerequisite: CPH 2250 Extended Image, or permission of instructor.

CPH 3640. Advanced Studio Lighting: Commission Project. 3 Credits.
Students will work collaboratively with two professional photographers to produce 5-10 photographic portraits and 5-10 short videos of Foreign Service employees for an exhibition at the U.S. Department of State's new U.S. Diplomacy Center. Through an immersive, hands-on approach, students will learn the different aspects of commissions and exhibitions, including research, project management, collaboration and production. Students will also learn about historical and contemporary aesthetic approaches to photographic portaiture and will master technical issues such as lighting and interviewing skills. This coures is aimed toward photography and photojournalism students who want to learn to work collaboratively in a real-life commission situation.Pre-requisite: CPH 3070 Studio Lighting and CPH 3050 Media Lab II or equivalent.

CPH 3800. Independent Study: Photography. 3 Credits.
This option is appropriate for degree students who want access to independent faculty supervision, lab areas, and supplies for independent projects, and do not need or desire extensive course instruction.

CPH 3900. Internship: Photography. 1 Credit.
For degree students only. Internships can help students develop marketable skills, establish professional contacts, and explore different career options.

CPH 4090. Photography Thesis I. 3 Credits.
As a complement to Senior Seminar, Senior Thesis Studio emphasizes process and practice in the development of a senior thesis project. The work evolves from a studio and seminar atmosphere that stresses individual and group critiques, as well as readings and discussions. Students are responsible for planning and executing a final thesis exhibition that meets professional standards and pushes their visual language and conceptual development. Various modes of presentation are discussed and demonstrated. During the fall semester, students exhibit their work-in-progress (White Walls Gallery) and participate in a critique with other Corcoran faculty. The work-in-progress critique at the end of the fall semester represents a pivotal moment in the development of the thesis exhibition and will be judged accordingly by the Studio faculty. Additionally, students will present and defend their work in the Photography Department's Departmental Review, in preparation for their exhibition during the spring semester. Prerequisite: CPH 3091 Photography Studio IV.

CPH 4091. Photography Thesis II. 3 Credits.
Senior Thesis Studio emphasizes process and practice in the development of a senior thesis project. The work evolves from a studio and seminar atmosphere that stresses individual and group critiques, as well as readings and discussions. Students are responsible for planning and executing a final thesis exhibition that meets professional standards and pushes their visual language and conceptual development. Various modes of presentation are discussed and demonstrated. During the spring semester, students continue to develop and refine their thesis project, so as to exhibit it in the thesis exhibition (Corcoran Gallery of Art). The latter part of the semester is dedicated to preparing the student to go out into the world as a practicing artist, interacting with visiting artists, with the public, continuing to look at a variety of artists' approaches, while pursuing a new body of work. Prerequisite: CPH 4090 Photo Thesis I.

CPH 4120. Photography/Photojournalism Seminar II. 3 Credits.
This course is a complement to Fine Art Photography Senior Thesis Studio (CPH 4090) and Photojournalism Senior Studio (CPJ 4090). This course explores issues of photographic voice, precedent and impact in the art world and publishing worlds. Students develop an awareness of the context in which they are making work by addressing contemporary issues through writing and oral presentations, visiting speakers, readings, exhibitions, and critiques with Corcoran faculty and outside experts. An emphasis will be placed on engaged participation and articulate and convincing writing addressing a student's ideas and aspirations in relation to traditions, practices, and discourses of photo-based art and media. This course is designed to assist Fine Art Photography and Photojournalism students in the process of working through a successful Senior Thesis project as well as in developing a well-rounded artistic and photojournalistic practice.

CPH 4170. Professional Practices for Photography. 3 Credits.
For photography majors only. This course facilitates the transition from a structured learning environment to real life. The range of experiences discussed includes working in commercial photography, in a classroom, or in commercial galleries or museums. In addition to field work, a classroom component provides information about current professional practices in photography. Topics include models' releases, copyright laws, taxes, contracts, graduate schools, resume writing, and business card and portfolio preparation, as well as others. Prerequisite: CPH 3091 or permission of department.

CPH 4251. Making Meaning: Narrative and the Art of the Photography Book. 3 Credits.
This advanced studio-based seminar engages with the traditions and practices of the photographic book to examine and explore narrative strategies useful to today's artists/photographers. Through close readings of such classic 20th century book works as Walker Evans's American Photographs, Wright Morris's The Inhabitants, Robert Frank's The Americans, Ralph Gibson's The Somnabulist and Déjà Vu, Larry Clark's Tulsa, Joel Sternfeld's American Prospects, and Alex Soth's Sleeping by the Mississippi, students will gain insight into ways of structuring their own photographic projects. On completion of the course, students will be expected to have sequenced and produced a book-length collection of their own photographs, in consultation with the instructor. This course can be taken as a substitute for CPH 3120, Junior Seminar. Former name: The Photo Book.

CPH 6070. Studio and Location Lighting. 3 Credits.
Introduction to studio and location lighting. Strobe and continuous lighting equipment; light modifiers and grip equipment; mixed sources light; and aesthetic approaches using artificial and ambient light.

CPH 6400. El Salvador Studio: International Experience/ Transnational Identity. 3 Credits.
With some two million Salvadorans living in the U.S.-500,000 of them in the greater Washington, D.C., area-the people of El Salvador offer a lens into issues of migration and cultural identity that are central to much contemporary art and photography. El Salvador: International Experience/ Transnational Identity, a seminar/studio and study-away course peers into this lens. Through readings, guest speakers, documentaries, first-hand experiences, interviewing artists and the study of an important art collection of Salvadoran art, students learn about the history and culture of El Salvador and its diaspora communities in the U.S., become mentors and ambassadors of culture, and probe the artist's role in the mediation of one's sense of self and place in a global/local context.During the seminar, students develop research and interviewing skills and learn to work collaboratively. With the assistance of the Corcoran's Public Education department, and in partnership with Salvadoran students and cultural figures, students will help develop an interdisciplinary outreach program to be used in schools and museums in Washington DC and in El Salvador that links art to contemporary life. Open to juniors and seniors, as well as graduate students from all Corcoran programs. Pre-requisite for CPH 3401 El Salvador/ Travel: International Experience/Transnational Identity.

CPH 6450. Pre-Digital Alternative Process. 3 Credits.
1. Exploration of Salted Paper, Platinum printing, Mordencage, production of large format negatives and Wet Plate Processes 2.Alternative presentation methods 3.Exploration of the marriage between concept and process Restricted to This is a graduate level course. (Same as CPH 3450).

CORCORAN PHOTOJOURNALISM (CPJ)

CPJ 2091. Photojournalism Studio II. 3 Credits.
This course continues the progression of CPH 2090 Photojournalism Studio I but focuses entirely on the techniques, practices, and ethics of photojournalism itself. Assignments, classroom visitors, field trips, and readings will deepen students' understanding of the field and increase their skills for researching, photographing and editing stories. Prerequisite: CPJ 2090 Photojournalism Studio I.

CPJ 3090. Photojournalism Studio III. 3 Credits.
For Photojournalism majors only. Classes in this third-year course for photojournalism majors examine the similarities and differences in photojournalism in newspapers, magazines, television, the Internet, and other media. In additon to short-term, deadline-driven assignments, students undertake long-term projects. Topics include still and moving images, writing and editing needs in a variety of assignments, journalistic ethics, and communication laws. Prerequisite: CPJ 2091 Photojournalism Studio II.

CPJ 3091. Photojournalism Studio IV. 3 Credits.
For Photojournalism students only. In this continuation of CPJ 3090 students research, report and photograph a longterm narrative project. Through guest speakers, readings and assignments students consider different modes of practice, journalistic ethics, and communication laws. Multimedia approaches are explored as part of the course. Prerequisite: CPJ 3090 Photojournalism Studio III.

CPJ 3300. Speed of Sound. 3 Credits.
Great audio is a key component to compelling multimedia and video. Over the course of this class, audio reporting, collection, and postproduction techniques are explored and put into practice as a means to sharpen skills and advance understanding of the role and power of audio in visual journalism. Prerequisites: CPH 3050 and CPJ 2090 or CPJ 2091, or CPH 2090 and CPH 2091.

CPJ 4050. Picture Editing. 3 Credits.

CPJ 4090. Photojournalism Thesis I. 3 Credits.
In the final year of the Photojournalism curriculum, the emphasis is on developing individual strengths and style in the context of a sophisticated understanding of how photographic media shape and reflect public opinion. Students define, propose, research and initiate a longterm project that will culminate in the Spring semester Senior Thesis exhibit. Intensive one-on-one and group critiques are integrated into the course as the students explore various approaches to their chosen subject matter. Prerequisites: CPJ 3091 Photojournalism Studio IV and permission of the department.

CPJ 4091. Photojournalism Thesis II. 3 Credits.
This course continues the objectives of CPJ 4090 and focuses on the completion of the students' thesis work, which results in an exhibition at the Corcoran Gallery. Portfolio development and critique prepares students for the onset of their careers. Prerequisites: CPJ 4090 Photojournalism Thesis I and permission of the department.

CPJ 4170. Professional Practices for Photojournalism. 3 Credits.
For Photojournalism students only. This classroom complement to students' internship experiences examines the professional contexts in which today's photojournalism takes place and incorporates business practices, ethics, and economic realities. Practical approaches for working across mutliple platforms are explored. Students will meet with working professionals and experts during the semester and will develop their portfolios, resumes and web identities for presentation in meeting the professional demands of the field. Prerequisite: CPJ 3091 Photojournalism Studio IV.

CPJ 4340. Project-Driven Website Design. 3 Credits.
Technical and conceptual introduction to web design; visual design; fundamentals of website structure and navigation; accessibility and usability; writing HTML and CSS; content management systems; the web as a platform for both client-driven and self-published work. Prerequisites: DM1200 Digital or DM 2220 or FN1000.

CPJ 4600. Web Essay. 3 Credits.
This class will teach photographers to build essays with still photography images and audio files. Over the course of the semester students will propose, research, edit and produce a series of audio/stills essays for web publication. Skills in developing and executing photo stories will be addressed as will effective audio gathering and editing. Audio gear and laptops required. Prerequisite: CPH 2090 Photography Studio I, CPJ 2090 Photojournalism Studio I, or permission of department.

CPJ 6010. Photojournalism Graduate Seminar I. 3 Credits.
This is the first in a three-semester series of courses exploring traditional and non-traditional uses of photographic imagery in the media. Over the semester the class will examine photojournalism to determine the elements within an image, sequence or mode of publication that are most effective in communicating a concept or representing human experience. The class will run as a series of lectures, visiting artists, field trips and group projects.

CPJ 6020. Photojournalism Graduate Seminar II: Approaches to Photo Editing. 3 Credits.
The course includes modules on the theory and aesthetics of editing and will enable students to develop creative skills for translating ideas into picture stories. Students will develop newspaper and magazine picture editor's management skills from managing assignments and photographers to storytelling in newspapers and magazines in print and online. Disscussions on the communicative qualities of images how they affect decisions of picture use in publications and on the web.

CPJ 6024. Photojournalism Seminar II: Danish Embassy. 3 Credits.
To be announced.

CPJ 6025. PJ Sem II: Theories of Change/ New Forms of Radical Photography. 3 Credits.
In questioning how photographers collaborate with NGO's, policy makers, community activists and many others, this course will examine if and how creative work can radicalize civic institutions like the press, citizenship and even government toward greater justice and equity. With a focus on three arenas examined through visual arts: violence, the environment and global equity; the class will present students with a comprehensive window into the discourse and practice(s) of socially engaged art, film, and photography. Through critical discussions, field trips, and visiting artists, the class will create a blueprint and staging ground for students to activate these ideas within their own areas of interest.

CPJ 6050. Advanced Multimedia Lab I. 3 Credits.
In this intensive, required course all MA in CPJ students are immersed in the basics of audio collection and production, integration of still images into audio timelines, video techniques and post-production. Three projects are completed through the course of the semester and grow increasingly complex. Final projects are published on a webpage conceived by the student.

CPJ 6060. Advanced Multimedia Lab II: Editing and Production. 3 Credits.
Reserved for MA/PJ requirement.

CPJ 6100. Research, Reporting, and Writing: Contemporary Journalism Practice. 3 Credits.
Students go beyond the basics in story coverage exploring effective research techniques, interview techniques, and writing for breaking news as well as short and long term projects. Through lectures, writing assignments, intensive workshops as well as individual and team assignments, students develop and begin to hone the skills of effective story coverage for web and print publications. This course works closely with the Photojournalism Story and Narrative and Advanced New Media Lab courses. A critical reading of contemporary media is emphasized throughout the course.

CPJ 6110. Story and Narrative in Photojournalism. 3 Credits.
At the heart of photojournalism is the human condition and the day-day-lives of those around us. Through this course students analize effective visual story telling with still images. Students develop an understanding of what makes a strong photo story and how to pursue compelling images. A series of student-generated projects is completed through the course of the semester.

CPJ 6300. Speed of Sound. 3 Credits.
Great audio is a key component to compelling multimedia and video. Over the course of this class, audio reporting, collection, and postproduction techniques are explored and put into practice as a means to sharpen skills and advance understanding of the role and power of audio in visual journalism. Prerequisite: CPJ 6050.

CPJ 6401. El Salvador Travel: International Experience/ Transnational Identity. 3 Credits.
The travel component of the course provides an opportunity for cultural exchange and for the application of an integrated model of art and social practice in a global/local context. By in situ exploration, conducting video interviews of artists and key cultural figures, and by leading educator workshops for youth, Corcoran students partner with students in El Salvador, empower young people, provide new models of engagement, and together construct a visual document of the artistic scene of the 1980s in El Salvador and its relevance to the current, transnational, cultural milieu. Travel expenses for CPH 3401 are additional. Pre-requisite: CPH 3400/6400 or permission by the instructor.

CPJ 6450. Pre-Digital Alternative Processes for Photography. 3 Credits.
1. Exploration of Salted Paper, Platinum printing, Mordencage, production of large format negatives and Wet Plate Processes 2.Alternative presentation methods 3.Exploration of the marriage between concept and process Restricted to
Must have photographic experience prior to this course. Recommended background: photographic skills. (Same as CPH 3450, CPH 3640).

CPJ 6600. Web Essay: Effective Storytelling with Audio and Images. 3 Credits.
This class will teach photographers to build essays with still photography images and audio files. Over the course of the semester students will propose, research, edit and produce a series of audio/stills essays for web publication. Skills in developing and executing photo stories will be addressed as will effective audio gathering and editing. Audio gear and laptops required. Restricted to students with advanced level with still photography skills; advanced knowledge of Adobe Premiere or Final Cut required of graduate students. Prerequisites: CPH 2090 and CPJ 2090 or permission of department for BFA and BA students; CPJ 6110 and CPJ 6050 or portfolio review and permission of department for graduate students. Recommended background: advanced abilities in still photography and/or photojournalism. (Same as CPJ 4600).

CPJ 6640. Advanced Studio Lighting: Commission Project. 3 Credits.
Students will work collaboratively with two professional photographers to produce 5-10 photographic portraits and 5-10 short videos of Foreign Service employees for an exhibition at the U.S. Department of State's new U.S. Diplomacy Center. Through an immersive, hands-on approach, students will learn the different aspects of commissions and exhibitions, including research, project management, collaboration and production. Students will also learn about historical and contemporary aesthetic approaches to photographic portaiture and will master technical issues such as lighting and interviewing skills. This coures is aimed toward photography and photojournalism students who want to learn to work collaboratively in a real-life commission situation.

CPJ 6800. Independent Study: Photojournalism. 3 Credits.
This option is appropriate for degree students who want access to independent faculty supervision, lab areas, and supplies for independent projects, and do not need or desire extensive course instruction.

CPJ 6900. Internship: MA Photojournalism. 3 Credits.
For degree students only. Internships can help students develop marketable skills, establish professional contacts, and explore different career options.

CPJ 7010. Photojournalism Graduate Seminar III: The Medium and the Message. 3 Credits.
This course is designed to support and challenge New Media Photojournalism students as they work through the concepts of their thesis work and presentations. Units will address the essential elements of exhibitions, social media, online publishing, and community engagement. A combination of case studies, visiting lecturers and practical exercises will be used to explore ideas and develop multi-platform strategies for publishing work. This course functions as a complement to CPJ 7800 PJ Thesis Workshop.

CPJ 7251. Making Meaning: the Photography Book. 3 Credits.
This advanced studio-based seminar engages with the traditions and practices of the photographic book to examine and explore narrative strategies useful to today's artists/photographers. Through close readings of such classic 20th century book works as Walker Evans's American Photographs, Wright Morris's The Inhabitants, Robert Frank's The Americans, Ralph Gibson's The Somnabulist and Déjà Vu, Larry Clark's Tulsa, Joel Sternfeld's American Prospects, and Alex Soth's Sleeping by the Mississippi, students will gain insight into ways of structuring their own photographic projects. On completion of the course, students will be expected to have sequenced and produced a book-length collection of their own photographs, in consultation with the instructor.

CPJ 7320. Fine Printing Technique. 3 Credits.
This course is for graduate New Media Photojournalism students who know the basics of digital imaging, printing, and workflow and want to increase their skills and competencies in these areas in a workshop environment. Students will learn more refined and subtle approaches to editing and printing their photographs, develop a personal workflow process that is efficient and confidence-building, and benefit from individual and group critiques of their personal projects. The emphasis will be on exploring the creative possibilities of the digital darkroom, on integrating advanced digital techniques and approaches so that they serve the content of the image and the intentions of the image-maker, and on making high quality prints from both digital originals and scanned film. The class will be taught in an up-to-date digital lab using Adobe's latest Creative Suite version of PhotoShop and a choice of printers and film and flatbed scanners. Among the subjects covered are varieties of ink-jet printers and papers, color profiles and color management, test printing and proofing, advanced scanning and re-sampling, and creating master files. Students will also learn contemporary ideas about digital asset management (DAM).

CPJ 7340. Project Driven Website Design for NMPJ. 3 Credits.
This class guides students through the process of bringing a large body of work or project to life through a website. Explored through the semester are questions of how to drive website design with content, engage viewers and nurture and build upon bodies of work. Each student will be expected to have join the class with a thesis project or equally substantial body of work upon which to base the development of a site. Project deadlines are linked to the Corcoran thesis process.

CPJ 7350. Nuancing the Story: Advanced Post Production for NMPJ.. 3 Credits.
This course explores motion graphics and visual effects for video and film. Asset management, timeline work flow, keyframes, sound, compositing techniques, basic keying, effects, lighting, and camera are just some of the elements and reviewed and taught in this course. Professional techniques and standards are explored for timeline based special effects. Students learn advanced asset management, effects, and presets. The focus will be on enhancing existing projects and preparing a professional demo reel of work.

CPJ 7800. Thesis Workshop. 3 Credits.
This workshop-style course focuses on student's projects and progress in the research and production of a thesis project for graduation from the New Media Photojournalism program. Arranged as a series of team-led workshops, group and individual critiques, coaching sessions, and work with outside mentors, the class provides a productive atmosphere as students build and refine their projects. This is where the rubber hits the road. The proof gets into the puddingequired of anyone who is working on thesis for Spring exhibit and defense.

CPJ 7815. Thesis Travel Project. 3-6 Credits.
This course provides structured support for New Media Photojournalism students undertaking thesis projects involving travel outside of the Washington, D.C. metro area. To be eligible to for this course students must have successfully completed the first year (24 credits) of the NMPJ curriculum and be on schedule to graduate and in good academic standing overall as outlined in the Student Handbook. Prior to enrolling in the course a thesis topic, proposal and budget must be approved by the program director and thesis project coach. Once approved and enrolled, the student will work with an assigned faculty member to develop a Work Plan and Outcomes document in order to define the pace and content of work, schedule of deadlines and expected outcomes. This plan must be approved by the program director. Students will undergo a minimum of three substantial reviews of work over the course of the semester in addition to a regular schedule of feedback as defined in the project Work Plan and Outcomes document. Students are expected to work independently and meet all deadlines for the course as well as thesis production, post-production, exhibition and defense over the course of the academic year. Expenses incurred for travel and submitting deadline materials to faculty before critiques are the responsibility of the student. As with all second-year NMPJ students, those enrolled in Thesis Travel Project are required to participate in Departmental Reviews at the end of the semester as scheduled. Program Director Approval RequiredThis course is offered at 3 and 6 credits. Credit value will be determined based upon the scope and content of the course as outlined in the Work Plan and Outcomes document.

CPJ 7900. Photojournalism Graduate Thesis (Directed Study). 3 Credits.
In this course, students complete a comprehensive body of visual journalism accompanied by a written thesis outlining approach, photo/video precedents, and a narrative piece to accompany visual work. Each student works closely with faculty and advisors with the goal of producing the highest quality work for all components of the thesis process. Regular critiques and workshops are designed to support each student and keep on a schedule of production, postproduction, exhibition and defense. The process will culminate with the display of thesis projects developed over the course of the semester through required websites and other exhibition formats; formal students presentations to faculty and area professionals; completion of community engagement projects; and submission of all thesis work. Suggested complementary course: CPJ 7340, Project Driven Web Design.

CORCORAN PRINTMAKING (CPR)

CPR 1270. Surface Design for Textiles. 1.5 Credit.
Surface Design for Textiles is an introduction to the properties of dyes, paints and discharge chemicals on fabric. The course will cover the processes of immersion and dye painting and the techniques of Shibori, silkscreening, block printing, stenciling, monoprinting, and computer inkjet printing. Various resists will be explored, including potato and corn dextrin, rock salt, and gutta, on a variety of materials including silk, cotton, linen, and rayon. The completion of small samples using the techniques introduced will demonstrate understanding of the various processes. Two final projects will reflect the creative application of the learned processes. It is recommended that students who are pregnant, nursing, or planning a pregnancy this semester do not take this class. In some terms this course may be cross-tallied at the undergraduate level as CPR 1270 and at the graduate level as CPR 5270. Additional work is required to earn graduate credit.

CPR 1300. Introduction to Screenprinting. 1.5 Credit.
Students will use the latest in water-based ink technology in a variety of techniques for stencilmaking suited specifically to the screenprinting medium. Substantial independent work is possible for advanced students.

CPR 1351. Collagraph & Monotype Prints. 1.5 Credit.
Monotype and Collagraph processes offer many possibilities as a medium for both small and large format prints in black and white or color. Students will learn to assemble and fabricate plates with found materials using various textures, gessoes and modeling pastes. A variety of techniques in preparing and print monotypes will also be demonstrated. Advanced Students may pursue individual projects with the instructor's supervision and approval.

CPR 155. Screenprinting. 1.5 Credit.

CPR 210. Bookbinding for Artists & Designers. 1.5 Credit.

CPR 2280. Between Paint and Print. 1.5 Credit.
This course is an opportunity for painters to explore the possibilities and potential of integrating screenprinted imagery, textures, and ideas into painting as unique works or as serial projects. Students will explore ways to incorporate printed images directly into the painted surface, working with printing inks, resists, and adhesives to alter and organize the paint when applied directly over the surface.

CPR 2300. Screenprinting. 3 Credits.
This is a broad based course in screen printing for both beginning and intermediate students. The course covers techniques and strategies in screen printing for students studying graphic design, photography and fine arts. The first half of the semester will be devoted to basic skill building and understanding the potential and uses of this medium. The second half will focus on specific projects related to each student's interests and background.

CPR 2403. Book Arts: Concept and Content. 3 Credits.
This course is for the beginner to intermediate student in fine arts, graphic design, or photography, and encompasses the fundamentals for creating and assembling artist's books. Class focus will be on student examination of book content and concept and will cover a range of book structures such as portfolio forms, pamphlets, Japanese stab binding, concertina, Coptic, and perfect bindings. The altered book and book object will also be covered. The Intermediate student will work more independently with additional hybrid book forms under the guidance of the instructor. Content of the books is emphasized with demonstrations in a variety of print and image-making techniques.

CPR 2423. Introduction to Papermaking. 3 Credits.
Introduction to papermaking skills, tools, and techniques; fibers and surface characteristics; coloring techniques; papers for specific purposes such as printmaking, bookbinding, and photographic processes; methods used in handmade paper. Intermediate to advanced students work on a more self-directed basis; a research paper is required for graduate credit.

CPR 2460. Botanical Print. 1.5 Credit.
While the new resurgence of interest in botanical art concentrates on watercolor, artists should know that botanical art started with wood block and etching prints. Botanical Prints date back to the late 15th century, and by the 16th century became the medium of choice for the great flower painters. This course is designed for the botanical illustrator and will cover a range of introductory techniques in etching, relief, and lithographic print processes. It will enable the student to make reproductions of his/her work in both traditional and experimental printmaking, while exploring the rich possibilities inherent in these media. The prerequisite for the course is Botanical Drawing or Botany for Illustrators.

CPR 2750. SMdA: Charting San Miguel de Allende: The Artist's Journal. 3 Credits.
How do we write literature and make art that captures the experience of the places we visit as tourists? What strategies are available beyond the obvious ones? Through writing and the making of visual art, how can we see and record aspects of the daily life of a community that might go unremarked or unknown otherwise? The historic town of San Miguel, Mexico, with its rich history of art and literature, provides an unparalleled opportunity to explore these questions. This winter-session course focuses on the intersection of writing and bookmaking. Through a series of hands-on seminars and workshops, students will learn how to transform the raw materials of their sketchbooks and notebooks into fully realized literary texts in a variety of hand-made book forms. Two major book projects, one collaborative and one independent, will be required. Note: This course carries an additional fee which includes triple occupancy lodging, daily breakfast, materials fee for the duration of the course, and airport transportation. Airfare and tuition are additional, as is an optional excursion. Please contact the department for details.

CPR 3250. Lithography. 3 Credits.
Designed as an exploration of the lithographic process, which involves both the direct application of drawing on stone and aluminum plate and the use of photographically derived imagery. This course is a great introduction to printmaking, as well as an excellent tool for more advanced students. Lithography can be a highly expressive drawing medium as well as a versatile technical tool for the manipulation of photography. Students will be able to sample both skills, with expert guidance from CCAD's printmaking faculty. Ambitious prints will be realized in black and white and color, and will be driven by images and imagination. Students will learn some great technical skills while getting critical feedback on their ideas. At times this course may be cross-tallied at the graduate level as CPR 5250. Students seeking graduate credit will be required to do additional work including a research paper and formal presentation of their work and ideas to the general class.

CPR 3261. Photo Printmaking Projects. 3 Credits.
Ideal for the printmaker, photographer, or any student interested in utilizing photographic or appropriated images in their work, this course will cover a range of approaches in making fine art prints. Using solar etching plates, lithographic pronto plates and alternative processes such as gum transfer printing, and other mixed media and alternative print methods, the student will develop his/her imagery in an expansive and experimental manner. Color printing techniques, and unique monoprint processes will also be covered, allowing the student to explore the many possibilities these media have to offer.

CPR 3311. Screenprinting for Digital Media. 1.5 Credit.
The combination of traditional printmaking processes and digital techniques will be explored. Students will learn how to produce limited-edition fine art prints and/or posters for graphic projects. They will also develop conceptual and technical skills for the creation of digitally-based work. Artwork will be generated on the computer and in combination with drawing, painting, and/or photography. Film positives for screenprinting will be printed directly from the computer as multilayered, duotone, or four-color process separations. Images will then be transferred to a screen using a photo emulsion process. The latest techniques for screenprinting will be demonstrated using water-based inks on archival papers as well as alternative materials. At times this course may be cross-tallied at the undergraduate level as CPR 3311 and at the graduate level as CPR 5311. Students seeking graduate credit will be required to do additional work including a research paper and formal presentation of their work and ideas to the general class.

CPR 3361. The Wood Block Print: Traditional and Contemporary. 3 Credits.
Contemporary practice in art has over the years attached a special interest in the unique and expressive visual qualities of the woodcut. Its appeal is both as a stand alone print medium as well as one that can be combined with screenprinting, painting, sculpture and photography in multimedia projects. In this class, traditional methods of wood block printing will be taught as well as techniques that include reductive color printing from single blocks and works that incorporate the inclusion of other media enabling the student to create unique as well as multiple prints and objects.Anselm Kiefer and Christiane Baumgartner, both known for their large scale woodcuts are a few the artists working today who have mined the potential of this medium in their work. Their woodcuts along with other contemporaries artists working in this medium will be introduced in this class.

CPR 4350. Advanced Printmaking: Lithography, Monoprint, Etching. 3 Credits.
This intensive course covers advanced techniques in Etching, Relief, and Monoprint processes, and is designed for the student who has had introductory courses in some of these areas. The class covers a variety of color printing methods such as multi-plate, chine colle, and stencil printing. Further exploration into photo print and mixed media processes as well as a range of monotype and monoprint techniques will be demonstrated.

CPR 4351. Advanced Printmaking: Screenprinting and Woodblock. 3 Credits.
Expanding upon knowledge students have gained studying woodcut and/or screenprinting through intermediate level courses, students will work toward a level of mastery of one or both forms. Technical demonstrations will challenge students to technical expertise in their own work. This course will demonstrate the broad and varied connections of screenprinting and woodcut to other media, with emphasis on how they can be applied to the student's own artistic practice. Students will also pursue a cross media project resulting in a research paper and presentation, building toward strategies for future work. Examples will be regularly given linking the work of select contemporary artists to the notion that "printmaking processes, imagery and the materials themselves have an expansive quality that open new possibilities and perspectives in artistic process." Examples will be given of artists whose work uses print media to expand their ideas based in other media. Students will keep a journal with their thoughts and ideas about these artists and their work.

CPR 5250. Lithography. 3 Credits.
Designed as an exploration of the lithographic process, which involves both the direct application of drawing on stone and aluminum plate and the use of photographically derived imagery. This course is a great introduction to printmaking, as well as an excellent tool for more advanced students. Lithography can be a highly expressive drawing medium as well as a versatile technical tool for the manipulation of photography. Students will be able to sample both skills, with expert guidance from CCAD's printmaking faculty. Ambitious prints will be realized in black and white and color, and will be driven by images and imagination. Students will learn some great technical skills while getting critical feedback on their ideas. At times this course may be cross-tallied at the graduate level as CPR 5250. Students seeking graduate credit will be required to do additional work including a research paper and formal presentation of their work and ideas to the general class.

CPR 5270. Surface Design for Textiles. 1.5 Credit.
Surface Design for Textiles is an introduction to the properties of dyes, paints and discharge chemicals on fabric. The course will cover the processes of immersion and dye painting and the techniques of Shibori, silkscreening, block printing, stenciling, monoprinting, and computer inkjet printing. Various resists will be explored, including potato and corn dextrin, rock salt, and gutta, on a variety of materials including silk, cotton, linen, and rayon. The completion of small samples using the techniques introduced will demonstrate understanding of the various processes. Two final projects will reflect the creative application of the learned processes. It is recommended that students who are pregnant, nursing, or planning a pregnancy this semester do not take this class. In some terms this course may be cross-tallied at the undergraduate level as CPR 1270 and at the graduate level as CPR 5270. Additional work is required to earn graduate credit.

CPR 5300. Screenprinting. 3 Credits.
This is a broad based course in screen printing for both beginning and intermediate students. The course covers techniques and strategies in screen printing for students studying graphic design, photography and fine arts. The first half of the semester will be devoted to basic skill building and understanding the potential and uses of this medium. The second half will focus on specific projects related to each student's interests and background.

CPR 5311. Screenprinting for Digital Media. 1.5 Credit.
The combination of traditional printmaking processes and digital techniques will be explored. Students will learn how to produce limited-edition fine art prints and/or posters for graphic projects. They will also develop conceptual and technical skills for the creation of digitally-based work. Artwork will be generated on the computer and in combination with drawing, painting, and/or photography. Film positives for screenprinting will be printed directly from the computer as multilayered, duotone, or four-color process separations. Images will then be transferred to a screen using a photo emulsion process. The latest techniques for screenprinting will be demonstrated using water-based inks on archival papers as well as alternative materials. At times this course may be cross-tallied at the undergraduate level as CPR 3311 and at the graduate level as CPR 5311. Students seeking graduate credit will be required to do additional work including a research paper and formal presentation of their work and ideas to the general class.

CPR 5423. 2D Applications in Paper. 3 Credits.
This course will introduce the beginning student to basic papermaking skills, tools and techniques. Sheets of various fibers and surface characteristics will be covered, as well a range of coloring techniques. Students will learn to prepare and beat cotton fiber and linter and design sheets for specific purposes such as printmaking, bookbinding, and photographic processes. Methods unique to making artwork in handmade paper will be explored, including pulp painting, printing and pulp transfer processes, and a variety of collaging, embedding, and watermark techniques. This course may be offered at the undergraduate level as CPR 3423 and at the graduate level as CPR 5423. The intermediate to advanced student will be able to do more self-directed projects in these areas and graduate students will be required to do a research paper on historical or contemporary papermakers and /or papermaking.

CPR 6261. Photo Printmaking Process. 3 Credits.
Ideal for the printmaker, photographer, or any student interested in utilizing photographic or appropriated images in their work, this course will cover a range of approaches in making fine art prints. Using solar etching plates, lithographic pronto plates and alternative processes such as gum transfer printing, and other mixed media and alternative print methods, the student will develop his/her imagery in an expansive and experimental manner. Color printing techniques, and unique monoprint processes will also be covered, allowing the student to explore the many possibilities these media have to offer.

CPR 6361. The Wood Block Print: Traditional and Contemporary. 3 Credits.
Contemporary practice in art has over the years attached a special interest in the unique and expressive visual qualities of the woodcut. Its appeal is both as a stand alone print medium as well as one that can be combined with screenprinting, painting, sculpture and photography in multimedia projects. In this class, traditional methods of wood block printing will be taught as well as techniques that include reductive color printing from single blocks and works that incorporate the inclusion of other media enabling the student to create unique as well as multiple prints and objects.Anselm Kiefer and Christiane Baumgartner, both known for their large scale woodcuts are a few the artists working today who have mined the potential of this medium in their work. Their woodcuts along with other contemporaries artists working in this medium will be introduced in this class.

CPR 6800. Directed Studies: Printmaking. 3 Credits.
This option is appropriate for degree students who want access to independent faculty supervision, lab areas, and supplies for independent projects, and do not need or desire extensive course instruction. This option is justified only if 1) the project content cannot be covered in an existing course, 2) the student's department deems it of substantive value to the student's educational goals and interests, and 3) the project work will be done outside of regularly scheduled class time.All directed studies are for credit (one to three credits). Students cannot take more than three credits of directed studies per semester. Students enrolled in directed studies will have access to the facilities and equipment at times arranged by the instructor. To enroll, students must submit a Directed Studies Contract that is available at the Office of the Registrar and obtain written permission from the instructor and the chair or program director of the student's department and when different, the course department. The directed studies instructor will be responsible for working with the student to establish project goals, oversee progress, and determine final course grades. Bachelor's Foundation students and Continuing Education students are not eligible for directed studies. Under certain circumstances, directed studies may be pursued by graduate students by combining participation in an advanced undergraduate course with extra independent assignments at the graduate level, as arranged in advance with the directed studies instructor.

CPR 7350. Advanced Printmaking: Lithography, Monoprint, Etching. 3 Credits.
This intensive course covers advanced techniques in Etching, Relief, and Monoprint processes, and is designed for the student who has had introductory courses in some of these areas. The class covers a variety of color printing methods such as multi-plate, chine colle, and stencil printing. Further exploration into photo print and mixed media processes as well as a range of monotype and monoprint techniques will be demonstrated.

CPR 7351. Adv Print: Screenprint/Woodblock. 3 Credits.
Expanding upon knowledge students have gained studying woodcut and/or screenprinting through intermediate level courses, students will work toward a level of mastery of one or both forms. Technical demonstrations will challenge students to technical expertise in their own work. This course will demonstrate the broad and varied connections of screenprinting and woodcut to other media, with emphasis on how they can be applied to the student's own artistic practice. Students will also pursue a cross media project resulting in a research paper and presentation, building toward strategies for future work. Examples will be regularly given linking the work of select contemporary artists to the notion that "printmaking processes, imagery and the materials themselves have an expansive quality that open new possibilities and perspectives in artistic process." Examples will be given of artists whose work uses print media to expand their ideas based in other media. Students will keep a journal with their thoughts and ideas about these artists and their work.

CORCORAN PAINTING (CPT)

CPT 0800. Painting Workshop. 0 Credits.
Working from a live model each session, students explore how the human body may be represented in paint both realistically and semi-abstractly. Beginning students focus on acquiring technical skills and more advanced students receive guidance in handling compositional and expressive challenges. Students may work in oil or acrylic.

CPT 0810. Academic Painting Short Course. 0 Credits.
This short course is based on the approach used by the European art academies. The class will consist of several long-term assignments such as still life, portrait and figure, and include thorough drawing. Students will learn to see specific realistic images as a set of abstract shapes, and to see tonal values and colors in relation to the whole rather than to the neighboring areas. Another important topic will be the study of specifics of oil paint as a material.

CPT 0812. Painting Short Course. 0 Credits.
This short course is the non-credit version of our introductory painting class and is appropriate for all skill levels. Beginners will learn the basics, and more advanced students will progress on an individual basis. This course covers composition, color theory and canvas preparation.

CPT 0820. The Art of Watercolor/Gouache. 0 Credits.
This course emphasizes the control and expression of two water-based media: transparent watercolor and opaque gouache. Subject matter will be still life, landscape and portrait. Color mixing and color expression will be the primary focus of the class.

CPT 0821. The Touchscreen Artist: Sketching in the Gallery. 0 Credits.
Explore the digital touchscreen as a medium for drawing and painting CPT 0822 This non-credit course introduces students to a fresh approach to using watercolor as a flexible and erasable medium. The class will also cover color mixing, new surfaces for watercolor and techniques for layering imagery. Previous drawing or painting experience recommended.

CPT 0822. Non-Traditional Watercolors. 0 Credits.

CPT 0860. Landscape Drawing and Painting. 0 Credits.
Drawing as a way of seeing is explored through a series of free hand exercises, thereby developing one's landscape painting abilities. Students of all levels will have the opportunity to hone their hand skills and sharpen their artist's eye in articulating forms in the landscape. With visits to scenic locations and popular panoramic venues, and observing street scenes and garden vistas, students will be instructed in color theory and the principles of good landscape composition. Students may work in their chosen media and studio space will be available for use in case of inclement weather. Open to all levels of experience.

CPT 105. Painting Workshop. 3 Credits.

CPT 1200. Introduction to Painting. 1.5 Credit.
For all skill levels. Beginners will learn the basics, and more advanced students will progress on an individual basis. This course covers composition, color, and canvas preparation.

CPT 1210. Academic Painting. 1.5 Credit.
This course is based on the approach used by the European art academies. The class will consist of several long-term assignments such as still life, portrait, and figure, and include thorough drawing. Students will learn to see specific realistic images as a set of abstract shapes, and to see tonal values and colors in relation to the whole rather than to the neighboring areas. Another important topic will be the study of specifics of oil paint as a material. Prerequisite: Permission from the Continuing Education Advisor or previous enrollment in any Academic Drawing or Painting class at the Corcoran, including, but not limited to: CDR 0810 Academic Drawing Workshop, CDR 1220 Academic Drawing, CDR 1310 Acasdemic Figure Drawing, CPT 0810 Academic Painting Workshop, CPT 1210 Academic Painting, or CPT 2310 Academic Portrait Painting.

CPT 1400. Introduction to Botanical Painting in Watercolor. 1.5 Credit.
For beginning students. This course is an introduction to the techniques of transparent watercolor using live plant material. Students will learn to apply paint and render the precise characteristics of specific plants, paying close attention to form, detail and color accuracy. Beginning with a simple plant form, students will move quickly to more complex plant portraits. Those with botanical drawings may proceed immediately to finished paintings. Drawing experience helpful. At times this course may be cross-tallied at a more advanced level as CPT 2400. Students with prior experience may wish to register for the more advanced section.

CPT 196. Oil Painting I. 0 Credits.

CPT 2200. Intermediate Painting. 1.5 Credit.
This course will review the fundamentals of painting and focus on individual development of style, technique, and direction. With the instructor's guidance, students will explore their personal visions and examine the historical and contemporary context of individual work. Class critiques and discusions will help students gain a better understanding of the painting process and increase their ability to express visual concepts. Students may work in oil or acrylic paint. For intermediate and advanced students. At time this course may be cross-talled at the Introductory level as CPT 1200, beginning students should register for the introductory course. Prerequisite: CPT 1200 Introduction to Painting; or CPT 1210 Academic Painting.

CPT 2220. Abstract Painting. 1.5 Credit.
This course explores the concepts and meanings of abstraction and their relevance in today's world. Students will draw on imagery from nature and the visible world, personal experience, ideas, dreams, and the history of abstract painting. No painting or drawing experience required. At times this course may be offered at the undergraduate level as CPT 2220 and at the graduate level as CPT 6220. Additional coursework is required to earn graduate credit.

CPT 225. Painting. 0 Credits.

CPT 2280. Art of Color in Painting. 1.5 Credit.
Through a series of color exercises and painting assignments students will master the art of color using either oil or acrylic paint. Students will learn color mixing along with how to use color successfully in painting compositions. The course will also address the historical and theoretical use of color as well as explore color as personal expression. This class is open to both beginners as well as experienced painters.

CPT 2351. Still Life Painting in Oil: Techniques of the Old Masters. 1.5 Credit.
In this class, students will become acquainted with the painting techniques of early 17th-Century Europe. Starting with a tonal underpainting, students will use transparent glazes to build form, color, luminosity, and drama. The paintings of Caravaggio, Georges de La Tour, Clause Lorraine, and Vermeer will be used as guides as students become familiar with the terms chiaroscuro, tenebrism, and sfumato. Subject matter includes still life and landscape. This class is appropriate for both beginners and intermediate students. Offered in the the Spring semester only.

CPT 2400. Intermediate Botanical Painting in Watercolor. 1.5 Credit.
This course is a continuation of CPT 1400 Introduction to Botanical Painting in Watercolor. This course is a continuation of the techniques of transparent watercolor using live plant material. Students will learn to apply paint and render the precise characteristics of specific plants, paying close attention to form, detail, and color accuracy. Beginning with a simple plant form, students will move quickly to more complex plant portraits. Those with botanical drawings may proceed immediately to finished paintings. At times this course is cross-tallies with CPT 1400 Introduction to Botanical Painting. Pre-requisite: CPT 1400 Introduction to Botanical Painting.

CPT 2600. Painting Studio: Master Workshop. 3 Credits.
In this master workshop students will begin a cohesive body of work or fully develop one in progress. They will fine-tune image making skills on work with live models, projected images, or special projects, with emphasis on professional execution. History suggests that Van Eyck made the first oil painting medium, Rubens, Vermeer, and others helped to perfect it. Using the secret formulas and techniques of the Masters, students will learn how to use Maroger medium also known as miracle medium. Students will also explore imprimatura, underpainting and glazing, mixing and drying properties, opacities and characteristics of colors and media, and the production of effects with different brushes and painting tools. Finally, they will master these techniques and adapt them to their vision in forming expressive strategies in oil or acrylics.

CPT 301. Portrait Painting. 0 Credits.

CPT 3200. Painting Studio. 3 Credits.
Students in this course will begin a cohesive body of work or fully develop one in progress. They will fine-tune image making skills on work with live models, projected images, or special projects, with emphasis on professional execution. Using The Secret Formulas and Techniques of the Masters students will learn how to use Maroger Medium also known as Miracle Medium, history suggests that Van Eyck made the first oil painting medium, Rubens, Vermeer, and others helped to perfect it. Additionally, students will explore imprimatura, underpainting and glazing, mixing and drying properties, opacities and characteristics of colors and media, and the production of effects with different brushes and painting tools. Finally, they will perfect techniques and adapt them to vision in forming expressive strategies in oil or acrylics. For all skill levels, but some drawing is recommended. A few beginning and intermediate flourish with the Advanced students. Beginning students should register for CPT 3200 and advanced students may register for CPT 4200 if they have previously completed CPT 3200.

CPT 3201. The Contemporary Image in Painting and Drawing. 1.5 Credit.
This class challenges and facilitates intermediate, advanced, and post-baccalaureate students who wish to develop their art using emerging and current strategies in contemporary visual arts. Primary focus is painting and drawing but cross-media of all kinds will be considered and welcomed. The course is content driven and each student will be guided in developing strategies which uncover meaningful subject matter.Students will be guided in developing and refining painting and drawing skills in their chosen methods and materials. A series of experiments with methods and materials will challenge what students already know and enable them to develop a body of work that participates in the current conversation in the visual arts. Class critique, assigned reading and class discussions on current exhibitions in the city will be part of the class.Pre-requisite: CPT 2200: Intermediate Painting or equivalent painting experience.

CPT 3220. Advanced Abstract Painting Studio. 1.5 Credit.
For students with considerable drawing and painting experience who are interested in abstraction and non-objective imagery. Both individual and group critiques will be provided, with emphasis on the development of personal attitudes and approaches to painting. Out-of-class work will be encouraged and critiqued in relation to in-class work. This course is offered in the fall of even years only. Prerequisite: CPT 2220 Abstract Painting.

CPT 335. Intermediate Painting. 1.5 Credit.

CPT 392. Acrylic Painting. 1.5 Credit.

CORCORAN SCULPTURE (CSL)

CSL 1200. Introduction to Sculpture for CE. 1.5 Credit.
In this course students will focus on a variety of problems, from elementary design to intermediate projects, and learn the basics of modeling in clay, plaster moldmaking, and casting. Each student will also work in one other medium, choosing from wood or metal. Drawing and design experience are strongly recommended. At times this course may be cross-tallied at an intermediate to advanced level as CSL 2200. Students with prior experience may wish to register for the more advanced section.

CSL 1410. Introduction to Stone. 3 Credits.
This course focuses on direct carving in stone. Students will explore abstract and objective forms while working on personally designed projects. There will be an emphasis on mastering carving techniques, including hand and power tools, and on exploring concept and composition within the subtractive context. Individual attention and an immediate hands-on approach will address the needs of all students. This course is designed for all skill levels. At times this course may be cross-tallied at a more advanced level as CPT 2410. Students with prior experience may wish to register for the more advanced section.

CSL 2250. Introduction to Metal Sculpture. 1.5 Credit.
This course is designed for beginning students and will explore welding, cutting, bending, and fastening a variety of metals. Oxyacetylene and MIG welders, cutting saws and shears, and the bending brake will be introduced. Students will construct sculpture projects of their own design. At times this course may be cross-tallied at an intermediate level as CSL 3250. Students with prior experience may wish to register for the intermediate section.

CSL 2252. Metals and Metalsmithing. 3 Credits.
Large-scale metal sculpture and small-scale metalsmithing techniques share the student's creative energy in this inter-studio course. In the Sculpture studio, students explore welding, cutting, bending, and fastening a variety of metals. Oxyacetylene and MIG welders, cutting saws and shears, and the bending brake will be introduced. Small scale bronze casting, cold forging, piercing (jeweler's saw) scoring-and-bending, cold connections (rivets), soldering and emphasizing the use of the jeweler's saw, torch, flexible shaft drill and fine hammer work, are the focus of work in the metalsmithing studio. Assignments are designed to relate the use of metal and metalsmithing to students' own artistic explorations.

CSL 2320. Creative Destruction: Subtractive Processes. 3 Credits.
Using both wood and foam students will explore the subtractive method of carving and discover ways to make large works relatively inexpensively. Students will gain familiarity with power wood carving techniques using tools such as the band saw, die grinder, and the lathe. In addition, the class will explore foam carving through the use of hot wire tools, hand tools and power tools. Various types of foam will be discussed as well as materials for foam coating which will create a firm, paintable, permanent shell over the foam using materials such as Magic-Smooth, Aqua-Resin, Plasti-paste, and more. Priming and painting methods for finished works will be stressed in addition to the method of final presentation. The application of mixed media or video to the final presentation will be encouraged but not required. In addition to gaining a level of proficiency with these techniques, students will create a cohesive body of work that is an investigation of a singular theme of the student's choice.

CSL 2341. Woodworking and Furniture Design. 1.5 Credit.
This course is designed for students with an interest in woodworking and furniture design. The fundamentals of both traditional and contemporary design are explored. From chairs to tables to a variety of cabinetry, students will have the ability to construct a work of their own design. Over the course of the semester, students will work with the instructor on the design and building of a piece of furniture. Instruction in the usage and techniques of both machine and hand tools are covered in conjunction with the execution of the finished piece. Beginning with sketches, students will explore design and materials, fabricate models, and generate construction drawings, with a goal of fabricating and completing their own project. As different projects progress, tutorials on new techniques will be explained and applied. At times this course may be cross-tallied at an intermediate level as CSL 2351. Students with prior experience may wish to register for the intermediate section.

CSL 2351. Intermediate Woodworking and Furniture Design. 1.5 Credit.
In this intermediate course students expand on the skills and techniques developed in CSL 2341: Introduction to Woodworking and Furniture Design. From chairs and tables to a variety of cabinetry, students will have the ability to construct a work of their own design. Over the course of the semester, students will work with the instructor to design and build a piece of furniture. Instruction in the usage and techniques of both machine and hand tools are covered in conjunction with the execution of the finished piece. As different projects progress tutorials on new techniques will be explained and applied. At times this course may be cross-tallied at an introductory level as CSL 2341. Students with no prior experience may wish to register for the introductory section. Prerequisite: CSL 2341 Introduction to Woodworking and Furniture Design.

CSL 2410. Intermediate Stone. 1.5 Credit.
This course is designed for students who have had entry-level sculpture and carving classes. The focus will be advanced carving techniques. The use of texture and form will be explored, utilizing both traditional and non-traditional carving techniques and tools. Further inclusion of advanced sculptural techniques will examine the direct carving method, not using a model or maquette but allowing free creative expression. Traditional carving methods will also be employed to replicate sculpture, planned thought process, drawing, modelmaking, moldmaking, and copying using advanced sculptural instruments. Prerequisite: CSL 1400 Introduction to Stone and Wood, or CSL 1410 Intro to Stone.

CSL 3260. Mold-making and Casting. 3 Credits.
In this class students will gain familiarity with a variety of mold making and casting techniques and materials, brush up on clay modeling skills, and experiment with ways to add a final finish such as paint, stain, flocking, etc, to three-dimensional work. Students will create several small silicone rubber box molds, a large brush-on silicone rubber mold with a plaster mother mold, and an alginate mold from life. Castings will be made in Aqua Resin (a new non-toxic material) as well as polyurethane resin (liquid plastic) and alternative media such as latex, dirt, soap, or chocolate. The addition of dyes and decorative powders to the casting resin will be covered. The concept of the multiple and the copy will be discussed. The integration of mixed media into the final work is encouraged along with creative final presentation methods as students work towards the goal of creating portfolio quality work.

CSL 3351. Advanced Woodwork and Furniture Design. 1.5 Credit.
This course is designed for students with some experience in woodworking and furniture design. The fundamentals of both traditional and contemporary design are explored. From chairs to tables to a variety of cabinetry, students will have the ability to construct a work of their own design. Over the course of the semester, students will work with the instructor on the design and building of a piece of furniture. Instruction in the usage and techniques of both machine and hand tools are covered in conjunction with the execution of the finished piece. Beginning with sketches, students will explore design and materials, fabricate models, and generate construction drawings, with a goal of fabricating and completing their own project. As different projects progress, tutorials on new techniques will be explained and applied. In some cases this course may be cross-tallied at an intermediate level as CSL 2351. Based on experience, students may wish to register for the intermediate section. Prerequisite: CSL 2351 Intermediate Woodworking and Furniture Design.

CSL 3352. Wood as Sculpture. 3 Credits.
This practical skill-building course will explore the different uses and applications of wood as a material for making art. Students will learn the material characteristics of wood, methods of milling and processing, as well as engineered wood products. Instruction will include joinery, proper use of fasteners and adhesives, and wood finishing techniques. Emphasis will be placed on tool safety, project planning, and critical thinking skills. Through a series of direct, hands-on explorations students will gain the knowledge and experience to safely and confidently use; stationary tools as well as portable woodworking machines to perform cutting, joining, turning, carving, shaping, and finishing operations. At the conclusion of this course students will be able to identify and use the table saw, jointer, planer, band saw, drill press, hand circular saw, lathe, angle grinder, belt sander and miter saw. Successful completion of this course is required for use of the Sculpture Department's woodworking studio.

CSL 3451. Sculpture/New Techonlogies. 3 Credits.

CSL 5252. Metals and Metalsmithing. 3 Credits.
Large-scale metal sculpture and small-scale metalsmithing techniques share the student's creative energy in this inter-studio course. In the Sculpture studio, students explore welding, cutting, bending, and fastening a variety of metals. Oxyacetylene and MIG welders, cutting saws and shears, and the bending brake will be introduced. Small scale bronze casting, cold forging, piercing (jeweler's saw) scoring-and-bending, cold connections (rivets), soldering and emphasizing the use of the jeweler's saw, torch, flexible shaft drill and fine hammer work, are the focus of work in the metalsmithing studio. Assignments are designed to relate the use of metal and metalsmithing to students' own artistic explorations.

CSL 5341. Woodworking and Furniture Design. 1.5 Credit.
This course is designed for students with an interest in woodworking and furniture design. The fundamentals of both traditional and contemporary design are explored. From chairs to tables to a variety of cabinetry, students will have the ability to construct a work of their own design. Over the course of the semester, students will work with the instructor on the design and building of a piece of furniture. Instruction in the usage and techniques of both machine and hand tools are covered in conjunction with the execution of the finished piece. Beginning with sketches, students will explore design and materials, fabricate models, and generate construction drawings, with a goal of fabricating and completing their own project. As different projects progress, tutorials on new techniques will be explained and applied. At times this course may be cross-tallied at an intermediate level as CSL 2351. Students with prior experience may wish to register for the intermediate section.

CSL 6451. Sculpture/New Technologies. 3 Credits.

COUNSELING (CNSL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CNSL 0920. Continuing Research - Masters. 1 Credit.

CNSL 0940. Cont Research - Doctoral. 1 Credit.

CNSL 2102. Foundations of Counseling. 3 Credits.

CNSL 2162. Professional and Ethical Orientation to Counseling. 3 Credits.
The roles and functions of a professional counselor and the ethical standards that govern the profession.

CNSL 2163. Psychosocial Adjustment. 3 Credits.
Mental health problems; emphasis on needs of counselors, teachers, and others working with children and adolescents.

CNSL 2376. Introduction to Rehabilitation Counseling. 3 Credits.
Overview of rehabilitation profession, including philosophy, history, ethics, theory, legislation, settings, and practice.

CNSL 2378. Disability Management and Psychosocial Rehabilitation. 3 Credits.
Case management services for persons with physical, mental, and emotional disabilities.

CNSL 2381. Medical and Psychosocial Aspects of Disabilities. 3 Credits.
Chronic and traumatic disorders; rehabilitation and psychosocial implications.

CNSL 6100. Special Workshop. 1-12 Credits.
Topics to be announced in the Schedule of Classes. May be repeated for credit.

CNSL 6101. Research and Independent Study. 1-3 Credits.
Individual research under guidance of a staff member. Program and conferences arranged with an instructor.

CNSL 6103. Thesis Research. 3 Credits.

CNSL 6104. Thesis Research. 3 Credits.

CNSL 6130. Vocational Assessment of Individuals with Disabilities. 3 Credits.
Investigation of vocational appraisal processes and techniques for individuals with disabilities. Includes assessment for transition using field-based assignments. Three credits of practicum experience for students specializing in vocational evaluation. Material fee. Same as SPED 6230.

CNSL 6151. Professional and Ethical Orientation to Counseling. 3 Credits.
The roles and functions of a professional counselor and the ethical standards that govern the profession.

CNSL 6153. Counseling Interview Skills. 3 Credits.
Acquisition of counseling skills common to all theories through lectures, demonstrations by faculty, role playing, and videotaping. Prerequisite or concurrent registration: CNSL 6151 (for counseling majors); permission of instructor is required for others. Material fee.

CNSL 6154. Theories and Techniques of Counseling. 3 Credits.
An introduction to basic counseling and psychotherapeutic theories and associated techniques. Prerequisite or concurrent registration: CNSL 6151 (for counseling majors); permission of instructor is required for others.

CNSL 6155. Career Counseling. 3 Credits.
A consideration of theory, practice, and the body of information related to career counseling, choice, and development over the life span. Prerequisite: CNSL 6153, EDUC 6114 for counseling majors; permission of instructor is required for others. Material fee.

CNSL 6157. Individual Assessment in Counseling. 3 Credits.
Detailed study of individual analysis and appraisal techniques. Development of systematic case study. Prerequisite: CNSL 6153, EDUC 6114 for counseling majors; permission of instructor is required for others. Material fee.

CNSL 6159. Psychosocial Adaptation. 3 Credits.
Mental health problems; emphasis on needs of counselors, teachers, and others working with children, adolescents, and adults.

CNSL 6161. Group Counseling. 3 Credits.
Principles of group dynamics as related to interaction within groups. Techniques and practice in group counseling. Prerequisite or concurrent registration: CNSL 6151 (for counseling majors); permission of instructor is required for others.

CNSL 6163. Social/Cultural Dimensions-Cns. 3 Credits.
Basic sociocultural concepts in counseling theory and how they apply to the practice of the counseling profession. Prerequisite or concurrent registration: CNSL 6153 (for counseling majors); permission of instructor is required for others.

CNSL 6164. Values, Spiritual, and Religious Issues in Counseling. 3 Credits.
The theoretical and practical intersection of counseling, psychotherapy, and mental health considerations with religion and spirituality. The clinically effective and ethically responsible integration of religion and spirituality into counseling. Prerequisite or concurrent registration: CNSL 6151 (for counseling majors); permission of instructor is required for others.

CNSL 6169. Counseling Substance Abusers. 3 Credits.
Individual, group, family, and self-help counseling applied to substance abusers. Prerequisite or concurrent registration: CNSL 6153 (for counseling majors); permission of instructor is required for others.

CNSL 6170. Grief and Loss. 3 Credits.
Exploration and discussion of grief and loss from theoretical, practical, cross-cultural, and personal perspectives; implications for counselors within a multidisciplinary environment.

CNSL 6171. Family Counseling. 3 Credits.
The family as a system: how it affects the client and how the client affects it. Didactic presentations, role playing, and work with simulated families. Prerequisite or concurrent registration: CNSL 6153 (for counseling majors); permission of instructor is required for others.

CNSL 6172. Human Sexuality for Counselors. 3 Credits.
Issues of sexuality as related to counseling in contemporary society. Prerequisite or concurrent registration: CNSL 6153 (for counseling majors); permission of instructor is required for others.

CNSL 6173. Diagnosis and Treatment Planning. 3 Credits.
For counselors and mental health practitioners. Symptoms and treatment of various mental disorders. The process of making psychiatric diagnoses. A variety of treatment strategies are covered, along with their application to various disorders. Prerequisite: CNSL 6153.

CNSL 6174. Trauma and Crisis Intervention. 3 Credits.
This course provides the counseling student with an introduction to research, theory, and practices within the field of traumatology. The course will cover the historical evolution of the field; biopsychosocial underpinnings of trauma and trauma spectrum disorders; issues in diagnosis, assessment, and intervention from a culturally diverse framework; and a synthesis of best practices as they are currently evolving. Using a developmental and systemic approach, the course will provide a counseling perspective on the knowledge base from the multiple disciplines that contribute to the field of traumatology.

CNSL 6175. Living and Dying: A Counseling Perspective. 3 Credits.
Survey of fundamental psychosocial issues surrounding grief, loss, and life-threatening illness. Topics include AIDS, suicide, multiple loss, caregiver's grief, spirituality, and cross-cultural issues.

CNSL 6177. Spirituality and Loss. 3 Credits.
Exploration of how spiritual beliefs, faith traditions, and life philosophy affect the process of dying, bereavement, and grieving. Effective counseling approaches.

CNSL 6179. Children and Loss. 3 Credits.
The process of grief, loss, and death as experienced by children and adolescents from theoretical, moral, spiritual, and developmental perspectives. Development of effective and sensitive skills and competencies to meet the needs of children and their families as they face life-challenging transitions.

CNSL 6185. Practicum/Internship in Counseling. 3 Credits.
Part of a two-semester clinical experience for degree and certificate candidates in counseling. Includes 100 hours of supervised practicum in a counseling setting. Material fee.

CNSL 6186. Advanced Internship in Counseling. 3-6 Credits.
Part of a two-semester clinical experience for degree and certificate candidates in counseling. Material fee. Prerequisite: CNSL 6185.

CNSL 6188. Systems in Career Counseling Development. 3 Credits.
The complex role of systems in career counseling and development. Class and work experience in the areas of career assessment, computerized career planning, and the design and evaluation of career counseling systems.

CNSL 6189. Career Development and the Contemporary Workforce. 3 Credits.
Through case studies, simulations, and group work, the demographics and challenges of the workforce in the United States are examined. The knowledge, skills, and competencies necessary to respond to current trends and projected changes in the global workforce.

CNSL 6190. Advanced Career Counseling. 3 Credits.
Expansion of career development theory, concepts, and practice: the helping relationship, delivery systems, current market and economic information, and available resources. Prerequisite: CNSL 6155 (for counseling majors); permission of instructor is required for others. Material fee.

CNSL 6268. Foundations/Practicum: Clinical Mental Health Counseling. 3 Credits.
Description of community counseling settings, problems clients present, and a consideration of appropriate intervention strategies.

CNSL 6376. Foundations/Practicum: Rehabilitation and Case Management. 3 Credits.
Survey of history, philosophy, basic principles, legislation, roles, and services.

CNSL 6378. Disability Management and Psychosocial Rehabilitation. 3 Credits.
Disability management services; psychosocial aspects of disability; rehabilitation services for persons with psychiatric disabilities.

CNSL 6380. Job Placement and Supported Employment. 3 Credits.
Job development and modification: placement of persons with disabilities.

CNSL 6381. Medical and Psychosocial Aspects of Disabilities. 3 Credits.
Chronic and traumatic disorders with rehabilitation and psychosocial implications.

CNSL 6395. Foundations of Forensic Rehabilitation Counseling I. 3 Credits.
Overview of the roles and functions of professionals who provide forensic rehabilitation services in matters of litigation. Vocational assessments, labor market issues, transferable skills analysis, job analyses. Instruments utilized in forensic rehabilitation.

CNSL 6396. Foundations of Forensic Rehabilitation Counseling II. 3 Credits.
Workers' compensation, personal injury, medical/professional malpractice, catastrophic injury, loss of earnings capacity, and life care planning. Ethical standards, practices, federal court rules, and common situations found in the litigation process.

CNSL 6397. Law and the Rehabilitation Consultant. 3 Credits.
Overview of law and court procedures for forensic rehabilitation professionals. Qualification of forensic experts, roles and functions of expert witnesses, discovery, work product, hearsay, direct and cross-examination, admissibility of evidence, and opinions in state and federal venues.

CNSL 6398. Psychopharmacology. 3 Credits.

CNSL 6466. Foundations of School Counseling K–12. 3 Credits.
Study of the environmental and specialty elements for school counseling, with special attention to the principles and practices of school counseling.

CNSL 8100. Special Workshop. 1-12 Credits.
Topics to be announced in the Schedule of Classes. May be repeated for credit.

CNSL 8101. Research and Independent Study. 1-3 Credits.
Guided individual research. Program and conferences arranged with an instructor.

CNSL 8244. Advanced Group Counseling. 3-6 Credits.
A post-master's course on interpersonal process groups, with didactic, experiential, and supervisory components. Prerequisite: CNSL 6161 ; permission of instructor is required.

CNSL 8252. Advanced Leadership and Advocacy in Counseling. 3 Credits.
Theory and practice of consultation and administration, with focus on school, community, and rehabilitation settings. Research issues. Admission by permission of instructor.

CNSL 8253. Work, Identity, and Adult Development. 3 Credits.
The influence of work on identity, intellectual and personality development, and other developmental attributes. Same as HDEV 8253/HOL 8742.

CNSL 8254. Advanced Multicultural Counseling. 3 Credits.
Recent research addressing key aspects of multicultural counseling. Practical knowledge about effective skills practice in the provision of services to clients from different cultural backgrounds, with emphasis on experiential and cognitive/behavioral approaches. Restricted to Admission by permission of instructor. Prerequisites: CNSL6163 Social and Cultural Dimensions of Counseling. Recommended background: PhD degree student in the field of counseling; completed a master's degree in counseling.

CNSL 8255. Advanced Supervision in Counseling. 3 Credits.
Theory and practice of clinical supervision and consultation for preparation to enter supervisory positions in the field of counselor education. Current thinking regarding supervisory theory/models, practice, research, and ethics. Restricted to Admission by permission of instructor. Recommended background: For PhD degree students.

CNSL 8257. Doctoral Practicum in Counseling. 3 Credits.
Experiential learning of advanced counseling and counseling-related competencies through direct, supervised participation in group work, research, teaching, and/or consultation. Admission by permission of instructor.

CNSL 8258. Advanced Theories of Counseling. 3 Credits.
Current research on counseling and psychotherapy process and outcome; critical analysis of theory with applications for practice and research. For Ed.S. and Ph.D. degree candidates in the field of counseling. Admission by permission of instructor.

CNSL 8259. Doctoral Internship in Counseling and Counselor Supervision I. 3 Credits.

CNSL 8260. Doctoral Internship in Counseling and Counselor Supervision II. 3 Credits.

CNSL 8961. Seminar: Counseling. 1-12 Credits.

CNSL 8998. Predissertation Seminar. 3 Credits.

CNSL 8999. Dissertation Research. 3,6 Credits.
Prerequisite: CNSL 8998/ EDUC 8998.

CURRICULUM AND PEDAGOGY (CPED)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CPED 0920. Continuing Research - Masters. 1 Credit.

CPED 0940. Continuing Research - Doctoral. 1 Credit.

CPED 6100. Special Topics. 1-12 Credits.
Topics and fees announced in the Schedule of Classes.

CPED 6100W. Special Topics. 1-12 Credits.

CPED 6101. Research and Independent Study. 1-3 Credits.
Individual research under the guidance of a staff member; program and conferences arranged with an instructor.

CPED 6172. Strategies for Inclusion: Addressing the Needs of Diverse Learners. 3 Credits.
Strategies by which teachers can more effectively assume the responsibility to serve all children in an inclusionary setting, including those who are second language learners and students with disabilities. Same as SPED 6272.

CPED 6175. The Culturally and Linguistically Diverse Student with Special Needs: Policy, Research, and Trends. 3 Credits.
Educational service delivery for the culturally and linguistically diverse student. National, state, and local policies; current research in bilingual education, special education, and bilingual special education. Material fee. Same as SPED 6275.

CPED 6176. Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student. 3 Credits.
Issues in academic and psychosocial assessment of second language learners. The impact of second language acquisition and culture on the assessment process; differentiation between language difference and disability; IEP development; the use of interpreters and translators; the involvement of family and communities; standardized and alternative assessments; and legislative mandates. Material fee. Same as SPED 6276.

CPED 6199. Federal Education Policy Institute. 3 Credits.
The federal role in education policymaking in the context of national, state, and local efforts to create school environments for effective learning and the promotion of social and emotional health in children and youth. Same as SPED 6299.

CPED 6221. Developmental Reading: Emergent Literacy. 3 Credits.
The components of a balanced literacy program for emergent, beginning, and early-instructional-level readers. Incorporation of phonological awareness, phonics, fluency, reading comprehension, and writing lessons into a balanced reading–literacy program.

CPED 6223. Interdisciplinary Elementary School Literacies. 3 Credits.
Theory and practice of interdisciplinary elementary school studied in the context of the interactions between the domain-specific and strategic processes involved in teaching and learning from printed text and other media in science, literature, mathematics, social studies, and the arts.

CPED 6224. Diagnostic Teaching of Reading: K–6. 3 Credits.
Collection of diagnostic data; construction of informal traditional and non-traditional reading and writing tests; other instruments of evaluation; selecting and planning activities suitable to specific problems. Prerequisite: at least one previous course in reading.

CPED 6225. Introduction to International Curricula. 3 Credits.

CPED 6229. Current Issues in Elementary Education. 3 Credits.
Identification, definition, and analysis of some of the most important problems facing the contemporary American elementary school.

CPED 6236. Analysis of Teaching. 3 Credits.
Teaching viewed as a system; component aspects are examined with a view toward developing a critical method of analysis. Material fee.

CPED 6239. Practicum in Curriculum and Instruction. 3-6 Credits.
Supervised field experience in curriculum and instruction. Admission by permission of instructor.

CPED 6289. New Literacies Coach and Reading Specialist. 3 Credits.
Contemporary issues and conditions influencing literacy/reading leadership roles and the expanded roles of the new literacy reading coach and reading specialist. Topics include designing and evaluating interdisciplinary literacy education environments. Students work with educators on instructional and professional development activities to meet the literacy education needs of children. Prerequisites: CPED 6224 and departmental approval.

CPED 6292. Practicum 2: Leadership in Interdisciplinary Literacies. 3-6 Credits.
Drawing on prior program experiences in leadership and interdisciplinary literacies, students develop and refine effective interdisciplinary literacy education leadership qualities and skills, facilitate change in school communities, and foster teacher growth and student achievement. Students demonstrate lessons and provide assistance with lesson planning to teachers in, across, and between subject area disciplines and conduct professional development workshops in school settings. Prerequisite: CPED 6289.

CPED 6305. Foundations of Curriculum Theory. 3 Credits.
Examination of the educational ideas of individuals and groups that have influenced American and international curriculum development and practice during the 20th and 21st centuries. Comparisons of the issues, models, and principles that have guided curricular thought, development, and innovation.

CPED 6340. Teacher Leadership in Education. 3 Credits.
From the perspectives of educational theory and practice, the ideals and realities of contemporary public school teaching are viewed within a system of local, state, and federal organizations, with the goal of enhancing the role of teachers as knowledgeable and effective leaders in their profession. Material fee.

CPED 6353. Post-Master's Internship in Curriculum and Instruction. 3-6 Credits.
Supervised professional internship in curriculum, instruction, teaching, research, or policymaking. Internships are individually arranged. (Same as SPED 8353).

CPED 6365. Perspectives and Research in Teaching Computer Science. 3 Credits.

CPED 6366. Perspectives and Research in Teaching English. 3 Credits.
Prerequisite: the appropriate subject content course from CPED 6545 through CPED 6550.

CPED 6367. Perspectives and Research in Teaching Science. 3 Credits.
Significant trends, findings, and perspectives in science education in the United States from the early 19th century to the present.

CPED 6368. Perspectives and Research in Teaching Social Studies. 3 Credits.
Deepens students' understanding of the social studies curriculum through analysis of current research, theory, and practice, and application of this knowledge to instructional planning.

CPED 6370. Perspectives and Research in Teaching Mathematics. 3 Credits.
Survey of the history of mathematics, mathematics education research, instructional design, and the teaching of science, technology, engineering, and mathematics (STEM) curriculum standards. The impact of history in the field and research on teaching.

CPED 6410. Reading Children's Literature across the Curriculum. 2,3 Credits.
Participants read and analyze multicultural children's literature (from folktale to nonfiction) while simultaneously practicing discussion, dramatization, art, and writing response strategies suitable for involving all students and integrating literature across the school curriculum.

CPED 6411. Elementary School Curriculum and Methods. 3 Credits.
A comprehensive block course with subsections in mathematics, science, language arts, and social studies. Integrated with CPED 6635. May be repeated for up to 15 credits; with permission, up to four blocks (to a total of 12 credits) may be taken in one semester. Admission by permission of advisor. Material fee.

CPED 6412. Elementary School Curriculum and Methods. 2 Credits.
A comprehensive block course with sections in mathematics, science, language arts, and social studies. Integrated with CPED 6635. Pre-service teachers taking the four sections learn to be successful teachers of elementary methods in all content areas, including how to incorporate content and pedagogy into practice at their internships. May be repeated for up to 8 credits; with permission, up to four blocks (to a total of 8 credits) may be taken in one semester. Restricted to Admission by permission of advisor.

CPED 6507. Instructional Models and Classroom Management. 3 Credits.
The interconnections between effective instruction and positive classroom management. Through planning, implementing, and evaluating learning activities that apply research-based practices, students link instructional and management strategies to specific content and thinking goals. Microteaching lab. Material fee.

CPED 6530. Assessment in the Secondary Classroom. 3 Credits.
Key concepts and principles in the field of educational assessment, with emphasis on practical applications for classroom teachers. Students design and evaluate a range of assessment tools in their content areas.

CPED 6532. Professional Internship in Middle School Education. 3-6 Credits.
Supervised internship in middle schools; required seminar. Admission by permission of instructor. Material fee.

CPED 6534. Professional Internship in Secondary Education. 3-6 Credits.
Supervised internship; required seminar. Admission by permission of instructor. Material fee.

CPED 6544. Educational Technology and Computer Literacy Methods. 3 Credits.
Computers and related technologies in educational settings. Using national technology standards for teachers as a framework, the course combines discussion of key issues related to technology in education, demonstration of technology-related instructional methods, and hands-on computer use and materials development. Material fee.

CPED 6545. Teaching Computer Science in Secondary Schools. 3 Credits.
Theoretical, curricular, and practical considerations. Thirty hours of field experience in a secondary classroom is required. Material fee.

CPED 6546. Teaching English in Secondary Schools. 3 Credits.
Offers theoretical, curricular, and practical considerations for teaching the content area concerned. Requires a 30-hour field experience in a secondary classroom. Prerequisite: CPED 6606 and CPED 6507 and the approved certification course work in the content area. Material fee.

CPED 6547. Teaching Science in Secondary Schools. 3 Credits.
Offers theoretical, curricular, and practical considerations for teaching the content area concerned. Requires a 30-hour field experience in a secondary classroom. Prerequisite: CPED 6606 and CPED 6507 and the approved certification course work in the content area. Material fee.

CPED 6548. Teaching Social Studies in Secondary Schools. 3 Credits.
Theoretical, curricular, and practical considerations. 30-hour field experience in a secondary classroom is required. Material fee. Prerequisites: CPED 6606, CPED 6507.

CPED 6549. Teaching Art in Secondary Schools. 3 Credits.
Theoretical, curricular, and practical considerations. Material fee.

CPED 6550. Teaching Mathematics in Secondary Schools. 3 Credits.
Introductory course in mathematics teaching that derives its goals from pedagogy standards for secondary mathematics developed in collaboration with the National Council of Teachers of Mathematics (NCTM). Focus on developing and understanding middle and high school curriculum standards. Material fee.

CPED 6551. Second Language Instructional Methods. 3 Credits.
Knowledge and skills related to the instruction and assessment of language students in ESL/FL and FL settings. Past second language teaching methods, contemporary instructional approaches and materials, and other considerations in developing academic and social language proficiency. Materials fee. Prerequisites: CPED 6507 and CPED 6606 and the approved certification coursework in the content area.

CPED 6554. Issues, Study & Practices-ESL. 3 Credits.
A critical review of scholarship and research findings in English as a second language. Major policy issues and implications that relate to ESL practice.

CPED 6555. Educating Language Minorities. 3 Credits.
A study of federal, state, and local policies and issues affecting the education of linguistically diverse populations. Resources for use with specific linguistically diverse groups.

CPED 6556. Linguistic Applications in English as a Second Language. 3 Credits.
The science of language and how its different branches may be used for English as a Second Language (ESL) teacher training, classroom instruction, material development, evaluation, research, and policy development.

CPED 6557. Second Language Acquisition. 3 Credits.
The nature of first and second language acquisition and development; emphasis on sociolinguistics and psycholinguistics most pertinent to educational settings.

CPED 6604. Perspectives in American Education. 3 Credits.
Historical and social development of education in the United States; evolution of American education related to the growth of the nation and the changing social order; examination of selected issues in contemporary education.

CPED 6606. Theories of Learning and Development. 3 Credits.
A comprehensive investigation of the complex relationship between teaching and learning. How learning takes place, how it is motivated, and how it is influenced. Material fee.

CPED 6608. Development and Diversity. 3 Credits.
Student diversity in relation to theories of human growth and development. Diverse student strengths and needs; the special needs population; dynamics of inclusion; and intercultural issues related to the teaching/learning process. Material fee.

CPED 6623. Foundations of Reading Development. 2 Credits.
Basic theories and processes of reading acquisition and assessment; linguistic, cognitive, developmental, social, and affective bases of reading; influences of media, instructional strategies, including formal and informal assessment. Design and implementation of instruction in critical literacy.

CPED 6624. Foundations and Research of Literacy and Reading Education. 3 Credits.
Study of the scholarship on foundational and new literacy knowledge, concepts, and practices. Topics include models of literacy, theories and relations of multimodal and printed text reading (e.g., linguistic, psychological, and sociocultural), and the uses of these theories for the teaching and learning of literacies.

CPED 6626. Practicum 1: Reading Diagnosis, Assessment and Solutions. 3 Credits.
Candidates learn advanced diagnostic and assessment procedures to determine specific difficulties associated with printed-text reading, generate diagnostic profiles, and make instructional recommendations. Data are collected from children who struggle with printed texts; and, from those data, case studies are developed with implications for instruction.

CPED 6627. Teaching Second Language Reading and Writing. 3 Credits.
Literacy development for language learners; theories of literacy development in a second or foreign language, strengths and needs of language learners, reading and writing instructional strategies for language and content classrooms. Appropriate for students interested in teaching ESL, foreign languages, or content areas in elementary or secondary schools. Materials fee.

CPED 6628. Literacies in Informal Learning Environments. 3 Credits.
How culture, language, and out-of-school literacy experiences, particularly those in museums, influence attitude, learning, affective and interdisciplinary knowledge, and teaching practices. New literacy research, curriculum, and literature, and how social and cultural factors contribute to the literacies of everyday life.

CPED 6635. Professional Internship in Elementary Education. 3-6 Credits.
Supervised internship; required seminar. Admission by permission of instructor. Material fee.

CPED 6691. Interdisciplinary Adolescent Literacies. 3 Credits.
Theory and practice of interdisciplinary adolescent literacies studied in the context of the interactions between the domain-specific and strategic processes involved in teaching and learning from printed text and other media in science, literature, mathematics, social studies, and the arts.

CPED 6701. Arts in the STEM Curriculum. 3 Credits.
In-depth coverage of approaches to integrating arts and design into STEM curricula ("STEAM") for student learning; criteria and approaches for assessing student learning in arts-integrated STEM curricula; building a culture of craftsmanship; and collaborating with arts and design professionals.

CPED 6702. Integrating Engineering in the Math and Science Classroom. 3 Credits.
Approaches to integrating engineering and design into K-12 math and science classrooms. Students develop competencies by engaging in various forms of engineering and design, from small "design challenges" to more complex, semester-long engineering projects.

CPED 6703. Advanced STEM Teaching Methods. 3 Credits.
Advanced approaches for integrating science, technology, engineering, and mathematics into the K-12 classroom.

CPED 8100. Special Topics. 1-12 Credits.
Topics and fees announced in the Schedule of Classes.

CPED 8101. Research and Independent Study. 1-3 Credits.
Individual research under guidance of a faculty member. Program and conferences arranged with an instructor.

CPED 8199. Federal Educ Policy Institute. 3 Credits.

CPED 8309. Supervising Preservice Clinical Experience. 1-3 Credits.
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CPED 8325. Advanced Ideas in Curriculum Theory. 3 Credits.
Examination of reviews and research studies on curriculum theory. Focus on trends, values, interpretations, design systems, and evaluation. Prerequisite: CPED 6305.

CPED 8330. Paradigms of Instruction and Assessment. 3 Credits.
A foundation of theory, models, and variables that have contributed to the fields of instruction and assessment. The major paradigms of instruction and assessment. Material fee.

CPED 8331. Seminar in Instruction. 3 Credits.
Analysis of alternative models of instruction and the factors that influence the instructional process in schools. Connections among learning, instructional theory, research, and practice. Material fee.

CPED 8332. Search of the Literature in Curriculum and Instruction. 3 Credits.
Analysis of types of literature reviews in the field of curriculum and instruction and development of a literature review; the relationship of theory building to review of literature, and how research questions arise from extant theory and related literature. For doctoral students in curriculum and instruction, to precede CPED 8998. Material fee.

CPED 8333. School Reform through Professional Development. 3 Credits.
Fundamental perspectives of school reform through professional development of educators (K–12); evolution of contemporary professional development models and trends: examination of interactive modules using selected professional development activities. Material fee.

CPED 8334. Seminar in Research in Curriculum and Instruction I. 1-3 Credits.
Models of curriculum and instruction research that span various research methods.

CPED 8335. Seminar in Research in Curriculum and Instruction II. 1-3 Credits.
Development of initial research proposal ideas for the dissertation.

CPED 8340. Education Policy, Reform & Teacher Leadership. 3 Credits.
This online course will engage students in the study of education policies and reforms that specifically focus on teaching and teachers. Further, this course will examine teacher leadership as it impacts school reform through professional development initiatives that sustain change efforts. Four areas of study ground the focus of this course: education policy, change theories and school reform, teacher leadership, and professional development. Restricted to Doctoral level course; masters students by permission of instructor. Prerequisites: None.

CPED 8341. Evaluation in Curriculum & Instruction. 3 Credits.
This course will teach doctoral and masters' students about evaluating curriculum and instruction related programs, projects, or policies. This course provides students with the theoretical grounding and practical experiences they need to develop and implement evaluation research. Students in the course are required to: 1) read current literature that covers the breadth of theories and models applied in the field of evaluation, 2) participate in live online discussions and instructor presentations and, 3) design, implement and report on a targeted evaluation of a curriculum and instruction related program, project or policy. Restricted to doctoral students; masters students with approval of instructor.

CPED 8354. Doctoral Internship: Teacher Education. 3-6 Credits.
Supervised professional internship in college teaching, administration, supervision, research, policymaking, or private agency function. Admission by permission of advisor.

CPED 8998. Doctoral Seminar in Curriculum and Instruction. 3-6 Credits.
Review of literature; preparation of a dissertation proposal and a manuscript of publishable quality. Admission by permission of instructor and approval of major advisor. Material fee.

CPED 8999. Dissertation Research. 3-6 Credits.
Prerequisite: CPED 8998.

DATA SCIENCE (DATS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

DATS 6101. Introduction to Data Science. 3 Credits.
Basic techniques of data science; algorithms for data mining; and basics of statistical modeling. Concepts, abstractions, and practical techniques. Prerequisites: STAT 2118 or permission of the instructor. Recommended background: An undergraduate degree with a strong background in science, mathematics, or statistics. (Same as STAT 6289).

DATS 6102. Data Warehousing. 3 Credits.
Fundamentals and practical applications of data warehousing, including planning requirements, infrastructure, design, and maintenance. Prerequisites: STAT 2118 or permission of the instructor. Recommended background: An undergraduate degree with a strong background in science, mathematics, or statistics.

DATS 6103. Introduction to Data Mining. 3 Credits.
Concepts, principles, and techniques related to data mining; strengths and limitations of various data mining techniques, including classification, association analysis, and cluster analysis. Restricted to candidates for the MS or graduate certificate in data science; permission of the instructor may be substituted. Prerequisites: DATS 6101 or permission of the instructor.

DATS 6201. Numerical Linear Algebra and Optimization. 3 Credits.
This course is a study of linear and quadratic programming, nonlinear equations, global and unconstrained optimization, and general linearly and nonlinearly constrained optimization as used in data science. Restricted to Designed primarily for students in the Data Science program, however other students with appropriate backgrounds can register for the course with permission of the instructor. Prerequisites: MATH 2184 or MATH 2185. Recommended background: An undergraduate degree with a strong background in science, mathematics, or statistics.

DATS 6202. Machine Learning I: Algorithm Analysis. 3 Credits.
This course is a practical approach to fundamentals of algorithm design associated with machine learning. Topics include techniques of statistical and probability theory, combinatorial optimization, and factor graph and graph ensemble as used in machine learning. Restricted to Designed primarily for students in the Data Science program, however other students with appropriate backgrounds can register for the course with permission of the instructor. Recommended background: An undergraduate degree with a strong background in science, mathematics, or statistics. (Same as PHYS 6620).

DATS 6203. Machine Learning II: Data Analysis. 3 Credits.
This course is a practical approach to fundamentals of machine learning with an emphasis on data analysis; i.e., how to extract useful information from different datasets Topics include linear models, error and noise, training and testing methods, and generalization as used in machine learning. Restricted to Designed primarily for students in the Data Science program, however other students with appropriate backgrounds can register for the course with permission of the instructor. Prerequisites: DATS 6101 - Introduction to Data Science. Recommended background: An undergraduate degree with a strong background in science, mathematics, or statistics. (Same as PHYS 6720).

DATS 6401. Visualization of Complex Data. 3 Credits.
This course is a practical approach to fundamentals of data visualization specifically for data science professional. It covers all significant topics, including graphics, discrete and continuous variables, clustering and classification. Restricted to candidates for the MS or graduate certificate in data science; permission of the instructor may be substituted. Prerequisites: DATS 6101, DATS 6102, and DATS 6103.

DATS 6402. High Performance Computing and Parallel Computing. 3 Credits.
This course is a practical approach to high performance computing specifically for the data science professional. It covers topics such as parallel architectures and software systems, and parallel programming. Restricted to candidates for the MS or graduate certificate in data science; permission of the instructor may be substituted. Prerequisites: DATS 6101, DATS 6102, and DATS 6103.

DATS 6450. Topics in Data Science. 3 Credits.
The purpose of DATS 6450 being a topics course is to respond to new ideas and issues in the rapidly evolving fields of Data Science and Big Data. Possible topics may include new application areas in Big Data, emerging new languages and development systems, and policy issues arising from impacts of Big Data on individuals and society. Restricted to Intended primarily for students in the Data Science Master's and Certificate programs. Prerequisites: DATS 6101 Introduction to Data Science or permission of instructor. Recommended background: Enrollment in a Data Science graduate program.

DATS 6499. Data Science Applied Research. 3 Credits.
Students conduct research projects under the supervision of the instructor. Project topics build on the knowledge and skills acquired during the data science program. Permission of instructor required.

DATS 6501. Data Science Capstone. 3 Credits.
The course is a final practical application of the knowledge and skills acquired during the data science curriculum. The topics of the capstone team projects will be chosen in consultation with the Capstone Course instructor and the members of the teams. The course is designed to help students transition into the data science profession. Restricted to Designed for students in their last semester of the Data Science program as their final required core course. Prerequisites: Eight courses in the Data Science program, including the core courses 6101, 6102, and 6103 plus five approved courses from the categories Intermediate Analytics, Advanced Analytics, and Electives. Recommended background: Completion of the required courses in the Data Science Master's program.

DECISION SCIENCES (DNSC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

DNSC 3401. Introduction to Business Analytics. 3 Credits.
Fundamentals of business analytics: what information it provides, how and when that information is used, and how it affects decision making. Working with uncertainty; understanding the dynamic nature of decision making; using data, regardless of its size; and making decisions with incomplete data. The simulation of real-life scenarios to support optimal decision making. Prerequisites: APSC 3115 or STAT 1051 or STAT 1053 or STAT 1111.

DNSC 3402. Data Mining. 3 Credits.
The practice of exploring and discovering actionable business intelligence from large amounts of data; concepts, methods, and tools; supervised and unsupervised data mining techniques for discovering relationships in large data sets and building predictive models; regression models, decision trees, neural networks, clustering, and association analysis. Prerequisites: APSC 3115 or STAT 1051 or STAT 1053 or STAT 1111; Math 1231 or Math 1252.

DNSC 4403. Decision Models. 3 Credits.
Students learn to design and develop decision models using spreadsheet software with specialized decision support add-ins, and to effectively interpret the models' outputs. Commonly used classes of models including, optimization, Monte Carlo simulation and decision analysis. Models discussed span business disciplines including finance, accounting, marketing, human resources, economics, and operations. Prerequisites: DNSC 3401.

DNSC 4404. Essentials of Project Management. 3 Credits.
Theoretical foundations of and practical insights into project management; the role of project management in contemporary business and government organizations; the link between projects and strategy. Project design and development.

DNSC 4900. Special Topics. 0-3 Credits.

DNSC 6201. Introduction to Business Analytics. 1.5 Credit.
An introduction to business analytic concepts, methods, and tools with concrete examples from industry applications; Big Data and the opportunities it has created for businesses to store, organize, and analyze vast amounts of information. Completion of a basic course in statistics prior to enrollment is recommended.

DNSC 6202. Mathematics and Statistics for Management. 3 Credits.
Mathematical and statistical concepts employed in the solution of managerial problems. Applications of functions, elements of calculus, and linear algebra. Introduction to probability, frequency distributions, statistical inference, and regression and correlation.

DNSC 6203. Statistics for Analytics I. 1.5 Credit.
The foundations of statistical methodologies used in business analytics; statistical inference and probability models; methods of estimation, hypothesis testing, contingency table analysis, analysis of regression models and logit and probit analysis. Restricted to students in the MS in business analytics and graduate certificate in business analytics programs or with departmental permission.

DNSC 6206. Stochastic Fndn: Prob Models. 1.5 Credit.

DNSC 6207. Applied Probability Models. 1.5 Credit.

DNSC 6208. Computational Optimization. 3 Credits.

DNSC 6209. Forecasting for Analytics. 1.5 Credit.

DNSC 6210. Decision and Risk Analytics. 1.5 Credit.
Concepts, methods, and practical tools to analyze managerial decisions involving risk and uncertainty. Decision tree modeling, the strategic value of information, real options valuation, measurement and incorporation of risk preferences, and Monte Carlo simulation. The roles and limitations of judgment and sensitivity and robustness analysis as means to deal with the ambiguities inevitably present in real situations.

DNSC 6211. Programming for Analytics. 3 Credits.
Accessing, preparation, handling, and processing data that differ in variety, volume, and velocity. The ability to handle and process data is a core capability in the context of any analytics position in the industry. Development of a theoretical grounding in emerging paradigms like schema-less data. The programming environments that will be typically employed include Python and R.

DNSC 6212. Optimization Methods and Applications. 3 Credits.
Linear, network, integer, and nonlinear models and their fundamental underlying analytic concepts and solution methods. Emphasis on development of an intuitive understanding of solution methods and their underpinning theoretical paradigms for effective use of optimization models. Model formulation, solutions, and interpretation of results.

DNSC 6213. Statistics for Analytics II. 1.5 Credit.
Statistical methodologies for business analytics in real world scenarios; introduction of high-level analytical techniques such as hierarchical linear modeling and mixed-effects modeling. Restricted to students in the MS in business analytics and graduate certificate in business analytics programs or with departmental permission. Prerequisites: DNSC 6203.

DNSC 6214. Pricing and Revenue Management. 1.5 Credit.
Methodologies for addressing pricing issues; tactical optimization of pricing and capacity allocation decisions; quantitative models of consumer behavior and constrained optimization.

DNSC 6215. Social Network Analytics. 1.5 Credit.
Concepts, methods, and applications of network science; Analyzing real networks and related phenomena such as disease propagation, organizational analysis, social power, and fraud detection. Exposure to Python and R scripts prior to enrollment is recommended.

DNSC 6216. Business Analytics Skills Workshops. 0-1.5 Credits.
A series of workshops covering project management techniques for analytics projects, team dynamics skills, communicating quantitative information, and ethics, security, and privacy policies in analytics.

DNSC 6217. Business Analytics Practicum. 1.5 Credit.
Working in small teams, students apply their analytics skills to projects sponsored by public or private institutions. Each team is advised by a faculty member, and the practicum sponsor designates a mentor to provide guidance to the team for the duration of the project. Prerequisite: MSBA degree candidacy.

DNSC 6219. Time Series Forecasting for Analytics. 3 Credits.
Predictive analysis and blackbox models for time series and econometric forecasting; identifying hidden patterns and structures in the univariate and multivariate time series data and exploiting these for forecasting; use of SAS to apply different forecasting models and methodologies to real life time-series data. Restricted to students in the master of science in business analytics degree program; program approval may be substituted.

DNSC 6225. Business Process Simulation. 1.5 Credit.
Introduction to the compromises and limitations involved in business process design; basic tools used to analyze and improve processes; simulation models using a powerful discrete-event simulation tool. Restricted to students in the master of science in business analytics degree program; program approval may be substituted. Prerequisites: DNSC 6202.

DNSC 6230. Mgt of Technology Innovation. 3 Credits.

DNSC 6234. Procurement & Contracting. 3 Credits.
Principles and concepts essential to effecting large procurement programs. Planning, sourcing, and contractual design for diverse acquisitions. Emphasis on federal government policy with comparison of buying at other governmental levels and the private sector.

DNSC 6235. Communication Strategies in Project Management. 3 Credits.
Communication leadership and management practices that facilitate successful project management; strategies and practices related to communication, change management, and performance reporting.

DNSC 6236. Project Quality Management. 3 Credits.

DNSC 6237. International Project Management. 1.5 Credit.
Augments the basics of project management with theory, practice, and methodology related to global project environment; practical investigation of the cultural environment in the context of managing global projects.

DNSC 6239. Project Governance. 1.5 Credit.
An overview of project governance; models, practices and case studies.

DNSC 6247. Organization, Management, and Leadership. 3 Credits.
Fundamentals of human resource management for project managers. Tools and techniques for success in managing and leading people in a project environment.

DNSC 6250. Project Management Finance. 3 Credits.

DNSC 6251. Optimization Models for Decision Making. 1.5 Credit.
Optimization techniques, including linear programming, sensitivity analysis, networks, integer programming and multiple objective optimization, and nonlinear and evolutionary programming. Prerequisites: DNSC 6202 (equivalent to MBAD 6221 and MBAD 6222 or MBAD 6224).

DNSC 6252. Risk Analysis for Decision Making. 1.5 Credit.
Probabilistic modeling techniques with spreadsheet implementation. Special focus is placed on the concept of risk and methods for analyzing it. Topics include: risk attitudes, risk measures, decision trees, simulation models, game theory, real options approach, and risk communication.

DNSC 6254. Risk Management. 1.5 Credit.
Basic principles of risk management practices. Developing a risk management plan, including identifying, analyzing, mitigating, and monitoring projects risks. Prerequisites: DNSC 6202 or MBAD 6224 or MBAD 6221, MBAD 6222.

DNSC 6257. Cost Estimation and Control. 1.5 Credit.
Methods of developing project estimates during the planning stages and updating the estimates throughout the life of the project; monitoring, reporting, controlling, and managing project cost; relationships between project cost and other parameters, including scope, time, quality, reliability and procurement risk. Prerequisites: DNSC 6202 or MBAD 6221, MBAD 6222 or MBAD 6224.

DNSC 6258. Executive Decision Making. 1.5 Credit.

DNSC 6259. Project Portfolio Management. 1.5 Credit.
Management of an organization's portfolio of projects for the overall success of the enterprise; alignment of projects with an organizations strategy and goals and consistency with values and culture. Prerequisites: DNSC 6202 or MBAD 6221, MBAD 6222 or MBAD 6224.

DNSC 6261. Introduction to Project and Program Management. 3 Credits.
Practical examination of how projects can be managed from start to finish, including specific emphasis on planning and controlling to avoid common pitfalls. Identifying needs, defining requirements, project costing, scheduling, resource allocation, and project politics.

DNSC 6262. Directed Computational Project Management. 3 Credits.
Practical examination of project management concepts by quantitative application using various software tools. Research in real cost data to support project calculations. Prerequisite: DNSC 6254, DNSC 6257, DNSC 6261, DNSC 6267.

DNSC 6263. Managing External Projects. 3 Credits.
Fundamentals of contract management from a project manager's perspective. The outsourcing process, associated project strategies, and legal elements. Acquisition planning, vendor selection, contract formulation, and performance control.

DNSC 6267. Planning and Scheduling. 3 Credits.
Integrated planning, scheduling, and control systems for planning the scope of a project; optimizing time, cost, and resources; and monitoring and controlling schedules, including those for delayed projects. Prerequisites: DNSC 6202 or MBAD 6221, MBAD 6222 or MBAD 6224.

DNSC 6269. Project Management Application. 3 Credits.
Students will be expected to demonstrate integration of the knowledge accumulated in their study plan and apply integrated knowledge and experience to best practices, a project case history, and a handbook. Prerequisites: M.S.P.M. candidacy or permission of instructor/advisor.

DNSC 6274. Statistical Modeling and Analysis. 3 Credits.
The process of specifying, analyzing, and testing models of human and systemic behavior. Formalization of models; statistical test comparison and selection; computer implementation of univariate, bivariate, and multivariate tests. General linear model: linear regression, analysis of variance, and analysis of covariance. Prerequisite: MBAD 6221 and MBAD 6222 .

DNSC 6275. Advanced Statistical Modeling and Analysis. 3 Credits.
Advanced topics associated with the general linear model. Testing for and remediation of assumption violations. Detection of outliers, influential observations, and multicollinearity. Alternative design strategies in the analysis of variance; latent growth analysis; hierarchical linear modeling; testing for interactions and parallelism. Prerequisite: DNSC 6274 or permission of instructor.

DNSC 6276. Exploratory and Multivariate Data Analysis. 3 Credits.
Methods for exploratory and multivariate data analysis. Application and comparison of advanced multivariate analytical procedures. Multivariate and discriminant analysis, LISREL analysis, and canonical correlation. Prerequisite: DNSC 6274 or permission of instructor.

DNSC 6277. Applied Forecasting and Time-Series Analysis for Managers. 3 Credits.
Introduction to various forecasting techniques, including time-series regression models, cyclical trends, exponential smoothing methods, seasonal and nonseasonal ARIMA processes, and the Box–Jenkins approach. Application of forecasting methods in economics, finance, and marketing. Prerequisite: MBAD 6222 or permission of instructor.

DNSC 6279. Data Mining. 3 Credits.
How organizations make better use of the increasing amounts of data they collect and how they convert data into information that is useful for managerial decision making. Examination of several data mining and data analysis methods and tools for exploring and analyzing data sets. State-of-the-art software tools for developing novel applications.

DNSC 6290. Special Topics. 0-3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated once for credit.

DNSC 6298. Directed Readings and Research. 0-3 Credits.

DNSC 6300. Thesis Seminar. 3 Credits.

DNSC 6401. Sustainable Supply Chains. 1.5 Credit.
Introduction to integrating environmental management and sustainability concepts into the operations and supply chain management fields.

DNSC 8328. Special Topics in Decision Making. 3 Credits.
Special topics and advanced applications, such as catastrophe theory, Markovian decision processes, and Bayesian statistics. May be repeated once for credit.

DNSC 8385. Special Topics in Research Methods. 3 Credits.
Research problems and issues related to student dissertations form topics for readings, group discussions, and assigned papers.

DNSC 8397. Advanced Special Topics. 1-3 Credits.
Current research and scholarly issues in management science.

DNSC 8998. Advanced Rdgs & Research. 1-12 Credits.
Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

DNSC 8999. Dissertation Research. 1-12 Credits.
Limited to doctoral candidates. May be repeated for credit.

EAST ASIAN LANGUAGE AND LITERATURE (EALL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EALL 1075. East Asian Calligraphy. 3 Credits.
Writing of Chinese characters with traditional writing implements. No knowledge of the language required. Covers the history, aesthetics, and philosophy of East Asian scripts and calligraphy and their relationships to paintings, seal carving, and literature. Same as FA 1075.

EALL 3811. Confucian Literature in East Asia. 3 Credits.
General introduction to the Confucian traditions of literature, with an emphasis on history, historical writings, popular tales, and drama in China, Japan, and Korea. (Same as REL 2811).

EALL 3814. Religion and Philosophy in East Asia. 3 Credits.
Historical introduction to the major religious and philosophical traditions in China, Japan, and Korea, with focuses on ancestor worship, shamanistic cults, Confucianism, Buddhism, Daoism, and Shinto. The interactions of common East Asian religious and philosophical traditions, how these traditions evolved over time, and the way each culture assimilates foreign elements. How the very ideas of religion and philosophy are formulated and practiced differently in East Asia from those in the Western tradition. (Same as REL 3814, REL 2814).

EALL 3814W. Religion and Philosophy in East Asia. 3 Credits.
General introduction to the religions and philosophical tradition of China, Japan, and Korea. Same as REL 3814.

EALL 3831. Daoism in East Asia. 3 Credits.
Study of the early history of the formation and development of Daoism, its growth into an institutionalized religious organization in China, and its role in the religious and philosophical history of Japan and Korea. Same as REL 3831.

EALL 3831W. Daoism in East Asia. 3 Credits.
Study of the early history of the formation and development of Daoism, its growth into an institutionalized religious organization in China, and its role in the religious and philosophical history of Japan and Korea. Same as REL 3831.

EALL 3832. Myth, Ritual, and Popular Religion in China. 3 Credits.
Key aspects of popular religious myths, symbols, rituals, and practices in China, such as ancestor worship, spirit possession, fengshui theories, and pilgrimage. Same as REL 3832.

EALL 3881. Women, Gender, and Religion in China. 3 Credits.
A historical introduction to the concepts of body, gender, and womanhood in Confucian, Daoist, Buddhist, and popular Chinese religious traditions. Women's roles in religious ritual and practices; the influence of Christianity and modernity. (Same as REL 3881, WSTU 3881.).

EALL 4197. Independent Study. 1-3 Credits.
Departmental approval is required to register.

EALL 6811. Confucian Literature in East Asia. 3 Credits.
Introduction to Confucian literature in China and other parts of East Asia from earliest times to the present day. Various historical, philosophical, and religious dimensions of Confucian texts and practices. (Same as EALL 3811, REL 3811).

EALL 6832. Myth, Ritual and Popular Religion in China. 3 Credits.
Popular beliefs and practices in the everyday life of China, with consideration of a variety of practices such as ancestor worship, family and communal rituals, spirit possession, fengshui theories, and pilgrimage. (Same as EALL 3832, REL 3832).

EALL 6881. Women, Gender, and Religion in China. 3 Credits.
A historical introduction to the concepts of body, gender, and womanhood in Confucian, Daoist, Buddhist, and popular Chinese religious traditions. Women's roles in religious ritual and practices; the influence of Christianity and modernity. (Same as EALL 3881, REL 3881, WSTU 3881).

ECONOMICS (ECON)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ECON 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details. Restricted to First-year students in CCAS.

ECON 1001. Principles of Mathematics for Economics. 3 Credits.
Prepares students for college instruction in principles of microeconomic and macroeconomic theory and in business, social science, and basic science courses that do not require knowledge of calculus. Restricted to students who have successfully completed high school algebra I and basic geometry prior to matriculation and who also have registered for and attended the first six weeks of instruction in ECON 1011 or ECON 1012 at GW.

ECON 1011. Principles of Economics I. 3 Credits.
Major economic principles, institutions, and problems in contemporary life. Microeconomics—supply and demand, the price system and how it works, competitive and monopolistic markets.

ECON 1012. Principles of Economics II. 3 Credits.
Continuation of ECON 1011. Major economic principles, institutions, and problems in contemporary life. Topics in macroeconomics, including national income concepts, unemployment and inflation, institutions of monetary control. Prerequisite: ECON 1011.

ECON 2101. Intermediate Microeconomic Theory. 3 Credits.
Analysis of household economic behavior, including derivation of demand functions. Analysis of firm behavior, including derivation of supply frameworks. Demand and supply interaction under various market structures and in factor markets. Prerequisites: ECON 1011 and ECON 1012; and MATH 1221 or MATH 1231 or MATH 1252. Same as ECON 2103.

ECON 2102. Intermediate Macroeconomic Theory. 3 Credits.
Investigation of the determinants of national income, inflation, unemployment, and interest rates. Alternative business cycle theories, with emphasis on the role of imperfect information, uncertainty, and expectations. Prerequisites: ECON 1011, ECON 1012; MATH 1221, MATH 1231, or MATH 1252.

ECON 2103. Intermediate Microeconomic Theory: A Mathematical Approach. 3 Credits.
Analysis of household economic behavior, including derivation of demand functions, and of firm behavior, including derivation of supply frameworks. Demand and supply interaction under various market structures and in factor markets. Reliance on constrained and unconstrained optimization techniques when analyzing household and firm behavior. Corequisite: MATH 1232. Recommended for students pursuing the B.S. degree. Prerequisites: ECON 1011, ECON 1012; MATH 1221, MATH 1231, or MATH 1252.

ECON 2104. Intermediate Macroeconomic Theory: A Mathematical Approach. 3 Credits.
Development and application of mathematical models of aggregate economic behavior with a focus on the intertemporal choices made by households, firms, and governments. The use of rigorous economic analysis provides a deeper understanding of the determinants of the economy's performance. Recommended for students pursuing the B.S. degree. Corequisite: MATH 1232 . Prerequisites: ECON 1011, ECON 1012; MATH 1221, MATH 1231, or MATH 1252.

ECON 2121. Financial Economics. 3 Credits.
Economic analysis of key financial institutions, markets, and variables. Investigation of the performance of asset markets and the roles of money, credit, interest rates, and exchange rates. Examination of private sector institutions like equity markets and the banking system and the roles of regulators like the Federal Reserve. Prerequisite: ECON 1011– ECON 1012.

ECON 2122. Monetary Theory and Policy. 3 Credits.
Analysis of classic and modern monetary theories and their application to current economic conditions. The links between theory and policy. The altered role of money over time; the new money technology. Prerequisite: ECON 1011– ECON 1012.

ECON 2123. Introduction to Econometrics. 3 Credits.
Joint offering of the Economics and Statistics Departments. Construction and testing of economic models: regression theory, parameter estimation, and statistical techniques applicable to economic models. Prerequisites: MATH 1221 or MATH 1231 or MATH 1252; STAT 1051 or STAT 1053 or STAT 1111. (Same as STAT 2123).

ECON 2136. Environmental and Natural Resource Economics. 3 Credits.
Analysis of a variety of environmental and natural resource problems. The economic causes of these problems, their consequences, and the relative merits of alternative policies for dealing with them. Prerequisite: ECON 1011– ECON 1012.

ECON 2148. Survey of Health Economics. 3 Credits.
Economic analysis of the determinants of demand, supply, output, and distribution in the health care sector, with special emphasis on current policy issues of access, quality, and cost. Credit may not be earned for both ECON 2148 and ECON 3148. Prerequisites: ECON 1011 - ECON 1012.

ECON 2151. Economic Development. 3 Credits.
Theories and empirical studies of the economic problems of developing countries. Prerequisite: ECON 1011 and ECON 1012.

ECON 2151W. Economic Development. 3 Credits.

ECON 2157. Urban and Regional Economics. 3 Credits.
Analysis of the determinants of urban growth and development; firm location; the functioning of urban land and housing markets. Prerequisite: ECON 1011– ECON 1012.

ECON 2158. Industrial Organization. 3 Credits.
Analysis of market structure, conduct, and performance of firms in a market economy, with emphasis on case studies of U.S. industries. Prerequisite: ECON 1011– ECON 1012.

ECON 2159. Government Regulation of the Economy. 3 Credits.
Economic analysis of antitrust and regulation in the American economy. Prerequisite: ECON 1011– ECON 1012 and ECON 2101 or ECON 2158.

ECON 2160. Surv:Finance&Engineering Econ. 3 Credits.

ECON 2167. Economics of Crime. 3 Credits.
Analysis of crime, both empirical and theoretical, that examines the links between law and economics, the economics of criminal participation, and the economics of law enforcement. Prerequisite: ECON 1011– ECON 1012.

ECON 2169. Introduction to the Economy of China. 3 Credits.
Background, organization, and operation of the economy. Appraisal of performance and analysis of problems of development. Prerequisite: ECON 1011– ECON 1012.

ECON 2170. Intro to the Economy of Japan. 3 Credits.
Analysis of the structure and growth of the Japanese economy. Prerequisite: ECON 1011– ECON 1012.

ECON 2180. Survey of International Economics. 3 Credits.
Basic concepts of international trade and international finance, with emphasis on policy issues. Prerequisites: ECON 1011 and ECON 1012.

ECON 2181. International Trade Theory and Policy. 3 Credits.
The basis for international trade and the effect of trade on consumers, producers, and workers; the causes and effects of the international movement of factors including foreign direct investment, outsourcing, and migration; and the impacts of trade policies and trade agreements. Credit may not be earned for both ECON 2181 and ECON 3181. Prerequisites: ECON 1011– ECON 1012.

ECON 2182. International Macroeconomic Theory and Policy. 3 Credits.
Topics include the balance of payments, the determination of exchange rates and prices in open economies, the interaction of the exchange rate and domestic economic activity, international financial markets, and exchange rate and financial crises. Prerequisites: ECON 1011– ECON 1012.

ECON 2185. Economic History and Problems of Latin America. 3 Credits.
Analysis of present structures and problems of Latin American economies. Prerequisite: ECON 1011– ECON 1012.

ECON 2195W. Special Topics. 3 Credits.

ECON 2198. Special Topics in Economics - Regional. 3 Credits.
Topics cover individual countries or regions of the world and vary depending on current issues of interest and faculty availability. Prerequisites: ECON 1011 - ECON 1012.

ECON 2199. Special Topics in Economics. 3 Credits.
Topics vary depending on current issues of interest and faculty availability. Prerequisites: ECON 1011, ECON 1012.

ECON 3098. Variable Topics-Regional Econ. 1-9 Credits.

ECON 3105. Economic Forecasting. 3 Credits.
Theory and empirical analyses of economic trends and fluctuations; use of economic indicators and simple econometric models. Prerequisites: ECON 1011– ECON 1012; ECON 2102 or ECON 2104; ECON 2123.

ECON 3142. Labor Economics. 3 Credits.
Analysis of labor supply and demand; measurement and theory of unemployment; occupational choice; wage differentials; labor market issues and policies. Prerequisite: ECON 1011– ECON 1012 and ECON 2101 or ECON 2103.

ECON 3148. Health Economics. 3 Credits.
Analysis of economic theories and applications to the demand for and supply of healthcare. Examination of the role of government in health care, public health, and unhealthy behavior (e.g., smoking). Credit may not be earned for both ECON 2148 and ECON 3148. Prerequisites: ECON 2101 or ECON 2103.

ECON 3161. Public Finance: Expenditure Programs. 3 Credits.
Economic analysis of government spending and social regulation programs. Topics include public goods, externalities, income transfer and social insurance programs, and benefit–cost analysis of government programs. Prerequisite: ECON 1011– ECON 1012 and ECON 2101 or ECON 2103.

ECON 3162. Public Finance: Taxation. 3 Credits.
Economic analysis of taxes. Topics include individual and corporate income taxes, payroll taxes, sales and excise taxes, property and wealth taxes, design of tax systems, and effects of taxation on labor and capital markets. Prerequisite: ECON 1011– ECON 1012 and ECON 2101 or ECON 2103.

ECON 3165. Economics of Human Resources. 3 Credits.
Economic analysis of education and training, labor market discrimination, marriage and the family, and social security. Prerequisite: ECON 1011– ECON 1012 and ECON 2101 or ECON 2103.

ECON 3181. International Trade Theory. 3 Credits.
Rigorous examination of theories of international trade that explain why countries trade and their gains from trade. Theories include comparative advantage, the factor-proportions theory of trade, and recent theoretical developments. The course also deals with the theory of trade policies, such as tariffs and quotas. Credit cannot be earned for both ECON 2181 and ECON 3181. Prerequisites: ECON 2101 or ECON 2103; MATH 1221, MATH 1231, or MATH 1252.

ECON 3190. Law and Economics. 3 Credits.
An introduction to the economic analysis of legal systems. How laws alter behavior and how laws might be designed to satisfy efficiency and fairness criteria. Prerequisite: ECON 1011– ECON 1012 and ECON 2101 or ECON 2103.

ECON 3191. Game Theory. 3 Credits.
Introduction to game theory, covering concepts such as Nash equilibrium, evolutionary games, backward induction and subgame perfection, Bayesian–Nash games of imperfect information, adverse selection, and moral hazard. Prerequisites: ECON 1011 and ECON 1012; and ECON 2101 or ECON 2103.

ECON 3198. Advanced Topics in Economics - Regional. 3 Credits.
Topics cover individual countries or regions of the world and vary depending on current issues of interest and faculty availability. Prerequisites: Depending on the topic: ECON 2101 (or ECON 2103) or ECON 2102 (or ECON (2104) or ECON 2123.

ECON 3199. Advanced Topics in Economics. 3 Credits.
Topics vary depending on current issues of interest and faculty availability Prerequisites: Depending on the topic: ECON 2101 (or ECON 2103) or ECON 2102 (or ECON (2104) or ECON 2123.

ECON 4198W. Proseminar in Economics. 3 Credits.
Preparation and presentation of a research paper in any field of economics agreed upon by the student and instructor. Restricted to Economics majors in their senior year. Prerequisites: ECON 2101 or ECON 2103 and ECON 2102 or ECON 2104. Recommended background: Prior or concurrent enrollment in ECON 2123 or STAT 2112 or STAT 2118 is recommended.

ECON 4199. Independent Research-Economics. 3 Credits.
Prerequisite: ECON 1011– ECON 1012 and completion of 12 hours of upper-division economics courses, including ECON 2101 or ECON 2103 and ECON 2102 or ECON 2104, with a minimum grade-point average of 3.4; and approval of an independent research project by a faculty member of the Economics Department.

ECON 6217. Survey of Economics I. 3 Credits.
Intermediate-level microeconomic theory for graduate students in fields other than economics.

ECON 6218. Survey of Economics II. 3 Credits.
Continuation of ECON 6217. Intermediate-level macroeconomic theory for graduate students in fields other than economics. (ECON 6217 and ECON 6218—).

ECON 6219. Managerial Economics. 3 Credits.
Intermediate microeconomic theory, with emphasis on production and costs, market structure and pricing, risk analysis, and investment theory and capital budgeting. Credit can be earned for only one of ECON 6217 or ECON 6219.

ECON 6237. Economics of the Environment and Natural Resources. 3 Credits.
Analysis of public policy problems relating to the environment and natural resources development and management. Prerequisite: ECON 6217.

ECON 6239. Economics of Defense. 3 Credits.
Economic analysis applied to national security planning and objectives. Analysis of defense establishment problems, including manpower, the defense industry base, procurement policy.

ECON 6248. Health Economics. 3 Credits.
Demand for medical care; organization of the health care delivery industry; policy issues on regulation, efficiency, and allocation of health care services.

ECON 6249. Industrial Org-TComm Industry. 3 Credits.

ECON 6250. Survey of Economic Development. 3 Credits.
An introduction to economic problems faced by less developed countries. Emphasis on applications to policymaking and evaluation. Prerequisite: ECON 6217 or ECON 6280 or equivalent.

ECON 6255. Economics of Technological Change. 3 Credits.
Economics of research and development; innovation and growth; the role of government in the development and use of new technology.

ECON 6269. Economy of China I. 3 Credits.
Analysis of organization, operation, policies, and problems. Development of the economy since 1949.

ECON 6270. Economy of China II. 3 Credits.
Continuation of ECON 6269. Examination of critical problems of development. Prerequisite: ECON 6269 or permission of instructor.

ECON 6271. Economy of Japan. 3 Credits.
Analysis of Japanese economic institutions and their contribution to Japan's development.

ECON 6280. Survey of International Economics. 3 Credits.
Introductory international trade and finance, primarily for students in the Elliott School. Topics include the economic effects of trade liberalization and protection, exchange rate determination, and macroeconomic policies in an open economy. Prerequisite: ECON 1011 and ECON 1012.

ECON 6283. Survey of International Trade Theory and Policy. 3 Credits.
For graduate students in fields other than economics. Survey of international economics and policy; application of comparative advantage and other arguments for trade; impact of trade on a domestic economy; new arguments for protectionism; and regional trading blocs.

ECON 6284. Survey of International Macroeconomics and Finance Theory and Policy. 3 Credits.
For graduate students in fields other than economics. Open economy macroeconomics; international finance; balance of payments accounting; exchange markets; alternative models of balance of payments determination and adjustment; behavior of flexible exchange rate systems.

ECON 6285. Economic Development of Latin America. 3 Credits.
Diversity of structures of Latin American economies; import substituting industrialization; inflation; problems of underemployment and income distribution.

ECON 6286. Economic Development of Latin America. 3 Credits.
Continuation of ECON 6285. Structure of trade; protection, exports, and economic development; regional and global economic integration; foreign investment, multinational enterprise, and technology transfer.

ECON 6290. Principles of Demography. 3 Credits.
Introduction to basic demographic perspectives and data; methods for analysis of population size, distribution, and composition; determinants and consequences of population trends. Departmental prerequisite waived. Same as GEOG 6290/ SOC 6290/ STAT 6290.

ECON 6291. Methods of Demographic Analysis. 3 Credits.
Basic methods for analysis of mortality, natality, and migration; population estimates and projections; estimation of demographic measures from incomplete data. Departmental prerequisite waived. Same as GEOG 6291/ SOC 6291/ STAT 6291.

ECON 6292. Topics in International Trade. 3 Credits.
Topics on international trade issues and policy. Primarily for master's students in programs other than economics. May be repeated for credit if topic differs.

ECON 6293. Topics in International Finance. 3 Credits.
Topics on macroeconomic issues and policies in open economies, including exchange rate regimes, determinants of international capital flows, currency crises, financial contagion, current account sustainability and sovereign crises, fiscal problems, and macro-policies in emerging markets and mature economies.

ECON 6294. Topics in Economic Development. 3 Credits.
Topics on economic development issues and policy vary depending on faculty availability and interest. Primarily for master's students in programs other than economics. May be repeated for credit if topic differs.

ECON 6295. Special Topics. 3 Credits.
Topics vary, depending on current issues of interest and faculty availability.

ECON 6298. Reading and Research. 3 Credits.
Limited to master's degree candidates.

ECON 6300. Mathematical Methods for Economics. 3 Credits.
Instruction in the mathematical background required to appreciate and understand the use of mathematics in economic analysis, including multivariable calculus, integral calculus, and linear algebra. Emphasis on techniques for solving systems of equations, unconstrained and constrained optimization, comparative static analysis, difference equations, and analysis of dynamic models and their application to a range of economic problems. Restricted to Graduate applied economics majors only.

ECON 6301. Applied Microeconomic Theory. 3 Credits.
The principal areas of microeconomic theory: consumer demand, decision making under uncertainty, production and costs, game theory, and product markets; both competitive and imperfectly competitive, factor markets, and market failures. Emphasis on the application of theory to microeconomic issues of interest to the private and public sectors, such as product pricing, market entry and deterrence, competition policy, tax policy, and environmental regulation. The level of mathematical rigor is above that in a typical intermediate undergraduate microeconomics course, but below that in a first-year PhD course. Restricted to Graduate applied economics majors only.

ECON 6305. Applied Macroeconomic Theory. 3 Credits.
Development of an integrated framework for analyzing the determination of macroeconomic variables such as total production, unemployment, interest rates and inflation. Interpreting macroeconomic data and macroeconomic policy. A key objective of the course is to provide a link between economic theory and current economic policy. Topics for application may include recent developments in monetary policy and causes of hyperinflation and the national debt. The level of mathematical rigor is above that in a typical intermediate undergraduate macroeconomics course, but below that in a first-year PhD course. Restricted to Graduate applied economics majors only. Prerequisites: ECON 6300 and ECON 6301.

ECON 6374. Probability and Statistics for Economics. 3 Credits.
Focus on specific probability and statistical inference skills required for applied economic problems. Topics include laws of probability, limit laws, random events, independence and dependence, expectations, Bayes theorem, estimation, and hypothesis testing. Discrete and continuous random variables, density, and distribution functions. Various distributional models for observational data. Data manipulation and analysis using both SAS and Stata software. Emphasis on general methods applicable to econometrics. Restricted to graduate applied economics majors only.

ECON 6375. Applied Econometrics. 3 Credits.
An introduction to the skills needed to critically evaluate and conduct econometric analysis. Multiple regression analysis; theoretical underpinnings of the ordinary least squares estimator; interpreting regression results and how to address common issues that arise in regression analysis; econometric methods to estimate and test economic models and to address causal questions using observational data. Students build proficiency in using statistical software to perform basic econometric techniques studied in the course. Restricted to Graduate applied economics majors only. Prerequisites: ECON 6300 and ECON 6374.

ECON 6376. Time Series Analysis. 3 Credits.
The objective of this course is to give students the tools required to understand, implement, and interpret common models used in time series econometrics. Emphasis is placed on intuition and application. The course will both help students understand how to use time series data to test hypotheses and serve as an introduction to the ideas and techniques of forecasting. Topics covered are: time series properties of data (unit roots, near unit roots, stationarity), difference equations, stationary models (autoregressive and moving-average models), models with trends (deterministic and stochastic), multi-equation models (reduced-form and structural VARs), cointegration and error-correction models, models with time-varying coefficients, forecasting models, and basic forecast evaluation. Students will become proficient with performing basic time series analysis and forecasting using time series statistical software. Restricted to applied economics MA students only. Prerequisites: ECON 6374, ECON 6305.

ECON 6997. Independent Research. 1-3 Credits.
This course is limited to master's degree candidates in Economics. Before permission is granted to register for ECON 6997, the student must submit a written plan of study for the approval of the staff member of the department who will be directing the research. The written plan must also be approved by the program director. This course may be repeated once for credit but to no more than a total of 6 credits.

ECON 6998. Thesis Research. 3 Credits.

ECON 6999. Thesis Research. 3 Credits.

ECON 8301. Microeconomic Theory I. 3 Credits.
Theory of unconstrained optimization; optimization subject to equality and inequality constraints, along with applications. Profit maximization, utility maximization and cost minimization, concave and quasi-concave functions, monotone comparative statics, duality theory, the envelope theorem and Le Chatelier principle, and the Kuhn–Tucker conditions.

ECON 8302. Microeconomic Theory II. 3 Credits.
Expected utility theory, general equilibrium in a pure exchange economy and economy with production, welfare theorems and the core theory of the competitive firm in the short run and long run, monopoly and price discrimination, models of oligopoly. Prerequisite: ECON 8301.

ECON 8303. Microeconomic Theory III. 3 Credits.
Theory of games, including Nash equilibrium and its refinements and comparative statics, evolutionary game theory, multistage games and subgame perfection, repeated games and oligopolistic supergames, static and dynamic Bayesian games, auction theory, and bargaining theory. Prerequisite: ECON 8301 and ECON 8302.

ECON 8305. Macroeconomic Theory I. 3 Credits.
Alternative theories of income, employment, and the price level; impact of monetary and fiscal policy; role of expectations in the economy; and microfoundations of macroeconomic models and dynamic analysis.

ECON 8306. Macroeconomic Theory II. 3 Credits.
Extensions of alternative models of income determination, economic growth, and the application of analytical frameworks to the U.S. and international economies. Prerequisite: ECON 8305.

ECON 8307. Macroeconomic Theory III. 3 Credits.
Extensions to stochastic and dynamic general equilibrium frameworks, with emphasis on economic policy. Prerequisite: ECON 8306.

ECON 8323. Monetary Theory and Policy I. 3 Credits.
Theory of monetary policy within the framework of contemporary American central banking.

ECON 8324. Monetary Theory and Policy II. 3 Credits.
Continuation of ECON 8323. Theory of monetary policy within the framework of contemporary American central banking.

ECON 8337. Environmental Economics. 3 Credits.

ECON 8341. Labor Economics I. 3 Credits.
Theory of wages and employment, analysis of labor supply and demand. Analysis of unemployment; unions; wage regulation.

ECON 8342. Labor Economics II. 3 Credits.
Continuation of ECON 8341. Theory of wages and employment, analysis of labor supply and demand. Analysis of unemployment; unions; wage regulation.

ECON 8345. Industrial Organization I. 3 Credits.
Economic theory and evidence regarding industrial market structure, conduct, and economic performance.

ECON 8346. Industrial Organization II. 3 Credits.
Continuation of ECON 8345. Economic issues in antitrust and government regulation of the U.S. economy.

ECON 8351. Development Economics I. 3 Credits.
Major analytic concepts, measures, theoretical models, and empirical methods of development economics.

ECON 8352. Development Economics II. 3 Credits.
Continuation of ECON 8351. In-depth examination of special research topics with emphasis on methods in applied microeconomics.

ECON 8357. Regional Economics. 3 Credits.
Study of regional planning and growth models, including input–output, programming, and econometric models used by planning agencies; analysis of interregional production, trade, migration, firm location, and pricing models.

ECON 8358. Urban Economics. 3 Credits.
Analysis of spatial relationships among economic activities within an urban area including the urban land, labor, and housing markets; urban transportation models; fiscal relationships among jurisdictions.

ECON 8363. Public Finance I. 3 Credits.
Theoretical and empirical analysis of the economic role of the public sector and the effects of public expenditures on resource allocation and income distribution. Topics include public goods, externalities, social insurance, and benefit–cost analysis.

ECON 8364. Public Finance II. 3 Credits.
Theoretical and empirical analysis of the effects of taxes and transfers on the allocation of resources and income distribution. Topics include partial and general equilibrium models of tax incidence, effects of taxes on labor supply, saving, and portfolio choices of households and on investment and financing decisions of firms.

ECON 8375. Econometrics I. 3 Credits.
Statistical foundations for econometrics; standard methods of estimation and inference for classical and generalized regression models. Same as STAT 8375.

ECON 8376. Econometrics II. 3 Credits.
Topics may include asymptotic theory, statistical endogeneity, instrumental variables estimation, discrete and limited dependent variable models, and time-series models.Same as STAT 8376. Prerequisite: ECON 8375.

ECON 8377. Econometrics III. 3 Credits.
Econometric methods for systems of equations and panel data, with additional topics that may vary from year to year. Prerequisite: ECON 8376.

ECON 8378. Economic Forecasting. 3 Credits.
Introduction to the theoretical and applied aspects of economic forecasting. Topics include the role of forecasting, univariate time-series analysis, single equation models, multiple series models, and evaluation of forecasts. Prerequisite: ECON 8375 or permission of instructor.

ECON 8379. Laboratory in Applied Econometrics. 0-3 Credits.
Application of econometric theory and the use of econometric software; students are required to write an empirical research paper. The course usually deals exclusively with either micro or macroeconomic issues. May be repeated for credit provided the topic differs.

ECON 8381. International Trade Theory. 3 Credits.
International trade theory, including alternative models of the gains from trade and evaluations of the new justifications for protectionism, and analysis of commercial policy, factor flows, and trade and investment with multinational corporations. Prerequisite: most sections require calculus or permission of instructor.

ECON 8382. International Finance and Open-Economy Macroeconomics. 3 Credits.
International finance, including alternative models of balance of payments behavior and adjustment, payments accounting, exchange markets, and alternative exchange-rate regimes.

ECON 8383. International Financial Markets. 3 Credits.
Financial economics and international financial markets. Topics include standard asset pricing theory, uncertainty in open economy macroeconomics models, financial market micro-structure, and incomplete markets.

ECON 8395. Advanced Special Topics. 3 Credits.
Topics vary depending upon current interests and faculty availability. Open to graduate students in economics. May be repeated for credit.

ECON 8397. Dissertation Proposal Seminar. 3 Credits.
Limited to Doctor of Philosophy candidates in Unit II. Critical analysis of current research. Formulation of a dissertation proposal and development of dissertation research strategies.

ECON 8997. Independent Research. 3 Credits.
This course is limited to doctoral degree candidates in Economics. Departmental approval required to register. Before permission granted to register for ECON 8997, the student must submit a written plan of study for the approval of both the faculty member of the department who will be directing the research. And the Director of Graduate Studies for the PhD Program or the Department Chair. May be repeated for a total of 6 credits.

ECON 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

ECON 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

EDUCATIONAL LEADERSHIP (EDUC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EDUC 0920. Continuing Research - Masters. 1 Credit.

EDUC 0940. Cont Research: Doctoral. 1 Credit.

EDUC 2701. Museums as Cultural and Educational Resources. 3 Credits.
A general introduction to museums as institutions, sources of information, and places for enjoyment. Classes take place on campus and at museums in the metropolitan area. Admission by permission of instructor.

EDUC 3002. Special Workshops. 3 Credits.

EDUC 6100. Experimental Courses. 1-12 Credits.
Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

EDUC 6101. Research and Independent Study. 1-3 Credits.
Individual research under guidance of a staff member. Program and conferences arranged with a program advisor.

EDUC 6112. Foundations of Assessment, Testing, and Measurement in Education. 3 Credits.
Foundations of assessment, testing, and measurement with a focus on basic statistical concepts for assessment data literacy, research design issues for assessments, a review of other educational assessments (IQ and psychological, personality and diagnostic), and other issues with assessment and testing including technology, ethical, and legal issues.

EDUC 6114. Introduction to Quantitative Research. 3 Credits.
Development of a conceptual understanding of research design and quantitative analysis options for the consumer of research. Appropriate use of vocabulary and interpretation of research findings. Critique of research articles and/or development of a small-scale proposal.

EDUC 6116. Introduction to Educational Statistics. 3 Credits.
Fundamentals of descriptive statistics and hypothesis testing; introduction to inferential statistics and research design, distinguishing between nonexperimental, quasi-experimental, and true experimental designs. Designed for those with little preparation in quantitative methods or who are not prepared for Educ 8120.

EDUC 6232. Supervision and Evaluation of Instruction. 3 Credits.
The roles and functions of educational leaders in the areas of curriculum, staff development, instructional supervision, and evaluation of personnel. Theory and practice to increase teacher effectiveness and improve student learning through supervisory strategies.

EDUC 6234. Site-Based Leadership: K-12. 3 Credits.
A general introduction to the principalship. Stresses leadership theory, roles, and management tasks in instruction, curriculum, budget, staff development, supervision, interagency services, student learning, and policy considerations. Site-based management and communication within a changing and diverse school environment.

EDUC 6236. School Law and Policy. 3 Credits.
The legal basis of education and public schools in the United States. Constitutional provisions and federal statutes that guide school law. Legal factors that influence school policy. Consideration of practical school situations for legal implications, development of skills to research legal issues affecting schools, and preventive law measures.

EDUC 6240. Fundamentals of Educational Leadership and the Change Process. 3 Credits.
Current leadership theory and systems behavior in the context of administrative practice in educational settings. Key elements of leadership and management. The impact of context, culture, power, politics, change, communications, and organizational learning on administration.

EDUC 6242. Administrative Issues in Education. 3 Credits.
The impact of major social, political, economic, and education issues on the role of school leaders and the delivery and quality of programs and services.

EDUC 6244. School-Community Relations. 3 Credits.
The purpose, scope, essential elements, and impact of a successful school–community relations program. Community power structures, the roles of policy and leadership, communication techniques for interacting with various audiences and the media, evaluation of public relations and marketing for educational institutions.

EDUC 6246. Seminar: Applied Educational Administration. 3-6 Credits.
Application of the theories and principles of administration to public and private schools. Field experience in a phase of administration and supervision. Admission by permission of instructor.

EDUC 6252. Human Relations Diversity. 3 Credits.
Application of current theory and research findings in human relations to staff motivation, change, conflict management, and communication techniques for working with individuals and groups within organizations.

EDUC 6256. School Business Management. 3 Credits.
Management and control of the business functions of school districts. Assessing, planning, developing, and presenting educational budgets; the legal contexts affecting school business management. Risk management and school-site budgeting.

EDUC 6258. School Finance. 3 Credits.
The financing of public elementary and secondary education in the United States; current revenue sources, distribution decisions, and trends in the fiscal operations of schools. Litigation, finance policies, and equitable investments of public monies.

EDUC 6260. Practicum in Supervision. 3-6 Credits.
Practical experience in supervision of instruction. Admission by permission of instructor.

EDUC 6262. Internship in Supervision and Instructional Leadership. 3-6 Credits.
Service in a school situation directed by the University's faculty and school systems; integration of theory and practice.

EDUC 6264. Problems and Practices in Staff. 3 Credits.
Application of principles and practices concerned with change and evaluation of educational administration.

EDUC 6287. Internship: Administration. 3-6 Credits.
Service in an educational institution or education-related program directed by the University's faculty.

EDUC 6314. History of American Education Reform. 3 Credits.
An examination of how evolving social, economic, and political forces have propelled and opposed American education reform efforts throughout history.

EDUC 6368. Leadership and Education. 3 Credits.
A general introduction to issues of leadership applicable to education settings and to key features of educational organizations; leadership as a process and a set of skills and how its styles interact with organizational contexts.

EDUC 6371. Education Policy. 3 Credits.
An introduction to the development, implementation, and assessment of education policies at national, state, and local levels.

EDUC 6381. Program Evaluation: Theory and Practice. 3 Credits.
Introduction to the theory of social program evaluation, alternative evaluation models and methodologies, and the political and social contexts of evaluation.

EDUC 6388. Analysis of Education Policy Issues. 3 Credits.
Covers a range of education policy options, assessing their advantages and disadvantages based on evidence, and drawing implications for policy formulation. A critical approach is applied to the assigned readings, questioning the sources of evidence, appropriateness of analysis, and validity of the findings. Prerequisite: EDUC 6371, EDUC 6114, or permission of instructor.

EDUC 6392. Practicum in Educational Policy Program Evaluation. 3-6 Credits.
Supervised practical experience in field placements. Admission by permission of instructor. Prerequisite: EDUC 6381.

EDUC 6401. Applying Educational Media and Technology. 3 Credits.
Theory and practice of educational technology. Key characteristics of different media, principles of application, and issues concerning their appropriate use.

EDUC 6402. Computers in Education and Human Development. 3 Credits.
The research and practice surrounding the use of computers in educational and training settings. Students will acquire the practical knowledge necessary to the development and evaluation of computer-related curricula through projects and case studies.

EDUC 6403. Educational Hardware Systems. 3 Credits.
Design and implementation of educational hardware systems, including computers and computer networks.

EDUC 6404. Managing Computer Applications. 3 Credits.
For managers and prospective managers in education and human services who are concerned with the automation of their operations. Basic principles needed to design, implement, and manage an information system. Admission by permission of instructor.

EDUC 6405. Developing Multimedia Materials. 3 Credits.
The design, development, integration, and use of multimedia resources in education and training settings. Students examine and critique multimedia technologies, develop instructional materials, and create a unit or module that applies instructional design theory.

EDUC 6406. Instructional Design. 3 Credits.
Designing, implementing, and evaluating instructional strategies for learners. Assessing needs, writing objectives, selecting curriculum/content, selecting and implementing methods and techniques, selecting appropriate devices and evaluating instruction.

EDUC 6407. Design and Implementation of Educational Software. 3 Credits.
Theory and practice of creating educational software; psychological basis of using software in learning; instructional programs; authoring tools; artificial intelligence applications; interactive media. Students design and evaluate an educational program. Prerequisite: EDUC 6401 or permission of instructor.

EDUC 6421. Critical Issues in Distance Education. 3 Credits.
Historical, conceptual, theoretical, and practical issues associated with distance education as a foundation for research and practice in the domain of distance education as well as adult learning, educational systems design, and school administration and policy.

EDUC 6422. Instructional Needs Analysis. 3 Credits.
An introduction to the role of instructional needs analysis and assessment. The design and development of instruction. Key elements of the instructional design cycle, including data analysis.

EDUC 6423. Technology and Disabilities. 3 Credits.
Assistive technology as it impacts the lives of people with disabilities, including the performance of tasks related to employment, education, and activities of daily living.

EDUC 6424. Learning Technologies and Organizations. 3 Credits.
The role of learning technology in organizations, learning in the workplace, and knowledge management in corporations, schools, and universities.

EDUC 6425. Developing Effective Training with Technology. 3 Credits.
Development of skills in planning and producing effective technology-rich training that meets institutional and organizational needs.

EDUC 6426. Computer Interface Design for Learning. 3 Credits.
Human-computer interaction, both in general and with emphasis on issues in education. General design aspects; theories, principles, and guidelines related to human-computer interaction.

EDUC 6427. Advanced Instructional Design. 3 Credits.
Development of a prototype instructional design project and documentation report requiring rapid design and development strategies. Prerequisites: EDUC 6406.

EDUC 6428. Developing Digital Professional Portfolios. 3 Credits.
Students create a digital professional portfolio, using advanced skills in the design, development, integration, and use of multimedia resources.

EDUC 6441. Internship in Educational Technology Leadership. 3 Credits.
Students are assigned to a cooperating agency and work in consultation under the guidance of the course instructor. Admission by permission of instructor.

EDUC 6442. Educational Technology Leadership Master's Project. 1-6 Credits.
Students design, develop, implement, and evaluate an individual project. Admission by permission of instructor.

EDUC 6500. Intro Stu Aff & Higher Ed. 3 Credits.
Introduction to the study of higher education and the student affairs profession, including the ways in which broader aspects of higher education research, theory and policy inform the work of student affairs practitioners. Historical and current contexts of American higher education, the academic community, and existing issues and emerging challenges surrounding the practice of student affairs in the current higher education landscape.

EDUC 6510. Administration of Higher Education. 3 Credits.
Government, organization, and administration of colleges and universities; duties of trustees and administrators.

EDUC 6520. Foundations of College Student Development. 3 Credits.
College student development theories, practices, and problems, including historical overview and human development theories related to college students.

EDUC 6525. Managing College Student Services Programs. 3 Credits.
An overview of student affairs administrative practices, including planning models, budgeting, policy development, program development, facility management, and team building. Admission by permission of instructor.

EDUC 6530. Intercultural Campus Ldrshp. 3 Credits.
This course is designed to explore intercultural leadership skills through the lens of understanding group identity differences, multicultural competence, and the foundations of effective advocacy for social justice. Lectures, readings, class discussions, written assignments, and experiential activities are used to promote an understanding of intercultural leadership skills to help create inclusive learning environments. The course will explore how oppression and privilege relate to differences based on gender, race and ethnicity, sexual orientation, and (dis)ability. Students will also study how these identities intersect with each other.

EDUC 6540. Group and Organizational Theories. 3 Credits.
Review of major organizational theories inside and outside higher education, including systems, institutional, cultural, cognitive, environmental, ecological, as well as power and influence.

EDUC 6550. Assessment in Higher Ed. 3 Credits.
Key concepts in the assessment of outcomes in higher education and in student affairs. History of the assessment movement in higher education, strategies and methods for measuring outcomes of the college experience, identifying the limitations of operational processes that can be improved, and current issues in measuring student success in higher education.

EDUC 6555. Higher Education Policy. 3 Credits.
Assessment of policies that impact higher education, including the relationship of K–12 policy to higher education. Policy networks and mechanisms of policymaking. Policy development and assessment.

EDUC 6560. Legal Problems in Higher Education. 3 Credits.
Investigation of legal problems in higher education related to the legal structure of higher education, religious concerns, students, faculty, and academic programs.

EDUC 6565. Financing Higher Education. 3 Credits.
Analysis of private, state, federal, and other revenue sources; strategic planning, program budgets, and financial methods and practices.

EDUC 6570. Educational Planning. 3 Credits.
An examination of the planning movement in education: its historical development and the recent shift in premises, context, and expectations. Different approaches to the planning process; its role in research; and overview of main analytical techniques currently in use.

EDUC 6572. Dynamics of Change. 3 Credits.
An analysis of the process of change, particularly as it relates to educational policy. Comparison of theories; analytical tools; historical precedents; examples of federal education policies.

EDUC 6575. Personnel Administration. 3 Credits.
Human resource management: planning, recruitment, selection, placement and induction, staff development, rewards, and negotiations. Issues and legislation that influence personnel functions and policy; communication skills for human resource leadership.

EDUC 6579. Managing Multicultural Environments. 3 Credits.
Application of multicultural research in identifying key elements for managing diverse environments, communicating with families, planning professional development activities, and increasing student learning.

EDUC 6585. Master's Internship in Higher Education Administration. 3-6 Credits.
Supervised field experience in higher education settings. Admission by permission of instructor.

EDUC 6601. International and Comparative Education. 3 Credits.
Theoretical foundations of comparative and international education; systematic investigation of the structure and practices of selected representative school systems in different parts of the world. Emphasis on development of methodologies for comparative study.

EDUC 6602. Regional Studies in International Education. 3 Credits.
In-depth study of education in a selected region of the world. Structures and issues facing education systems in social, political, economic, cultural, and historical context. Prospects of education for human national development. May be repeated for credit provided the region differs.

EDUC 6610. Programs and Policies in International Education. 3 Credits.
Overview of policies and programmatic responses to issues in international education. Topics include education and development, international higher education and student services, and education and marginalized people. May be repeated for credit provided the topic differs.

EDUC 6615. Internationalizing U.S. Schools. 3 Credits.

EDUC 6620. Strategies and Analysis in International Education. 3 Credits.
Strategies for improving education in international contexts. Topics include education and development, international higher education and student services, or education and marginalized people. May be repeated for credit provided the topic differs.

EDUC 6630. International Experiences. 1-6 Credits.
Study and research in a foreign country as part of a group program. Admission may require permission of the instructor.

EDUC 6631. Internship: International Education. 1-6 Credits.
Service in an international education institution or related individually designed program planned to enable the student to connect theory to practice. Admission may require permission of instructor. May be repeated for credit.

EDUC 6640. Selected Topics in International Education. 3 Credits.
Current trends, themes, and issues in international education. May be repeated for credit provided the topic differs.

EDUC 6650. Education and National Development. 3 Credits.
In terms of the basic assumption that education contributes to national development, the course examines the role education plays in the process of national development in advanced industrial societies and societies moving to industrialism.

EDUC 6660. Capstone in International Education. 3 Credits.
Review of core topics in international education and completion of major supervised project or paper. Taken near the end of the master's program in lieu of the Comprehensive Examination.

EDUC 6701. Museums as Institutions I: Fundamentals. 3 Credits.
An overview of the museum as an environment for learning, considering the influence of institutional history and organizational structure on the museum's mission of serving the public.

EDUC 6702. Facilitating Museum Learning I: Fundamentals. 3 Credits.
Theory of and practice in the development of communication skills in the museum. Educational concepts; teaching strategies and techniques; institutional liaison and group process.

EDUC 6703. Museum Audiences. 3 Credits.
A survey of the museum's diverse audience, emphasizing implications for effective programming, with attention to audience research.

EDUC 6704. Facilitating Museum Learning II: Field Placement and Seminar. 3-6 Credits.
Sixteen-hours per week placement in local educational institutions supervised by GW faculty. On-campus seminar focuses on human development and learning theory.

EDUC 6705. Museums as Institutions II: Field Placement and Seminar. 6 Credits.
Thirty-two hours-per-week supervised placement in education departments in area museums; students carry out projects in cooperation with the site. On-campus seminar includes presentations by leading practitioners.

EDUC 6706. Evaluating Museum Learning. 3 Credits.
Evaluation and research methods appropriate to the museum setting. Review of research on museum audiences; designing exhibition and program evaluations.

EDUC 6707. Museum Proposal Writing. 3 Credits.
Preparation of proposals for museums seeking support from public and private funders. Proposals are developed in cooperation with local museums.

EDUC 6709. Interpretation in the Historic House Museum. 3 Credits.
Seminar integrating advanced practices of museum education with current scholarship in architectural history, material culture, and social history. Extensive use of Washington museum resources. Same as AMST 6709. Admission by permission of instructor.

EDUC 6710. Museums and Technology. 3 Credits.
Applications of technology that link the public with the museum: Internet exhibitions, interactive computer programs, video conferencing, the electronic classroom. Guest lectures, field trips, and group projects.

EDUC 6711. Museum as a Learning Environment. 3 Credits.
Exploration of why visitors frequent museums and how they create personal meaning. Approaches to support the audience's engagement with the museum's resources.

EDUC 6998. Thesis Research. 3 Credits.
Thesis research.

EDUC 6999. Thesis Research. 3 Credits.

EDUC 8100. Experimental Courses. 1-12 Credits.
Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

EDUC 8101. Research and Independent Study. 1-3 Credits.
Review of literature. Preparation of a dissertation proposal and a manuscript of publishable quality.

EDUC 8110. Advanced Study: Ideas, Issues, and Practices in Education. 3 Credits.
For precandidates for the Ed.D. Alternative means of responding to the complexities of the educational process. Topics vary but concern education as an individual process and as sociocultural preservation and renewal. May be repeated for credit.

EDUC 8120. Group Comparison Designs and Analyses. 3 Credits.
Designs and analyses to assess differences for more than two groups when compared on one dependent variable. Fixed, random, and mixed effects ANOVA and ANCOVA models within factoral design, multiple comparison tests, and introduction to regression analysis. Prerequisites: EDUC 6116.

EDUC 8122. Qualitative Research Methods. 3 Credits.
A general introduction to several major qualitative research traditions (e.g., biography, grounded theory, ethnography, phenomenology, and case study). Application of qualitative research design and procedures, including preliminary data collection, analysis, and writing.

EDUC 8130. Survey Research Methods. 3 Credits.
Techniques used to collect an array of information from a large number of people through structured interviews and mailed, e-mailed, or web-based questionnaires. Defining the research question and design; sampling, survey development, data collection procedures, pretesting, and data handling. Prerequisite: EDUC 8120, EDUC 8122.

EDUC 8131. Case Study Research Methods. 3 Credits.
Techniques used to examine one or a few complex cases, collecting data from several types of sources and by several methods. The course covers design, data collection, and data analysis/integration. Prerequisite: EDUC 8122.

EDUC 8140. Ethnographic Research Methods. 3 Credits.
Techniques used to examine systematically the contemporary daily life of a given group in its natural setting, focusing on culture—the recurring patterns of thought and social relations. Issues of research design and data collection and analysis. Prerequisite: EDUC 8122.

EDUC 8142. Phenomenological Research Methods. 3 Credits.
Techniques used to elicit and recognize perceptions, interpretations, motives, expectations, and imaginations. The framing of appropriate research questions, data collection and analysis, and the statement of conclusions. Prerequisite: EDUC 8122.

EDUC 8144. Discourse Analysis. 3 Credits.
Techniques used to examine verbal and nonverbal communication to understand identity, beliefs, intentions, relationships, and culture. The framing of appropriate research questions; data collection and analysis. Prerequisite: EDUC 8122.

EDUC 8170. Educational Measurement. 3 Credits.
Classical and modern measurement theory, item response theory, and factor analysis. Educational and psychological instrument development and validation. Interpretation of scale scores and assessment of instrument adequacy. Prerequisites: EDUC 8120. Recommended background: EDUC 6112 or equivalent.

EDUC 8171. Predictive Designs and Analyses. 3 Credits.
Techniques used to assess how independent variables are related to one dependent variable. Multiple linear regression, logistic regression, ordinal regression, and non-linear regression. Appropriate research questions, data interpretation, and design within generalized linear modeling. Prerequisites: EDUC 8120.

EDUC 8172. Multivariate Analysis. 3 Credits.
Techniques for assessment of relationships among multiple independent variables and dependent variables. Multivariate analysis of variance (MANOVA), multivariate analysis of covariance (MANCOVA), discriminant analysis, and exploratory factor analysis. Prerequisite: EDUC 8171.

EDUC 8173. Structural Equation Modeling. 3 Credits.
Multivariate techniques used for assessment of structural (causal) relations among latent (unobserved) variables with multiple observed indicators: observed and latent variable path analysis and confirmatory factor analysis. Latent means analysis and latent growth modeling. Prerequisite: EDUC 8171.

EDUC 8174. Hierarchical Linear Modeling. 3 Credits.
Techniques appropriate for analyses of hierarchically structured data. Theoretical concepts of hierarchical linear models (HLM); social and behavioral research; popular HLM software such as HLMwin; and large scale datasets. Prerequisites: EDUC 8171.

EDUC 8175. Item Response Theory. 3 Credits.
Conceptual, mathematical, and applied issues in item response theory. Dichotomous models, item response theory software used for estimation and model fit, test construction, differential item functioning, and item response theory equating. Prerequisites: EDUC 8170.

EDUC 8177. Assessment Engineering. 3 Credits.
In-depth coverage of topics related to assessment engineering, including cognitive model development using cognitive diagnostic assessment and formative assessment modeling, item model development using auto item generation, and automated test assembly and psychometric model development using computer adaptive testing. Introduction to current assessment engineering and educational big-data analytic applications. Prerequisites: EDUC 8170.

EDUC 8179. Capstone Project in Assessment,Testing, and Measurement in Education. 3,6 Credits.
Multifaceted assessment that serves as a culminating academic and intellectual experience for students during the end of their academic program. The capstone project is similar to a thesis or dissertation but may take a variety of forms. Restricted to Permission of instructor. Prerequisites: EDUC 8170.

EDUC 8276. Seminar: Administration and Supervision. 1-12 Credits.

EDUC 8277. Advanced Instructional Leadership for School Improvement. 3 Credits.
Introduction to the role of the instructional leader from school and district perspectives. Students gain theoretical and practical skills and knowledge in areas including instructional improvement; education reform; accountability; conditions for improvement; and planning and sustaining change.

EDUC 8280. Critical Review of Educational Leadership Literature. 1,3 Credit.
The techniques, tools, and presentation of critical reviews and syntheses of educational literature used to inform forthcoming research. Systematic mapping of what is known and deriving research questions, conceptual frameworks, and applicable methods. Prerequisite: an approved dissertation topic or permission of instructor.

EDUC 8320. The Politics of Education. 3 Credits.
Examination of the contextual factors (political, economic, and historical) and the nature of political decision making on education issues, primarily at the state and local level. Prerequisite: EDUC 6371.

EDUC 8321. Economics of Education. 3 Credits.
Application of economic theory and analysis to education problems and policies. Contemporary education reforms that are adopted to improve educational outcomes are analyzed with emphasis on their complexities. Prerequisites: EDUC 6371, EDUC 8120.

EDUC 8322. Education Policy Implementation. 3 Credits.
The evolution and implementation of education policies. Analysis of policy implementation at varying governance levels and types of educational systems. Policy is analyzed as a process and as it interacts with organizational, social, economic, and political factors. Prerequisites: EDUC 6371.

EDUC 8323. Policies of Education Equity. 3 Credits.
Analysis of the development, implementation, and evaluation of education equity policies, with consideration of their context, formulation, and application. Prerequisite: EDUC 6371.

EDUC 8325. Policy Design: Accountability in Education. 3 Credits.
Issues of policy design that underlie the push for greater accountability in education. Students review research articles and conceptual argument, discuss evidence on actual practice, and identify strengths and weaknesses of a range of policy tools. Prerequisite: EDUC 6371.

EDUC 8329. Seminar in Program Evaluation. 3 Credits.
Contemporary problems and issues in evaluation of social programs: design, implementation, analysis, and utilization. Prerequisite: EDUC 6381 and approval of instructor.

EDUC 8334. Doctoral Internship in Educational Policy. 3-6 Credits.
Methods of analysis used in the study of educational policy issues. Case studies on a range of policy issues and trends, including testing and accountability, school finance, school choice, and the federal role. Prerequisite: EDUC 6371, EDUC 6114, or permission of instructor.

EDUC 8340. Methods of Policy Analysis in Education. 3 Credits.
Methods of analysis used in the study of educational policy issues. Case studies on a range of policy issues and trends, including testing and accountability, school finance, school choice, and the federal role. Prerequisite: EDUC 6371, EDUC 6114, or permission of instructor.

EDUC 8345. Advanced Studies in Educational Policy Analysis. 1-12 Credits.
The process by which education policies are designed, adopted, and implemented by education systems. Case studies of specific policies, examining their assumptions and objectives, the criteria for assessing their effectiveness, and their governance at federal, state, and local levels. Prerequisite: EDUC 6371, EDUC 8120, or permission of instructor.

EDUC 8505. Seminar: Higher Education Administration. 1-12 Credits.

EDUC 8525. College and University Curriculum. 3 Credits.
Development, patterns, creative design, issues, problems, evaluation, and trends in the higher education curriculum.

EDUC 8530. Leadership in Higher Education. 3 Credits.
Cognitive leadership theory as articulated in higher education: what leadership is, how it works, how it is practiced, how it is considered by scholars and practitioners, and how it is researched.

EDUC 8540. History of Higher Ed. 3 Credits.
History, philosophy, scope, purpose, present status, programs, and trends in higher education in the United States.

EDUC 8560. Case Studies in Higher Education Administration. 3 Credits.
An analysis of case studies related to administrative functions in colleges and universities.

EDUC 8565. College and University Governance. 3 Credits.
Organizational and administrative structures, patterns, and relationships in higher education.

EDUC 8580. The Community/Junior College. 3 Credits.
The two-year college as it relates to secondary education, four-year colleges, and universities. Objectives, curricula, students, faculty, legal concerns, and special problems of two-year colleges.

EDUC 8582. Administration and Governance of Two-Year Colleges. 3 Credits.
A study of the community/junior college, focusing on administrative and governance patterns and national, regional, state, and local influences, as well as the theory and structure of two-year college organization.

EDUC 8585. Doctoral Internship in Higher Education Administration. 3-6 Credits.
Service in a higher education situation directed by the University and the cooperating institution to integrate theory and practice. Admission by permission of instructor.

EDUC 8594. Current Issues in Higher Education. 3 Credits.
Analysis of contemporary issues in higher education practice and scholarship.

EDUC 8998. Pre-Dissertation Seminar. 3-6 Credits.
Required of all departmental Ed.D. degree candidates. Approval of the dissertation research proposal by the dissertation committee is necessary for successful completion of the seminar. Admission by permission of instructor.

EDUC 8999. Dissertation Research. 3,6 Credits.
Prerequisite: EDUC 8998.

ELECTRICAL & COMPUTER ENGINEERING (ECE)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ECE 1010. Introduction to Electrical, Computer, and Biomedical Engineering. 1 Credit.
Basic and emerging concepts in electrical, computer, and biomedical engineering. Hands-on experiments and projects. Introduction to the professional literature and available resources and to technical writing, speaking, and presentation skills.

ECE 1020. Introduction to Electrical, Computer, and Biomedical Engineering. 1 Credit.
Continuation of ECE 1010. Basic and emerging concepts in electrical, computer, and biomedical engineering. Hands-on experiments and projects. Introduction to the professional literature and available resources and to technical writing, speaking, and presentation skills.

ECE 1120. C Programming for ECE. 3 Credits.
Basic programming concepts including algorithmic thinking and structured programming, control flow, data types, pointers, functions, algorithms, I/Os, threads, and performance evaluation and optimization. Concurrency and multicore programming using threads, processes as well as parallel C programming paradigms. Controlling hardware devices and fine control via interfacing with assembly language.

ECE 1125. Data Structures&Algorithms ECE. 3 Credits.
Fundamentals of algorithms and data structures for electrical and computer engineering. Topics include techniques to solve problems through programming in C/C++ languages, linked lists, stacks, queues and trees; searching methods such as binary trees, hashing, and multi-way trees; design and analysis of algorithms and their space and time complexity. (Fall).

ECE 2110. Circuit Theory. 4 Credits.
Lecture (3 hours), laboratory (3 hours). Circuit elements, techniques of circuit analysis; circuit theorems; operational amplifiers; RLC circuits; natural and step responses; series, parallel and resonant circuits; sinusoidal steady-state analysis; phasers; power calculations; transformers; two-port circuits. CAD tools used in circuit projects. Corequisite: APSC 2113. Prerequisites: PHYS 1022 or PHYS 1026. (Fall and spring).

ECE 2115. Engineering Electronics. 4 Credits.
Lecture (3 hours), laboratory (3 hours). Solid-state devices used in electronic engineering. Physics of their operation. Application to electronic circuits. Primary emphasis on application of these elements in power supplies and in linear amplifiers. Design concepts through use of SPICE and graphical techniques. Prerequisite: ECE 2110.

ECE 2120. Engineering Seminar. 0-1 Credits.
This seminar course provides electrical and computer engineering students with a detailed view of the electrical and computer engineering professions. Speakers from within and outside of the department discuss facets of ECE, engineering education, and other important department, college, or university topics of interest. (Fall).

ECE 2140. Design of Logic Systems I. 4 Credits.
Lecture (3 hours), laboratory (3 hours). Boolean algebra; combinational and sequential circuits; minimization techniques; design-and-build logic subsystems, such as decoders, multiplexers, adders, and multipliers; use of CAD tools. Corequisite: ECE 2115.

ECE 2210. Circuits, Signals, and Systems. 3 Credits.
Circuit analysis using Laplace transforms; transfer functions; poles and zeroes; Bode diagrams; effects of feedback on circuits; convolution; Fourier series and Fourier transforms; design of filters; CAD tools used in design of projects. Prerequisite: ECE 2110.

ECE 3125. Analog Electronics Design. 4 Credits.
Design, testing, and measurement of analog electronic circuits. Differential and multistage amplifiers. Output stages and power amplifiers. Frequency response of amplifiers, high-frequency models of FETs and BJTs. Introduction to feedback circuit topologies. Use of electronic CAD tools, such as P-SPICE. Prerequisite: ECE 2115.

ECE 3130. Digital Electronics and Design. 4 Credits.
Lecture (3 hours), laboratory (3 hours). Design and testing of logic gates, regenerative logic circuits, and semiconductor memory circuits. Implementation of such circuits with NMOS, CMOS, TTL, and other integrated circuit technologies. Use of electronic CAD tools, such as SPICE. Prerequisite: ECE 2140.

ECE 3135. Design of Logic Systems II. 4 Credits.
Lecture (3 hours), laboratory (3 hours). Introduction of ASIC design techniques; design and programming of FPGAs using CAD tools; timing in sequential circuits; essential hazards; races in sequential circuits; design-and-build FPGA project. Prerequisite: ECE 2140.

ECE 3220. Intro to Digital Signal Proces. 3 Credits.
Signal representation, sampling and quantization, discrete-time signals, z-transforms and spectra, difference equations. Fourier analysis. Discrete Fourier transform, IIR and FIR filter design. Prerequisite: ECE 2210.

ECE 3225. Signal and Image Analysis. 3 Credits.
Introduction and clinical applications; characteristics of biomedical problems, time- and frequency-domain techniques for signal feature analysis; spectral estimation and analysis; autoregressive modeling; detection and estimation of periodicity; digital images as two-dimensional signals; 2-D Fourier transform. Corequisite: ECE 2210, ApSc 3115.

ECE 3310. Introduction to Electromagnetics. 3 Credits.
Maxwell's equations, pulse propagation in one dimension, transmission line equations, reflection coefficient, capacitance and inductance calculations, Smith chart, plane waves, reflection from a dielectric of fiber and integrated optics. Prerequisites: APSC 2113, PHYS 1022.).

ECE 3315. Fields and Waves I. 3 Credits.
Complex phasor notation, uniform transmission lines, standing wave ratio, power, reflection coefficient, impedance matching. Review of vector analysis and numerical methods. Electrostatics, generalizations of Coulomb's law, Gauss's law, potential, conductors, dielectrics, capacitance, energy. Prerequisites: APSC 2113 and PHYS 1022. (Fall and spring).

ECE 3410. Communications Engineering. 3 Credits.
Fourier series and Fourier transform in relation to signal analysis. Convolution and linear filtering. Signal bandwidth and sampling theorem. Analog modulation. Random variables and stochastic processes; power spectrum. Digital modulation: BPSK, QPSK, MSK. Pulse code modulation, DPCM and delta modulation. Prerequisites: APSC 3115, ECE 2210.).

ECE 3420. Communications Laboratory. 1 Credit.
Experiments supporting communications systems. Fourier analysis and Fourier transform. Sampling theorem, filtering, and aliasing. Amplitude modulation (AM), frequency modulation (FM), quantization, and pulse code modulation (PCM). Delta modulation. Binary phase shift keying (BPSK). Quadrature phase shift keying (PSK). Prerequisite or corequisite: ECE 3410.

ECE 3515. Computer Organization. 3 Credits.
Structure and operation of a digital computer. Design of computer arithmetic units, data and instruction paths. Microprogramming; memory technology; virtual memory; caches; pipelined computer organization; characteristics of secondary storage; I/O interfacing. May be taken for graduate credit. Prerequisite: ECE 2140. (Same as CSCI 3462) (Fall, Every Year).

ECE 3520. Microprocessors: Software, Hardware, and Interfacing. 3 Credits.
Microprocessor architecture, assembly language, address decoding, hardware interrupt, parallel and serial interfacing with various circuits, timer/counters, direct memory access, microprocessor-based system. Hands-on laboratory experience is an integral part of this course. Prerequisite: ECE 2140.

ECE 3525. Introduction to Embedded Systems. 3 Credits.
Microcontrollers and their application in embedded systems. Topics include assembly and C for microcontroller programming, serial and parallel I/O interfacing, and multimedia interfacing. Students perform laboratory experiments and a final project to develop a microcontroller-based embedded system. Prerequisite: CSCI 1121, ECE 3520.

ECE 3530. Introduction to Parallel and Distributed Computer Systems. 3 Credits.
Shared and distributed memory computer systems. Parallel computation. Interprocess communication and synchronization. Terminal, file transfer, and message handling protocols. Algorithms for deadlock detection, concurrency control, and synchronization in distributed systems. Network security and privacy. Resource control and management. Prerequisite: ECE 3515.

ECE 3915W. Electrical, Computer, and Biomedical Engineering Capstone Project Lab I. 1 Credit.
ECE 3915, ECE 4920, and ECE 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project.

ECE 4140. VLSI Design and Simulation. 3 Credits.
Study of VLSI circuit design including PMOS and NMOS transistor analysis, switch and gate logic design, understanding of semiconductor fabrication processes and design rules, CAD system, speed and power considerations, scaling of transistors to the nano-scale, and designing with highly variable process parameters. Each student will design a VLSI chip, simulate the design and submit a GDS II file for chip fabrication. Prerequisites: ECE 3130, ECE 3135. Same as ECE 6240. (Fall).

ECE 4145. Micro and Nano Fabrication Techniques. 3 Credits.
Introduction to modern fabrication process technologies associated with various types of nano-or micro fabrications process, with applications to the micro- and nano scale device fabrications; steps of standard processing will be illustrated; nano lithography and other available modern technologies. Prerequisite: ECE 2110. (Fall).

ECE 4150. ASIC Design and Testing of VLSI Circuits. 3 Credits.
ASIC and mixed-signal design methodology, use of ASIC design CAD tools. Logic synthesis, styles of synthesis, power/area/speed constraints. MIPS CPU HDL implementation/verification/testing. VLSI testing, fault models, design for testability techniques, scan path, built-in self-test. Testing of chips designed and fabricated in ECE 4140 or equivalent chips. Prerequisite: ECE 4140. (Same as ECE 6250) (Spring, Every Year).

ECE 4155. Modern Measurements and Sensors. 3 Credits.
Measurement of dc, ac, and high-frequency signals. Interface electronic circuits. Sensors for measurement of mechanical, optical, magnetic, electromagnetic, thermal, chemical, and biochemical signals. Prerequisite: ECE 4320, ECE 3125, ECE 2140. May be taken for graduate credit.

ECE 4160. Introduction to Nanoelectronics. 3 Credits.
Nanoscience and technology and nanoelectronics. Basic nanofabrication steps, and techniques to build devices such as carbon nanotubes, Graphene device, and other 2D nanoelectronic devices. Tools for performing design and characterizations of nanodevices, including scanning electron microscopy (SEM), atomic force microscopy (AFM), and transmission electron microscope (TEM). Prerequisite: ECE 2115. (Same as ECE 6260) (Fall, Every Year).

ECE 4320. Fields and Waves II. 3 Credits.
Magneto-stationary fields, Lorentz force torques, Biot–Savart law, Ampere's law, magnetic materials, inductance, energy. Maxwell's equations, Faraday's law, charge–current continuity, vector potential. Time-harmonic fields, plane waves, polarization, skin effect, dielectric boundaries, and fiber optics. Radiation, dipole, gain, effective area. Prerequisites: APSC 2114, ECE 3315.).

ECE 4325. Microwave and Optics Laboratory. 1 Credit.
Experiments in transmission lines, network analyzer measurements of scattering parameters, microwave systems, fiber-optic systems and antennas. Introduction to the characteristics of laser and optical systems. Prerequisite: ECE 4320.

ECE 4435. Fiber Optical Communications. 3 Credits.
Lightwave fundamentals. Integrated optics. Optical fiber waveguides. Light sources and detectors. Distribution networks and fiber components. Modulation. Noise and detection. System design. Prerequisite: APSC 2114; ECE 3310 or ECE 4320.

ECE 4535. Computer Architecture and Design. 3 Credits.
Design of bus-based digital computer systems, memory subsystems, caches, and multiple processors. Comparison of RISC and CISC processors and standard buses. Bus transfer and control signals. Performance, memory management, architectural support for protection, task switching, exception handling, instruction pipelines. Prerequisite: ECE 3515.

ECE 4610. Electrical Energy Conversion. 3 Credits.
Three-phase and single-phase AC rotating machines and transformers, DC machines, rotating machines as circuit elements, power semiconductor converters. Renewable generation, utility grid integration, smart grid applications. Prerequisites: ECE 2210, ECE 3315. (Same as ECE 6610) (Spring, Every Year).

ECE 4615. Electrical Power Laboratory. 1 Credit.
Experiments in support of the analysis and design of electrical power systems. Measurements of the characteristics of devices to generate electric power. Rectification and inversion processes for power systems and drives. Prerequisite or corequisite: ECE 4610.

ECE 4620. Electrical Power Systems. 3 Credits.
AC power grids, transmission line parameters, load flow, economic dispatch voltage, frequency and power flow control. Voltage, current and power limitations. Fault analysis and stability considerations. Effect of independent power producers and variable energy sources and energy storage. (Same as ECE 6620) (Fall, Every Year).

ECE 4710. Control Systems Design. 3 Credits.
Mathematical models of linear systems; steady-state and transient analyses; root locus and frequency response methods; synthesis of linear feedback control systems. Prerequisite: APSC 2114, ECE 2210 or MAE 3134.

ECE 4715. Control Systems Laboratory. 1 Credit.
Experiments in support of control theory, involving the use of the digital computer for process control in real time. Design of feedback and compensation with computer implementation. Digital simulation of linear and nonlinear systems. Prerequisite or corequisite: ECE 4710.

ECE 4730. Robotic Systems. 3 Credits.
Modeling and analysis of robot designs. Kinematics of mechanical linkages, structures, actuators, transmissions, and sensors. Design of robot control systems, computer programming, and vision systems. Use of artificial intelligence. Current industrial applications and limitations of robotic systems. Same as MAE 3197. Prerequisite: computer programming, APSC 2058, ECE 4710.

ECE 4735. Robotics Laboratory. 1 Credit.
Experiments illustrating basic principles and programming of robots and other automated machinery. Design and writing of computer programs to use a robot's arm, vision, and data files to accomplish tasks. Prerequisite or corequisite: ECE 4730/MAE 3197.

ECE 4920W. Electrical, Computer, and Biomedical Engineering Capstone Project Lab II. 3 Credits.
ECE 3915, ECE 4920, and ECE 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project.

ECE 4925W. Electrical, Computer, and Biomedical Engineering Capstone Project Lab III. 2 Credits.
ECE 3915, ECE 4920, and ECE 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project.

ECE 4980. Special Topics. 1-3 Credits.
Topic to be announced in the Schedule of Classes. (Fall and spring).

ECE 4990. Research. 1-3 Credits.
Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status.

ECE 6005. Microcomputer Systems Architecture. 3 Credits.
Advanced topics in computer architecture and design; instruction-level parallelism, thread-level parallelism, memory, multithreading, and storage systems. (Fall, Every Year).

ECE 6010. Linear Systems Theory. 3 Credits.
Introduction to linear systems theory. Topics include linear vector spaces and linear operators, mathematical representation of dynamic linear systems, concept of state and solution of the state equation, controllability and observability, canonical forms of the state equation, state feedback, and state estimation. (Fall, Spring, Every Year).

ECE 6015. Stochastic Processes in Engineering. 3 Credits.
Basic concepts of modeling of random phenomena in electrical and computer systems: probability framework, stationarity, linear filtering. Optimization of discrete and continuous stochastic processes. Elements of performance analysis. (Fall, Spring, and Summer, Every Year).

ECE 6020. Applied Electromagnetics. 3 Credits.
Review of Maxwell's equations; electromagnetics of circuits, plane wave propagation; transmission lines; waveguides; radiating systems; receiving antennas and pattern reciprocity, array antennas; electromagnetic properties of materials: conductors, crystals, devices; optical transmission. (Fall, Every Year).

ECE 6025. Signals and Transforms in Engineering. 3 Credits.
Signal spaces and approximation. Orthogonal functions. Fourier series and transform. Bandpass signals and modulation. Hilbert transform and analytic signals. Timefrequency analysis. Short-time Fourier transform. Linear systems properties. Laplace transform. Sampling and discrete-time signals. Discrete-time Fourier transform and z-transform. Wavelets. (Fall and Spring, Every Year).

ECE 6030. Device Electronics. 3 Credits.
Semiconductor device concepts; doping, drift diffusion, recombination. Analysis of Schottky and Ohmic contacts, pn junctions, MOS systems. Modeling and analysis of semiconductor devices such as MOSFET and bipolar transistors. Hot electron and short and narrow channel effects. (Spring, Every Year).

ECE 6035. Introduction to Computer Networks. 3 Credits.
Layered protocol architectures. Digital transmission, fundamental limits. Error detection and ARQ protocols. Data link layer and control. Multiple access protocols. Circuit and packet switching. Multiplexing. Routing. Flow and congestion control, queue management. LAN standards. TCP/IP. Next-generation Internet. (Same as ECE 3415) (Spring and fall).

ECE 6045. Special Topics. 1-3 Credits.
Topics to be announced in the Schedule of Classes. (Fall and spring).

ECE 6050. Research. 1-12 Credits.
Applied research and experimentation projects, as arranged. May be repeated for credit.

ECE 6060. Electric Power Generation. 3 Credits.
Overview of primary traditional and alternative energy sources and storage. Analysis of machinery employed in energy conversion processes. Effect of independent power producers on long-term and short-term stability of large grids. (Fall, Every Year).

ECE 6065. Colloquium. 0 Credits.
Lectures by outstanding authorities in electrical and computer engineering. Topics to be announced each semester. (Fall and spring).

ECE 6105. Introduction to High-Performance Computing. 3 Credits.
Taxonomy and classifications of computers and parallel computers. Parallel thinking and parallel algorithms. Domain decomposition and load balancing. Programming parallel computers using the message passing, global address space, and partitioned global address space paradigms. Prerequisite: graduate standing in science or engineering or consent of instructor.

ECE 6120. High-Performance Processors. 3 Credits.
Processor microarchitecture and instruction-level parallelism. Superpipelines and superscalar processors. Multiple-instruction fetching, aligning, merging, and issuing. Hardware and software solutions to structural and data and control hazards. Branch prediction and static and dynamic speculation. Register renaming, Tomasulo's algorithm. VLIWs. Prerequisite: ECE 6005.

ECE 6125. Parallel Computer Architecture. 3 Credits.
Architectural classifications and taxonomies of parallel computers; enabling technologies, including advanced processor concepts, interconnection networks, high-speed memory architectures and protocols; parallel performance and scalability; and introduction to parallel algorithms and parallel programming. Prerequisite: ECE 6005 or ECE 6105.

ECE 6130. Big Data and Cloud Computing. 3 Credits.
Research topics related to big data and cloud computing, including data centers, virtualization, hardware and software architecture; system-level issues on performance, energy efficiency, reliability, scalability, and security. Prerequisite: ECE 6105. (Spring).

ECE 6132. Secure Cloud Computing. 3 Credits.
Security and privacy issues in cloud computing systems; confidentiality, integrity, and availability of data and computations; cloud computing models, threat models, outsourcing, and security issues. Practical applications of secure cloud computing. (Fall, spring, and summer).

ECE 6140. Embedded Systems. 3 Credits.
Architectural advances and instruction sets for embedded microprocessors. Real-time operating systems and real-time scheduling, use of pre-designed software and hardware cores. Sensors, actuators, and data acquisition. System-on-chip (SoC). Design case studies. Prerequisite: ECE 6005.

ECE 6213. Design of VLSI Circuits. 3 Credits.
Top-down ASIC/FPGA design methodology; modeling of VLSI circuits using HDL; behavioral, structural, and RTL modeling techniques; logic synthesis techniques; design verification plan and techniques. Students design and verify a final project using state of the art commercial VLSI CAD tools for ASIC and FPGA (Altera). Prerequisite: ECE 6240. (Fall, Every Year).

ECE 6214. High-Level VLSI Design Methodology. 3 Credits.
High-level ASIC–FPGA design methodology. RTL modeling of VLSI circuits, using HDL for synthesis. Detailed discussion of logic synthesis. Architectural tradeoff for large VLSI circuits. Advanced optimization techniques. VLSI design flow, using the state-of-the-art, front-end design entry and simulation tools and back-end logic synthesis. Prerequisite: ECE 6213.

ECE 6215. Introduction to MEMS. 3 Credits.
Introduction to microelectromechanical and nanoelectromechanical systems (MEMS/NEMS). Basic principles of simulating, designing, and fabricating MEMS/NEMS. Prerequisite: ECE 6240. (Spring, Every Year).

ECE 6216. RF/VLSI Circuit Design. 3 Credits.
Introduction to radio frequency systems. RF design, specifications, S-parameters, gain, noise, stability, matching concepts, small signal amplifiers, low noise amplifiers, power amplifiers, system-level design. Students use CAD tools such as ADS and other industrial tools to design class project. Prerequisite: ECE 6240. (Spring, Odd Years).

ECE 6218. Advanced Analog VLSI Circuit Design. 3 Credits.
MOS technology: building blocks, devices, capacitors, limitations. Operational amplifiers and other analog systems. Layout examples and design principles. Mixed-signal A/D and D/A. Students use the CAD VLSI laboratory to design and simulate circuits. Prerequisite: ECE 6240. (Spring, Odd Years).

ECE 6221. Introduction to Physical Electronics. 3 Credits.
Theoretical principles underlying the operation of electronic devices. Postulates of quantum mechanics: wave–particle duality, uncertainty relations, electronic band structure. Free-carrier statistics; electron–photon interaction. Physical principles of semiconductor and optoelectronic devices. (Fall, Every Year).

ECE 6240. VLSI Design and Simulation. 3 Credits.
Study of VLSI circuit design including PMOS and NMOS transistor analysis, switch and gate logic design, understanding of semiconductor fabrication processes and design rules, CAD system, speed and power considerations, scaling of transistors to the nano-scale, and designing with highly variable process parameters. Each student will design a VLSI chip, simulate the design and submit a GDS II file for Chip fabrication. (Same as ECE 4140) (Fall, Every Year).

ECE 6245. Micro and Nano Fabrication Technology. 3 Credits.
Introduction to the basic fabrication principles at the micro and nano scale; students practice and fabricate simple devices. Restricted to graduate students. Prerequisites: ECE 2150. (Fall and spring).

ECE 6250. ASIC Design and Testing of VLSI Circuits. 3 Credits.
ASIC and mixed-signal design methodology, use of ASIC design CAD tools. Logic synthesis, styles of synthesis, power/area/speed constraints. MIPS CPU HDL implementation/verification/testing. VLSI testing, fault models, design for testability techniques, scan path, built-in self-test. Testing of chips designed and fabricated in ECE 4140 or equivalent chips. (Same as ECE 4150) (Spring, Every Year).

ECE 6260. Introduction to Nanoelectronics. 3 Credits.
Nanoscience and technology and nanoelectronics. Basic nanofabrication steps; techniques to build devices such as carbon nanotubes, graphene device, and other 2D nanoelectronic devices. Tools for performing design and characterizations of nanodevices, including scanning electron microscopy (SEM), atomic force microscopy (AFM), and transmission electron microscope (TEM). (Same as ECE 4160) (Fall, Every Year).

ECE 6500. Information Theory. 3 Credits.
The concepts of source and channel. Measure of information, entropy, mutual information. The noiseless coding theorem. The noisy coding theorem. Channel capacity: symmetric and nonsymmetric channels, Gaussian and binary symmetric channels. Rate-distortion theory. Basics of multiple-user information theory. Prerequisite: ECE 6015.

ECE 6505. Error Control Coding. 3 Credits.
Algebraic coding theory: finite fields, linear block codes, cyclic and Reed– Solomon codes. Error detection using CRC codes. Convolutional codes and trellis-coded modulations: structure, properties, performance bounds. Capacity achieving codes; soft-input–soft-output decoding; computationally efficient decoding algorithms. Prerequisite: ECE 6015.

ECE 6510. Communication Theory I. 3 Credits.
Principles of digital communications. Channels, digital modulation; optimum receivers and algorithms in the AWGN; coherent, non-coherent, and fading channels. Correlation detectors, matched filters; diversity. Bounds on performance of communications, comparison of communications systems and implementation issues. Prerequisite: ECE 6015.

ECE 6520. Mobile and Wireless Communication Systems. 3 Credits.
Characterization of mobile and wireless channels. Indoor and outdoor path loss models. Multipath propagation. Fading. Fading countermeasures (coding and equalization). Power control. Cellular design and frequency reuse. Modulation and coding techniques. Spread spectrum and orthogonal frequency-division multiplexing (OFDM). Space-code division multiple access (SCDMA), multiple-input and multiple-output (MIMO). Prerequisite: ECE 6510. (Fall, Odd Years).

ECE 6525. Satellite Communication Systems. 3 Credits.
Low earth orbit and geostationary satellite systems; transmission systems; RF link budgets; modulation and multiplexing; multiple access techniques, including FDMA, TDMA, and CDMA; satellite transponders, antennas, and earth stations. Prerequisite: ECE 6510. (Fall, odd years).

ECE 6530. Electronic Warfare. 3 Credits.
Electronic attack and protection of information. Countermeasures and counter-countermeasures. Electronic attacks on ranging and tracking radar systems; jamming and jamming defense. Electronic attack on communications systems. Defensive techniques, signal design, spread spectrum. Attack and defense of optical and high-energy systems. Prerequisite: ECE 6510. (Fall and Spring, Every Year).

ECE 6550. Advanced Network Architectures. 3 Credits.
Review of packet and circuit switching. Local access networks: digital subscriber lines. High-speed wide area networks: Frame relay, asynchronous transfer mode, and synchronous optical network. Multi-protocol label switching. Network layer protocols. Network management systems. Prerequisite: ECE 6035. (Spring, Every Year).

ECE 6555. Networks Protocols. 3 Credits.
Layering, OSI, and Internet architectures. Link–layer protocols: PPP, HDLC, SONET. Cell-switching, ATM, and adaptation protocols. MAC layer protocols: Ethernet, 802.11. IP addressing, routing protocols: RIP, OSPF. Multi-domain routing: CIDR, BGP. End-to-end protocols: UDP, TCP. TCP congestion control. Application layer protocols: DNS, HTTP, SMTP, FTP. Prerequisite: ECE 6035. (Fall and Spring, Every Year).

ECE 6560. Network Performance Analysis. 3 Credits.
Telecommunications traffic models: arrival and service time distributions, Poisson and Erlang formulas. Topological design algorithms. Delay and blocking models and probabilities for packet switched networks. Routing, relaying, and flow control algorithms: delay and cost minimization, throughput optimization. Prerequisite: ECE 6015, ECE 6035. (Fall, Every Year).

ECE 6565. Telecommunications Security. 3 Credits.
Speech and data scrambling. Linear and nonlinear transformations. Cryptographic techniques. Block and stream ciphers. The Data Encryption Standard (DES). Key management, digital signatures, message authentication, hash functions. Public key algorithms. Prerequisite: graduate standing in science or engineering or consent of instructor.

ECE 6570. Telecommunications Security Protocols. 3 Credits.
The OSI security architecture: services and mechanisms, risk analysis. Internet protocol mechanisms. Ipv4 and Ipv6 security, security associations, authentication, MD5. Encapsulating security payload. E-mail security: PGP, S/MIME, PEM, MSP. Secure voice communications algorithms. Security in Internet commerce: SSL, SET. Prerequisite: ECE 6565.

ECE 6575. Optical Communication Networks. 3 Credits.
Wave propagation through fiber, dispersion, polarization. Multiplexing techniques, WDM. Optical networking components. Optical transmission systems design. All-optical networking, broadcast star and wavelength routing networks. Performance analysis, survivability, control and management. Optical access networks. Prerequisite: APSC 3115.

ECE 6580. Wireless Networks. 3 Credits.
Telecommunications traffic models: arrival and service time distributions, Poisson and Erlang formulas. Topological design algorithms. Delay and blocking models and probabilities for packet switched networks. Routing, relaying, and flow control algorithms: delay and cost minimization, throughput optimization. Prerequisite: ECE 6015, ECE 6035. (Fall, Every Year).

ECE 6610. Electrical Energy Conversion. 3 Credits.
Three-phase and single-phase AC rotating machines and transformers, DC machines, rotating machines as circuit elements, power semiconductor converters. Renewable generation, utility grid integration, smart grid applications. May be taken for graduate credit by students in fields other than electrical engineering. Prerequisites: ECE 2210, ECE 3315. (Same as ECE 4610) (Spring, Every Year).

ECE 6620. Electrical Power Systems. 3 Credits.
AC power grids, transmission line parameters, load flow, economic dispatch voltage, frequency, and power flow control. Voltage, current, and power limitations. Fault analysis and stability considerations. Effect of independent power producers and variable energy sources and energy storage. (Same as ECE 4620) (Fall, Every Year).

ECE 6662. Power Electronics. 3 Credits.
The application of electronics to energy conversion. Principles of operation, analysis, and control of circuits including solid-state electronic switches. Methods of solving power electronic circuits and finding the steady-state values of important quantities. Deriving the linear model of the studied power electronic circuits and designing controllers for these devices. A general knowledge of electric circuits and linear control theory is required. (Spring, Every Year).

ECE 6666. Power System Transmission, Control, and Security. 3 Credits.
Analysis of AC networks, load flow, economic dispatch, voltage and frequency control. N-1 contingency and its role in assessing and maintaining system integrity. Analysis of loss of critical generating units and transmission capabilities under severe threats. Rapid restoration techniques based on historical data and heuristic approaches. Prerequisite: ECE 6620. (Spring, Odd Years).

ECE 6667. Nuclear Power Generation. 3 Credits.
Review of nuclear reactor engineering, traditional and developing reactor design, issues regarding the safe operation of nuclear plant, and control and regulatory aspects of nuclear power generation. Prerequisites: ECE 6620 or permission of the instructor. (Fall, Even Years).

ECE 6668. Power Distribution Grids. 3 Credits.
Equipment for power distribution for industrial, commercial, and residential applications. Switching and safety at the distribution voltage level. Bulk insulation level and insulation coordination principles. Smart grid innovations. Remote metering. Prerequisites: ECE 4620 or permission of course director. (Fall, odd years).

ECE 6669. Smart Power Grids. 3 Credits.
Review of power systems and elements of smart grids; wide-area monitoring (WAMS) and advanced metering infrastructure (AMI); communication and networking architecture (SCADA, Zigbee, PLC, GSM), standards and reliability aspects; state estimation; synchrophasors and their applications; demand response; distributed energy resources (DER) and microgrids; power electronic interface of DER units; switching techniques of inverters; control of DER units; control of microgrids; and electric vehicles. (Fall, Odd Years).

ECE 6670. Power System Protection. 3 Credits.
Main philosophy for protection of power systems. Protection systems and approaches; reliability and security of protection systems; protection of generators, transformers, motors and transmission lines; requirements for distributed source generation (DSG); and requirements for system protection to prevent grid blackouts and enhance power system security. Prerequisite: ECE 6620 or permission of instructor. (Spring, Even Years).

ECE 6690. Power Systems Economics. 3 Credits.
Overview of electrical power market economics and market participants. Production pricing and market clearing pricing. Market ancillary service pricing. Location marginal pricing and zonal pricing schemes. New electrical generation entrant impact. Investing in generation and in transmission. Independent power producers and independent transmission owners. Prerequisites: ECE 6060 or permission of course director. (Fall).

ECE 6691. Power Systems Reliability. 3 Credits.
Overview of probability theory and basic power market reliability modeling and evaluation; generation supply reliability techniques; reliability of transmission system and delivery of supply; loss of load probability evaluation; forced and maintenance outages; load forecasting and probability of interconnected systems; risk evaluation and operating reserves. Prerequisite: ECE 6620 or permission of the instructor. (Spring, Even Years).

ECE 6699. Energy and Sustainability. 3 Credits.
Energy sources, consumption, and the societal and environmental impacts. Energy generation and harvesting technology. Thermodynamics and efficiency limits. Nanotechnology for sustainability. Emission and pollution. Growth models; learning curves. Life-cycle analysis. Energy in an international perspective: origins, crises, and solutions. Recommended background: Basic understanding of energy and thermodynamics, such as ECE 4620, MAE 2131, or with permission from the course director. (Fall, even years).

ECE 6705. Introduction to Microwave Engineering I. 3 Credits.
Transmission lines, scattering parameters, microwave networks, resonators. Modes in uniform waveguides, general characteristics of waveguide junctions. Transfer representations, filters, couplers, symmetrical waveguide junctions. Prerequisite: ECE 6020.

ECE 6710. Microwave Engineering. 3 Credits.
Transmission line theory, transmission lines and waveguides, waveguide discontinuities, microwave networks, impedance matching and tuning, microwave resonators, power dividers and directional couplers, and microwave filters and active microwave circuits. (Fall, Even Years).

ECE 6715. Antennas. 3 Credits.
Antenna circuits, radiation pattern, reciprocity, gain, receiving cross-section, scattering by antennas, mutual coupling, arrays. Polarization. Radiation from current distributions, equivalent aperture currents, dipoles, patch antennas, large phased arrays. Prerequisites: ECE 6020.).

ECE 6720. Remote Sensing. 3 Credits.
Active and passive remote-sensing systems: scatterometers, real-aperture imaging, and synthetic-aperture radars. Sensing of surface, subsurface, and atmospheric parameters at microwave, infrared, and optical frequencies. Analysis of radiometric techniques using radiative transport theory, inverse scattering methods, profile inversion. Prerequisite: ECE 6020.

ECE 6725. Electromagnetic Radiation and Scattering. 3 Credits.
Alternative representations of solutions to Maxwell equations, Fourier transforms and spherical mode representations, field equivalence principles, dyadic Green's functions, radiation and scattering by simple shapes, geometrical theory of diffraction, integral equations and the moment method. Prerequisite: ECE 6020, ECE 6025.

ECE 6730. Waves in Random Media. 3 Credits.
Propagation and scattering of electromagnetic, optical, and acoustic waves in random media, scattering from rough surfaces and randomly distributed particles, turbulence. Applications to propagation through rain and fog. Laser beam scintillations, remote sensing, and communications channel modeling. Monte Carlo simulation. Prerequisite: ECE 6015, ECE 6725.

ECE 6735. Numerical Electromagnetics. 3 Credits.
Systematic discussion of useful numerical methods in computational electromagnetics, including integral equation techniques and differential equation techniques, both in the frequency and time domains. Hands-on experience with numerical techniques, including the method of moments, finite element and finite-difference time-domain methods, and spectral integral methods. Related numerical issues such as accuracy, stability, and dispersion are discussed. Examples are drawn from various electromagnetic applications such as nanowires, waveguides, and antenna radiation. Prerequisite: ECE 6020. (Fall, Odd Years).

ECE 6745. Analysis of Nonlinear and Multivalued Devices. 3 Credits.
Numerical techniques for modeling semiconductor and magnetic devices. Modeling multivalued behavior of memory materials. Optimization of geometry. Prerequisite: ECE 6020.

ECE 6750. Introduction to Radar Systems. 3 Credits.
The radar range equation. Radar cross section of targets, target detection and parameter estimation, detection in clutter. Resolution, ambiguities, and signal design. Moving-target indicators. Pulse Doppler radar. Radar antennas, phased arrays. Synthetic aperture and space-based radar. Prerequisite: ECE 4320, ECE 6015.

ECE 6760. Propagation Modeling in Wireless Communications. 3 Credits.
Wireless communication channel modeling, propagation mechanisms, terrestrial fixed links, satellite fixed links, macrocells, fading models, micro-cells, picocells, diversity, equalizers. Prerequisite: ECE 6020 or permission of instructor.

ECE 6765. Photonics and Fiber Optics. 3 Credits.
Concepts of opto-electronic devices. Light-matter-interaction and absorption. Device details and applications, including laser, photodetector, and modulators. Optical cavity. Waveguides and optical fibers. Device and link considerations include energy-per-bit, modulation speed, and nano fabrication. Plasmonics and nanophotonics. Industry perspective. (Fall, Odd Years).

ECE 6770. Applied Magnetism. 3 Credits.
Classification of magnetic materials. Magnetic measurements. Soft and hard magnetic materials. Applications to microwave, magnetic recording, permanent magnets, magneto-optics, magnetostrictive devices. Magnetic sensors. Electric power. Superconducting devices. Prerequisite: ECE 6020.

ECE 6800. Computational Techniques in Electrical Engineering. 3 Credits.
Introduction to linear algebra and vector spaces as applied to networks and electrical systems. Orthogonal bases, projections, and least squares. Fast Fourier transforms. Eigenvalues and eigenvectors with applications. Computations with matrices. Constrained optimization in electrical systems. Network models and applications. Prerequisite: ECE 2210, APSC 2114.

ECE 6810. Speech and Audio Processing by Computer. 3 Credits.
Acoustic sensor technologies and characteristics. Speech coding: waveform coding, voice source coding. Speech enhancement and noise reduction. Speech analysis and synthesis, audio formats and compression standards. Speech recognition: isolated word recognition, continuous speech recognition, language identification. Models for speech and audio. Prerequisite: graduate standing.

ECE 6815. Microarchitect/Multimedia Proc. 3 Credits.
Introduction to multimedia. Multimedia formats, conversion, and combinations. Delivery and trends. Servers and networks. Hardware and architecture. End-user devices. Digital libraries, video conferencing and collaboration. Educational and health applications. Case studies and trials. Prerequisite: ECE 6005.

ECE 6820. Real Time DSP. 3 Credits.
Digital signals, binary number representation, fixed-point and floating-point DSP architectures. Q-format for data representation, bit allocation and arithmetic. Portability of arithmetic expressions: floating point vs. fixed point. Applications to signal parameter estimation, signal generation, filtering, signal correlation, spectral estimation (FFT). Prerequisite: ECE 6005. Recommended background: Basic knowledge of computer architecture and DSP algorithms; knowledge of C programming language, assembly language and Matlab is desirable. (Fall and Spring, Every Year).

ECE 6825. Computer Control Systems. 3 Credits.
Analysis of automatic control systems in which the control procedure uses on-line digital computation. Topics include single- and multirate sampling, z-transforms, responses of discrete systems, stability criteria, and discrete control design. Prerequisite or concurrent registration: ECE 6010.

ECE 6830. System Optimization. 3 Credits.
Parameter optimization problems, theory of minima and maxima. Optimization problems for dynamic systems, calculus of variations, the maximum principle and the Hamilton–Jacobi equation. Optimization problems with constraints, optimal feedback systems. Numerical solution of optimal problems. Prerequisite: ECE 6010.

ECE 6835. Nonlinear Systems. 3 Credits.
Definition of linear and nonlinear systems; introduction to approximate analysis of nonlinear systems—describing functions, Krylov and Bogoliubov asymptotical method, and Tsypkin locus. Forced oscillations—jump resonance. Stability analysis—Liapunov criterion. Luré problem and Popov method. Prerequisite: ECE 6010.

ECE 6840. Digital Image Processing. 3 Credits.
Properties of images and visual systems. Image acquisition, sampling, quantization. One- and two-dimensional image transform techniques; enhancement and restoration. Image coding and data compression. Segmentation, representation, boundary and shape, texture, matching. Image understanding. Prerequisite: ECE 6800.

ECE 6842. Image Engineering. 3 Credits.
Sensor/camera design and analysis as a system. Detection and noise processes underlying the sensing of optical radiation; the engineering and physics of image formation. Topics covered include radiometry/photometry, optics and image formation, device and camera characterization, and image quality metrics and system design trades. Prerequisites: ECE 6010, ECE 6015. (Fall, even years).

ECE 6845. Image Synthesis. 3 Credits.
Image synthesis techniques, mathematical image models, image reconstruction techniques, color texture synthesis, synthesis of three-dimensional scenes. Prerequisite: ECE 6015.

ECE 6850. Pattern Recognition. 3 Credits.
Random vectors, transformations. Hypothesis testing, error probability, sequential methods. Bayes, other linear classifiers. Discriminant functions, parameter estimation, learning, and dimensionality reduction. Nonparametric methods; clustering; feature selection and ordering. Computer applications and projects. Prerequisite: ECE 6015.

ECE 6855. Digital Signal Processing. 3 Credits.
Signal and system representation, sampling and quantization, transform techniques. Recursive and nonrecursive digital filter design, recursive estimation, linear predictive filtering. Fast algorithms for signal processing. Current topics. Prerequisites: ECE 3220 or ECE 6025, and ECE 6015.).

ECE 6860. Compression Techniques for Data, Speech, and Video. 3 Credits.
Lossless and lossy coding theorems, rate distortion bound. Data compression algorithms: Huffman coding, run-length coding. Differential coding. Transform coding. Voice, audio, image and video coding techniques: CELP, JPEG, MPEG, MP3. Data coding standards: G.722, G.726, G.728, H.261, H.323. Prerequisite: ECE 6015, ECE 6025.

ECE 6865. Statistical Signal Estimation. 3 Credits.
Minimum variance unbiased estimation. Cramer–Rao bound, statistical modeling, sufficient statistics, maximum likelihood estimation, efficient estimators, and least squares. Bayesian estimators. Wiener and Kalman filters, complex data and parameters. Applications to radar, speech, image, biomedicine, and communications, control. Prerequisites: ECE 6010, ECE 6015, and ECE 6025. (Fall, Even Years).

ECE 6875. Wavelets and Their Applications. 3 Credits.
Time-frequency analysis. Continuous, discrete, and discrete-time wavelet transform. Multirate filter banks. Multiband wavelets, two-dimensional wavelets. Wavelet packets and matching pursuit. Wavelets in noise filtering, compression, modeling of fractals, communications, detection, adaptive systems, neural networks, and fast computation. Prerequisite: ECE 6025, ECE 6855.

ECE 6880. Adaptive Signal Processing. 3 Credits.
Adaptation criteria. On-line adaptive filtering algorithms: least mean square and recursive least square. Adaptation in transform domain. Convergence of adaptive algorithms and tracking. Applications in system identification, adaptive channel equalization, interference cancellation and suppression, and adaptive antenna arrays. Blind deconvolution. Prerequisite: ECE 6865.

ECE 6885. Computer Vision. 3 Credits.
Image processing; edge detection, segmentation, local features, shape and region description in 2D and 3D. Insights from human vision studies. Representation for vision: object models, synthetic images, matching, gaps, algorithms. Interference, production system, syntactic networks. Planning spatial reasoning for robot vision. Prerequisite: CSCI 6511; ECE 6850.

ECE 6998. Thesis Research. 3 Credits.

ECE 6999. Thesis Research. 3 Credits.

ECE 8150. Advanced Topics in Computer Architecture. 3 Credits.
Examples of topics are interconnection networks, fault tolerance, load balancing, workload characterization, and performance modeling of advanced computer systems. Prerequisite: ECE 6120, ECE 6125.

ECE 8999. Dissertation Research. 0-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

EMERGENCY HEALTH SERVICES (EHS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work

- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EHS 1002. CPR & First Aid. 1 Credit.
Development of the proper techniques of cardiopulmonary resuscitation and first aid. Nationally recognized certification provided.

EHS 1040. Emergncy Medical Tech-Basic. 3 Credits.
EMT–Basic knowledge and skills. Includes basic life support, patient assessment, bleeding control, bandaging and splinting. Successful completion makes student eligible to sit for National Registry certification exam.

EHS 1041. EMT - Basic Lab. 1 Credit.
Application and practice of EMT–Basic skills.

EHS 1044. EMT-Basic Recertification. 3 Credits.
Prepares students to recertify as a National Registry EMT–Basic. Includes an "EMT Refresher" class and continuing education program. Laboratory fee.

EHS 1058. EMT Instructor Development. 2 Credits.
Students develop and deliver didactic and skill instruction. Students participate in the day-to-day teaching and management in an EMT–Basic program.

EHS 2104. Legal Aspcts/Emergncy Mgmt. 3 Credits.
Legal issues in the delivery of emergency medical services, including abandonment, malpractice, negligence, patient consent, the Freedom of Information and Privacy Acts, the Good Samaritan law, protocol deviation, record keeping, patient refusal of services, and medical control. Emergency medicine legislation and recent court decisions. Prerequisite: HSci 2103.

EHS 2107. Theory&Prac ofRsch/ClinclSetng. 4 Credits.
Fundamentals of clinical research methods, design, and analysis related to emergency medicine.

EHS 2108. Emergncy Med Clinical Scribe. 3 Credits.
Fundamentals of emergency medicine clinical practice through documentation and management of clinical information. Students participate as members of an emergency medicine team and explore topics related to emergency health care, e.g., practical human anatomy, medical terminology, diagnosis, patient care, medical records, and practice management.

EHS 2109. Emerg.Infections&Bioterrorism. 3 Credits.
Principles of the epidemiology of outbreaks, the rise of emerging infectious diseases, and strategies for emergency preparedness from a national and international perspective that includes biosecurity.

EHS 2110. EmergDeptCritCareAsses&Proced.. 4 Credits.
Expansion of EMT–Basic knowledge and skills for independent performance as a hospital technician; emphasis on the Emergency Department and Intensive Care Units.

EHS 2160. Disastr Respnse Planng & Mgmt. 3 Credits.
Planning for and management of multiple-casualty incidents in the prehospital and hospital environment, including development of response plans, triage, medical evacuation procedures, communications, roles of government and the private sector, terrorism, and medical care for mass gatherings. Prerequisite: permission of program director.

EHS 2161. Medical Mgmt/Hasmat Incidents. 3 Credits.
Hazardous materials and their risks. Identification of hazardous materials and related problems, precautions in approaching the contaminated patient, protective clothing, decontamination, and management of selected hazards.

EHS 2162. Intro Princpls/Tactical Med. 4 Credits.
The basics of tactical emergency medicine, such as acute care in tactical combat situations and medical operations support of tactical teams.

EHS 2166. Current Topics. 1 Credit.
Review of the current literature to identify clinical, operational, educational, and administrative issues important in the leadership of EMS.

EHS 2174. Foundations of Emergency Health Services Systems. 3 Credits.
An overview of the design and operation of Emergency Health Services (EHS) systems, delivery of services, and the echelons of care. The history of Emergency Medical Services (EMS), the interface of public and private organizations and review of the various personnel who comprise these systems will be examined in relation to their impact on the heal care delivery system.

EHS 2175. Community Risk Management and Safety in EHS. 3 Credits.
This course introduces the EHS professional to the benefits of community information and community relations. Students analyze strategies for introducing risk reduction programs and apply these concepts in the development of such programs.

EHS 2211. Intro to Telemedicine. 3 Credits.
An introduction to the ethical, legal, and technical aspects of telemedicine, including, but not limited to, emerging technologies, planning and operational considerations. Students will complete a number of practical exercises requiring direct application and utilization of Internet, video, audio, and other technologies.

EHS 4101. Humanitarian Relief Ops. 3 Credits.
An integrative approach to humanitarian relief operations, including factors that can influence relief delivery, field planning considerations, and the roles and limitations of non-governmental organizations, international organizations, local government, and various federal and civilian and military agencies. Emphasis on medical aspects of working with particular populations such as women, children, the elderly, and culturally underrepresented or persecuted population subsets.

EHS 4110. Operations Mgt in EHS Systems. 3 Credits.
This course applies principles of general management that contribute to the effectiveness of day to day operations within an Emergency Health Services Organization.

EHS 4111. Leadership Concepts in EHS. 3 Credits.
This course is designed to provide a basic introduction to leadership by focusing on what it means to be a good leader. Emphasis in the course is on the practice of leadership in the Emergency Health Services setting. The course will examine topics such as: the nature of leadership, recognizing leadership traits, developing leadership skills, creating a vision, setting the tone, listening to out-group members, handling conflict, overcoming obstacles, and addressing ethics in leadership. The course provides a special focus on facilitating students' understanding of their own leadership vision.

EHS 4112. Special Ops and Disaster Mgt. 3 Credits.
This course is an introduction to Emergency Health Services (EHS) Special Operations. The student will develop and apply a general understanding of what constitutes special operations and resources needed to mitigate special operations incidents, both small and large, in the 21st century. The student will be able to evaluate local special operations incidents, major multi-agency operations, scheduled and unscheduled mass casualty events, terrorism and natural disaster.

EHS 4144. Seminar in EHS Leadership. 3 Credits.
A senior capstone course, integrating the theories and concepts covered in previous work, with a focus on the identification and resolution of problems and opportunities encountered by the health sciences manager. To be taken in the final semester of study or with the program director approval.

EHS 4197. Clinical Internship. 1-6 Credits.

EHS 4198. Administrative Internship. 1-12 Credits.

EHS 4199. Independent Study. 1-3 Credits.

EHS 6201. Response /High Impact Emergenc. 3 Credits.
Strategies for an effective response to large-scale and high-impact emergencies examined as the managerial foundation for development of a response policy.

EHS 6203. Legal&RegltryOblig/Emer Svcs. 3 Credits.
Laws, regulations, and standards pertaining to emergency services. Implications for organizational policy and response requirements for executives, managers, and supervisors.

EHS 6204. Publ Info Mgt fr Emergncy Svcs. 3 Credits.
Public information management for emergency services executives, managers, and supervisors.

EHS 6205. Strategic Emergency Response. 3 Credits.
Strategic analysis of counterterrorism response requirements for the emergency service organization. Determination of vulnerabilities and trends; development of operational doctrine.

EHS 6206. Case Studies in EMS Leadership. 3 Credits.
Integrative case-based approach to the analysis of complex problems in the management and leadership of emergency medical services. Same as CML 6205.

EHS 6210. EMS Systems Design and Analysis. 3 Credits.
System design characteristics of high-performance EMS systems based on excellence in emergency care, response-time reliability, economic efficiency, and customer service from a strategic perspective.

EHS 6211. Innovations in Telemedicine. 3 Credits.
Consideration of telemedicine in a multidisciplinary format toward innovation and entrepreneurship in the fields of medicine, public health, engineering, and business.

EHS 6227. Intro to Human Health in Space. 3 Credits.
Introduction of aerospace concepts in an interdisciplinary context for those interested in human spaceflight. Elements of physiology, medicine, law, policy, engineering, and history are incorporated.

EHS 6274. Health Economics and Finance. 3 Credits.
Issues of health care economics, financial management, and budgeting that relate to managerial decision making. Applied financial management, management control systems, budgeting, staffing, and cost accounting. (Same as CML 6274).

EHS 6275. Ldrshp&Change/EmergSvcsMgt. 3 Credits.
The concept of leadership within the context of health professions, health systems, and health policy.

ENGINEERING MANAGEMENT AND SYSTEMS ENGINEERING (EMSE)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EMSE 1001. Introduction to Systems Engineering. 1 Credit.
Core concepts in systems engineering; processes of system decomposition and integration; upfront conceptual design, rapid prototyping, structured testing, balanced work, lean processes, and design for manufacturability. (Fall, Every Year).

EMSE 2705. Mathematics in Operations Research. 3 Credits.
Linear algebra topics relevant for optimization methods and models; systems of linear equations, Gaussian elimination, matrix algebra, vector spaces, determinants, linear programming, orthogonality and least squares; mathematical foundations of optimization theory; linear algebra, advanced calculus, convexity theory; geometrical interpretations and use of software. Prerequisite: MATH 2233. (Same as MATH 2184) (Spring, Every Year).

EMSE 2801. Fundamentals of Systems Engineering. 3 Credits.
The systems approach to designing, building, and operating complex engineering systems; requirements, functional decomposition, systems architecting, analysis of alternatives, project life cycle modeling, cost analysis, and technical performance measurement. Prerequisites: EMSE 1001; COMM 1040, or COMM 1041 or COMM 1042. (Fall and spring).

EMSE 3701. Operations Research Methods. 3 Credits.
Mathematical properties and solution algorithms of optimization models used in operations research; linear programming: the simplex method, sensitivity analysis and duality theory; optimization models on graphs and networks: shortest path, longest path, network flow models; integer programming and discrete optimization; unconstrained and constrained nonlinear programming. Prerequisite: EMSE 2705 or permission of the instructor. (Spring, Every Year).

EMSE 3740W. Systems Thinking and Policy Modeling. 3 Credits.
Introduction to systems thinking and system dynamics approach to policy analysis; applications to business management and public policy. Key principles of systems; causal-loop and stock and flow models of business growth, technology adoption, and marketing. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: CSCI 1111 or CSCI 1121 or CSCI 1131. (Fall and spring).

EMSE 3760. Discrete Systems Simulation. 3 Credits.
Simulation of discrete stochastic models. Simulation languages. Random-number/random-variate generation. Statistical design and analysis of experiments, terminating/nonterminating simulations; comparison of system designs. Input distributions, variance reduction, validation of models. Prerequisites: APSC 3115; CSCI 1121, CSCI 1041, or CSCI 1111; or permission of instructor.).

EMSE 3815. Requirements Analysis and Elicitation. 3 Credits.
The process of translating and decomposing systems engineering objectives into measurable and tractable requirements. Includes the discussion of how requirements analysis supports general processes and standards through elicitation methods, requirements decomposition, traceability matrices, and systems requirements specifications, and case studies that feature contemporary SE problems. Prerequisites: EMSE 2801. (Spring).

EMSE 3820. Project Management for Engineering Systems. 3 Credits.
Introduction to project management concepts, processes, tools, and techniques; activity planning, budgeting, scheduling, analyzing risk, monitoring and controlling, evaluation and terminating; challenges of uncertainty, risk, and behavioral factors. Prerequisites: APSC 3115 and EMSE 3815. (Spring).

EMSE 3850. Quantitative Models in Systems Engineering. 3 Credits.
Introduction to analytical models used in systems engineering to support decision making in business and government; applications to, for example, production planning, workforce scheduling, and network problems; formulating and solving models using spreadsheets. Prerequisite: EMSE 2705. (Fall).

EMSE 3855W. Critical Infrastructure Systems. 3 Credits.
Topics in engineered infrastructure systems; asset management, environmental impact analysis, input–output life cycle analysis and inoperability modeling, infrastructure risk and reliability analysis, resilience and resistance to natural hazards or service disruptions, and development of infrastructure sustainability metrics. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: UW 1020. (Spring).

EMSE 4190. Senior Project in Systems Engineering I. 3 Credits.
First phase of a two-semester senior project to identify real world problems and assess applicable systems engineering methodologies. Project focus varies, but may include Washington, D.C. area problems in public infrastructure or the private sector, including transportation, energy, environment, healthcare, telecommunications. Prerequisites: EMSE 3820 and EMSE 4765. (Fall).

EMSE 4191. Senior Project in Systems Engineering II. 3 Credits.
Second phase of a two-semester senior project. Field experience and systems engineering project completion in a team context. Each small group confronts an actual problem, conducts an analysis and formulates a solution using systems engineering methods and models. Oral and written reports demonstrate project management, effective teamwork, and the mastering of applied systems engineering concepts. Prerequisites: EMSE 4190. (Spring).

EMSE 4197. Special Topics. 0-3 Credits.

EMSE 4198. Research. 1-3 Credits.
Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status.

EMSE 4410. Engineering Economic Analysis. 3 Credits.
How the concept of time value of money is used to make optimal engineering project investment choices in the face of competing alternatives; life-cycle financial analysis of engineering projects. Course provides foundation knowledge for the National Council of Examiners for Engineering and Surveying Fundamentals of Engineering examination. Prerequisites: ECON 1011 and MATH 1232. (Fall and spring).

EMSE 4710. Applied Optimization Modeling. 3 Credits.
Formulation and analysis of linear, integer, and nonlinear optimization models of decision problems that arise in industry, business, and government; modeling techniques and applications; use of optimization software to formulate and solve models. Prerequisites: EMSE 3850. (Fall, Every Year).

EMSE 4755. Quality Control and Acceptance Sampling. 3 Credits.
Survey of techniques in quality control, including acceptance sampling, capability analysis, control charts, and design of experiments. Prerequisites: EMSE 4765 or permission of the instructor. (Fall, Every Year).

EMSE 4765. Data Analysis for Engineers and Scientists. 3 Credits.
Design of experiments and data collection. Regression, correlation, and prediction. Multivariate analysis, data pooling, and data compression. Model validation. Prerequisites: APSC 3115.

EMSE 4770. Techniques of Risk Analysis and Management. 3 Credits.
Topics and models in current risk analysis. Use of quantitative and qualitative methods in risk analysis. Modern applications of risk based planning and risk management. Restricted to Exceptions may be permitted with the permission of the instructor. Restricted to undergraduates majoring in Systems Engineering. Prerequisites: APSC 3115. (Spring).

EMSE 6001. The Management of Technical Organizations. 3 Credits.
The practice of management as applied within technical organizations. Includes history of the tradition and current effective practices, research findings, and case studies, with objectives of enhanced understanding of external and internal factors influencing organizational performance and leadership requirements. (Fall, spring, and summer).

EMSE 6005. Organizational Behavior for the Engineering Manager. 3 Credits.
The behavior of individuals and groups in the context of technical organizations, focusing on relationships and interactions within the organization's operating activities. Individual and group development and motivation. Organizational structures and cultures. (Fall and spring).

EMSE 6014. Management of Engineering Contracts. 3 Credits.
Study of the total contracting process (including initial budget preparation and justification, execution of a contract, and administration of the contract to completion) considered from the viewpoints of the industrial and government buyer and the seller of technical materials and services. (Fall).

EMSE 6018. Engineering Law. 3 Credits.
Legal principles and procedures of interest to engineers. The American legal system, contracts and specifications, liability of professional engineers, product liability, agency relationships, patent and proprietary rights, special problems in research and development contracts. (As required).

EMSE 6020. Decision Making with Uncertainty. 3 Credits.
Problem formulation. Concepts and techniques used in analyzing complex decision problems. Modeling decision problems using decision trees, probability models, multi-objective models and utility theory. (Fall, spring, and summer).

EMSE 6023. Technology Issue Analysis. 3 Credits.
Contextual background and intellectual basis for addressing technology issues in the public and private sectors. Technology impact assessment, forecasting, and innovation; principles and practices of technology transfer as elements of a systematic approach to making technology decisions. (Fall, odd years).

EMSE 6026. Technical Enterprises. 3 Credits.
Essential features of technology-based companies from the entrepreneur's point of view. Team preparation of a simulated business plan for a technology-based company. Designed for those working in technical firms and for government personnel who depend on technical firms as suppliers. (Spring, odd years).

EMSE 6030. Technological Forecasting and Management. 3 Credits.
Concepts and methods for understanding the dynamics of technological change. Issues in technology assessment, technology transfer, and strategic management of technology. (Spring, even years).

EMSE 6035. Marketing of Technology. 3 Credits.
Analysis of industrial marketing process and functions, providing concepts and tools for engineering managers to market high technology products and services. (Fall, odd years).

EMSE 6070. Management of Research and Development. 3 Credits.
Seminar on readings and classic and contemporary case studies in the strategic management of innovation and technology. (Fall and spring).

EMSE 6099. Problems in Engineering Management and Systems Engineering. 3 Credits.
Capstone project providing the opportunity to apply concepts and tools previously studied to the solution of a real-world problem. Students work in small groups, on a problem proposed by students and approved by the instructor. Open only to master's candidates in the department, preferably during the last semester of their program.

EMSE 6115. Uncertainty Analysis for Engineers. 3 Credits.
Basics of probability theory and statistics, with a focus on engineering applications, particularly in the realm of systems. Topics include simulation, uncertainty analysis, central limit theorem, systems examination and analysis, and application to systems design and management. Prerequisite: MATH 1231.

EMSE 6200. Policy Factors in Environmental and Energy Management. 3 Credits.
Exploration of the policy development process from several different but integrated perspectives. Focus on areas of environmental and energy management and use of current case studies to develop a framework of understanding to support decisions in a broad variety of management settings. (Fall, odd years).

EMSE 6220. Environmental Management. 3 Credits.
Technical, economic, political, administrative, and social forces influencing the quality of the environment and the use of resources. Government and industrial programs to combat pollution of the air, soil, and water; existing and pending pertinent legislation; theoretical aspects of specific management problems. (Fall).

EMSE 6225. Air Quality Management. 3 Credits.
The nature of critical local, regional, continental, and global problems associated with air pollution and the historical evolution of such problems. The complex regulatory and institutional framework controlling air quality management in the U.S. Current air quality management concepts and processes. (Spring).

EMSE 6230. Hazardous Waste Management and Cleanup. 3 Credits.
Hazardous waste management and cleanup processes used in the U.S. and around the world. The roles of the relevant federal, state, and local government agencies; major hazardous waste laws and regulations. Planning, assessment, investigation, design, and construction phases of hazardous waste remediation projects. (Spring, even years).

EMSE 6235. Water Quality Management. 3 Credits.
The nature of point and non-point sources of surface and ground water pollution and the statutory, regulatory, and institutional framework controlling water quality management activities in the U.S. Current approaches to water quality protection and enhancement. The role of engineered treatment processes in water quality management. (Fall).

EMSE 6240. Environmental Hazard Management. 3 Credits.
Causes and effects of extreme natural and technological hazards. Organizational responsibilities, management approaches, directed technologies, and social factors related to environmental hazard assessment. Cultural, institutional, and technical capacities bearing on environmental disaster management, national and international risk reduction, and mitigation measures. (Spring, Odd Years).

EMSE 6245. Analytical Tools for Environmental Management. 3 Credits.
A survey course in environmental management, focusing on tools to assess the environment: quantitative risk assessment, environmental valuation methodologies, Congressional activities, and environmental laws. The regulatory process as it relates to environmental management. Risk assessment and modeling approaches to solving environmental problems. (Spring, odd years).

EMSE 6260. Energy Management. 3 Credits.
Examination of the range of available energy resources, trends in their use, the programs and organizations that have developed and evolved to address problems associated with energy resource use. (Spring).

EMSE 6285. Analytical Tools for Energy Management. 3 Credits.
Analytical tools needed to manage energy resources at the facility level. Energy technologies: instrumentation, measurement, and control. Energy auditing; conservation techniques, financial and economic analysis, and maintenance of energy budgets. Functions of an energy management office of a large organization. (Fall, even years).

EMSE 6290. Climate Change: Policy, Impact. 3 Credits.
What is known and unknown in climate change science. Strategies and technologies for mitigation of and adaptation to the impact of climate change. International issues related to avoidance, challenges posed by as yet undefined effects, and responsibilities mandated by existing and proposed laws, executive orders, regulations, and court rulings. (Fall, odd years).

EMSE 6291. Greenhouse Gas Measurement and Reporting. 3 Credits.
Study of existing methodologies and standards for measuring and reporting greenhouse gas (GHG) emissions with particular emphasis on accepted environmental accounting frameworks for the business sector and regulatory schemes. (Spring, even years).

EMSE 6292. Greenhouse Gas Mitigation. 3 Credits.
Conducting mitigation analyses, identifying, and analyzing projects to reduce greenhouse gas emissions with a focus on energy efficiency and renewable energy. Monitoring and reporting emission reductions using accepted methodologies. Use of carbon markets as a tool for cost-effective mitigation. (Fall, even years).

EMSE 6293. Greenhouse Gas Management Assurance and Information Systems Design. 3 Credits.
Design of information systems for management of greenhouse gas emissions. Assurance of greenhouse gas emissions assertions. (Spring, odd years).

EMSE 6295. Environmental Secuity. 3 Credits.
Overview of potential terrorist attack vectors on government-owned and private sector assets most directly tied to environmental health and safety. Homeland security requirements for environmental infrastructure, water supplies, energy sources, nuclear waste, and other programs vulnerable to targeting. Courses of action designed to prevent attacks. (Fall).

EMSE 6300. Homeland Security: The National Challenge. 3 Credits.
The evolution of homeland security as a concept, legal framework, and redirection of national policies and priorities. Issues and problems of implementation. The terrorist threat and U.S. responses. Fundamental policy legislation and documents, such as national security strategies, homeland security decision directives, the NRF, and NIMS. (Spring).

EMSE 6305. Crisis and Emergency Management. 3 Credits.
Defining crises, emergencies, and disasters. Developing crisis, business continuity, and incident management plans. The National Response Framework, National Incident Management System, organizing for response, managing the response organization, managing in a turbulent environment, crisis decision making and communication. (Fall).

EMSE 6310. Information Technology in Crisis and Emergency Management. 3 Credits.
The role of information in crisis and response management; determining disaster and crisis information requirements; information technologies applied to crisis, disaster, and emergency management; causes and effects of information breakdowns during crises and disasters.

EMSE 6315. Management of Risk and Vulnerability for Hazards and Terrorism. 3 Credits.
Development of concepts required for risk-based planning and risk management. Objectives and methods for vulnerability assessment for natural disaster, technological hazards, and terrorist threats. Risk analysis, risk perception, risk communication, risk mitigation. (Fall).

EMSE 6320. International Disaster Management. 3 Credits.
Guiding principles, key institutions, operational requirements, policy issues, and broad fundamentals associated with international disaster risk reduction and humanitarian response to natural and man-made disasters and complex emergencies. (Fall).

EMSE 6325. Medical and Public Health Emergency Management. 3 Credits.
Medical and public health management issues encountered in crises, emergencies, and disasters for non-medical emergency managers. The spectrum of medical, public health, psychological and behavioral problems; incident management organization and processes that address these concerns and integrate medical and public health assets into the response. (Spring).

EMSE 6330. Management of Terrorism Preparedness and Response. 3 Credits.
Terrorism, terrorist methods, and human/infrastructure vulnerability. Current preparedness and response programs. Mitigation, preparedness, and response requirements to manage mass terrorism incidents within the context of all-hazard emergency management. Case studies. (Fall).

EMSE 6345. Disaster Recovery and Organizational Continuity. 3 Credits.
Disaster recovery planning and business continuity. Recovery of information and communication systems. The role of the private sector in mitigation and recovery. Public/private partnerships in community reconstruction and recovery. (Spring).

EMSE 6350. Hazard Mitigation in Disaster Management. 3 Credits.
Hazard mitigation and its role in disaster management; analysis of past and current government and private-sector programs; examination of new approaches; structural versus nonstructural actions; mitigation of terrorist attacks. (Fall).

EMSE 6410. Survey of Finance and Engineering Economics. 3 Credits.
Survey of material relevant to financial decision making for engineering activity. Includes traditional engineering economy topics; fundamentals of accounting; and financial planning, budgeting, and estimating applicable to the management of technical organizations. (Fall, spring, and summer).

EMSE 6420. Uncertainty Analysis in Cost Engineering. 3 Credits.
Case studies in engineering economic analysis, capital budgeting, benefit–cost analysis, and other cost-related methodologies relevant to engineering managers. Prerequisites: EMSE 6410 or permission of instructor.).

EMSE 6430. Financial Management for Engineers. 3 Credits.
Financial analysis and concepts useful to engineers: sources and uses of funds, management of working capital, leverage, valuation, forecasting, investment decisions. Prerequisites: EMSE 6410.).

EMSE 6450. Quantitative Methods in Cost Engineering. 3 Credits.
Fitting exponential growth curves using cost data for forecasting; multiperiod capital budgeting using the analytical hierarchy process and optimization; and project network risk analysis. Case studies highlight theoretical complexities in solving problems. (Spring).

EMSE 6505. Knowledge Management I. 3 Credits.
The foundations of knowledge management, including cultural issues, technology applications, organizational concepts and processes, management aspects, and decision support systems. Case studies. (Fall).

EMSE 6506. Knowledge Management II. 3 Credits.
A capstone course. Students work in teams, applying principles and processes of systems thinking, systems engineering, and integrative management in the design and implementation of a knowledge management system. Prerequisite: EMSE 6505.

EMSE 6510. Decision Support Systems and Models. 3 Credits.
Theory of decision making—a cognitive view. Modeling decision maker heuristics and processes. Design, implementation, and evaluation of state-of-the-art DSS (hands-on). Assess impact of behavioral, situational, and organizational variables. (Fall).

EMSE 6537. Information Operations. 3 Credits.
National security concerns of governments and business about attacks across national borders and through physical protective mechanisms. The emergence of information technologies, from casual to full-fledged operational scale, to advance causes. Specific examples (e.g., attacks on Estonia, Palestinian conflict). (On demand).

EMSE 6540. Management of Information and Systems Security. 3 Credits.
Development and management of effective security systems. Includes information, personnel, and physical security. Emphasis on risk analysis for information protection. (Summer and fall).

EMSE 6543. Managing the Protection of Information Assets and Systems. 3 Credits.
Advanced topics in protection of information assets and systems, including authentication, asset control, security models and kernels, physical security, personnel security, operational security, administrative security, security configuration management, and resource control. Prerequisite: EMSE 6540.

EMSE 6544. Auditing, Monitoring, and Intrusion Detection for Information Security Managers. 3 Credits.
Methods for detecting problems with unauthorized activity in information systems and management challenges associated with those activities. Prerequisite: EMSE 6540.

EMSE 6545. Internet and On-Line Law for Security Managers. 3 Credits.
Legal issues regarding control of behavior, information security mechanisms, and information systems engineering in connected enterprises. Specific laws and regulations governing Internet and on-line activity, jurisdictional challenges associated with networked computing, and business law in cyberspace.

EMSE 6546. Cybercrime for Info Secur Mgrs. 3 Credits.
Legal issues regarding information security actions related to and in response to criminal activity, including industrial espionage, back-hacking, cracking, and cyberterrorism. Transnational issues, cybercrime treaties and conventions, and cyberwar issues. Prerequisite: EMSE 6545.

EMSE 6549. Business and Competitive Intelligence. 3 Credits.
Discovery and analysis of competitive information from open-source intelligence. Sources and methods for data collection; legal issues and constraints; analysis processes; longitudinal aspects; inference. (Spring).

EMSE 6570. Information Management and Information Systems. 3 Credits.
The use of information in organizations, the management of the information resource; the impact of information and communication technology. (Spring).

EMSE 6573. Managing E-Commerce Technologies. 3 Credits.
Principles of good e-business management. Methods of conducting e-commerce—major opportunities, limitations, issues, and risks. Popular technologies for building e-businesses, security authentication, privacy, acceptable use policies, and legal limits. (Fall, odd years).

EMSE 6579. Applied Data Mining in Engineering Management. 3 Credits.
Methods and techniques for discovering patterns and relationships in aggregated data, with practical focus on engineering problems. Tools, techniques, and methods explored in the context of their application. Prerequisite: EMSE 6020, EMSE 6586.

EMSE 6580. Information and Software Engineering. 3 Credits.
Introduction to analysis and design of information systems including requirements analysis, project management, and software architectures. Introduction to CASE tools. Prerequisite: EMSE 6570 or permission of instructor.

EMSE 6582. Object-Oriented Analysis and Design. 3 Credits.
The object-relationship model and the object-behavior model. Managing complexity with views and high-level modeling in object-oriented systems analysis. The concepts, the method, and applications, including object-based and object-oriented languages. Prerequisite: EMSE 6580.

EMSE 6584. Fundamentals of Artificial Intelligence. 3 Credits.
History of AI, expert systems, knowledge representation, search and control techniques, natural language processing, computer vision, computer speech, knowledge-based systems, and evidential reasoning. Hands-on experience with a knowledge-based shell. (Spring).

EMSE 6586. Database Design and Database Management Systems. 3 Credits.
Concepts, strategies, and features of database design and management. Analysis, design, and implementation of database systems for micro and mainframe applications. Development of a microcomputer database system. (Spring).

EMSE 6588. Software Project Development with CASE. 3 Credits.
Evaluation and selection of CASE tools, use of CASE tools in software design/project. Graphical user interface and re-engineering tools. Open only to master's candidates in the department during the last semester of their program. Prerequisite: EMSE 6580.

EMSE 6589. Data Communications and Networks. 3 Credits.
Technical and managerial aspects of data communications, with emphasis on communication networks. Methodologies used in data communications, communication networks, and distributed data processing. (On demand).

EMSE 6701. Operations Research Methods. 3 Credits.
Deterministic and stochastic methods. Optimization algorithms: Simplex method, Branch and Bound, combinatorial algorithms, heuristic methods. Optimization theory: convexity, duality, sensitivity analysis. Stochastic optimization: marginal analysis, Markov chains, Markov decision processes. Prerequisite: APSC 3115 or EMSE 6020, MATH 2233, or permission of instructor.

EMSE 6705. Mathematics in Operations Research. 3 Credits.
Mathematical foundations of optimization theory: linear algebra, advanced calculus, convexity theory. Geometrical interpretations and use of software. Prerequisite: MATH 2233.

EMSE 6710. Applied Optimization Modeling. 3 Credits.
Analysis of linear, integer, and nonlinear optimization models of decision problems that arise in industry, business, and government. Modeling techniques and applications; use of optimization software to solve models. Prerequisite: EMSE 6850 or permission of instructor.

EMSE 6715. Theory of Games. 3 Credits.
Mathematical models of conflict and cooperation with applications in economics, business, defense, transportation, and societal issues (voting schemes, fair division, auctions). Concept and computation of equilibrium in n-person games. Prerequisite: MATH 2233 or permission of instructor.

EMSE 6720. Topics in Optimization. 3 Credits.
Selected topics from the fields of linear programming, nonlinear programming, dynamic programming, heuristics, and constraint programming. May be repeated for credit provided the topic differs. Prerequisite: EMSE 6701 or permission of instructor.

EMSE 6730. Integer and Network Programming. 3 Credits.
Combinatorial optimization problems: algorithms and applications. Network problems: minimum spanning tree, shortest path, maximum flows, minimum cost flows, optimal matchings, routing problems. Complexity theory. Enumeration and cutting plane methods for solving integer programs. Prerequisite: EMSE 6701 or permission of instructor.

EMSE 6740. Systems Thinking and Policy Modeling I. 3 Credits.
Introduction to systems thinking and the system dynamics approach to policy analysis, with applications to business management and public policy. Causal-loop and stock and flow models of business growth, technology adoption, and marketing. Use of role-based games to explain key principles of systems. Use of simulation software to model problems and case studies.

EMSE 6745. Systems Thinking and Policy Modeling II. 3 Credits.
Case studies in dynamic policy analysis. Use of microcomputers in simulation. The class collectively models and simulates a social system to explore policy options. Prerequisite: EMSE 6740.

EMSE 6750. Stochastic Foundations of Operations Research. 3 Credits.
Topics in probability theory, stochastic processes, and statistical inference. Foundations of probability, conditional probability and expectation, Poisson processes, Markov chains, and Brownian motion. Prerequisite: APSC 3116 or permission of instructor.

EMSE 6755. Quality Control and Acceptance Sampling. 3 Credits.
Statistical approaches to quality assurance. Single and multivariate control charts, acceptance sampling by attributes and variables, process capability and design of experiments. Prerequisite: APSC 3115 or permission of instructor.

EMSE 6760. Discrete Systems Simulation. 3 Credits.
Simulation of discrete stochastic models. Simulation languages. Random-number/ random-variate generation. Statistical design and analysis of experiments, terminating/nonterminating simulations; comparison of system designs. Input distributions, variance reduction, validation of models. Same as STAT 4173. Prerequisite: APSC 3115; CSCI 1121, CSCI 1041, or CSCI 1111; or permission of instructor.

EMSE 6765. Data Analysis for Engineers and Scientists. 3 Credits.
Design of experiments and data collection. Regression, correlation, and prediction. Multivariate analysis, data pooling, data compression. Model validation. Prerequisite: APSC 3115.

EMSE 6770. Techniques of Risk Analysis and Management. 3 Credits.
Topics and models in current risk analysis; modern applications of risk-based planning and risk management; use of quantitative methods in risk analysis. (Spring).

EMSE 6790. Logistics Planning. 3 Credits.
Quantitative methods in model building for logistics systems, including organization, procurement, transportation, inventory, maintenance, and their interrelationships. Stresses applications. Prerequisite: APSC 3115, MATH 1232.

EMSE 6801. Systems Engineering I. 3 Credits.
Systems approach to the architecting and engineering of large-scale systems; elements of systems engineering; methods and standards; computer tools that support systems and software engineering; trends and directions; the integrative nature of systems engineering. (Fall, spring, and summer).

EMSE 6805. Systems Engineering II. 3 Credits.
Application of systems engineering tools to provide hands-on experience with essential elements of practice. Processes of requirements engineering, functional analysis and allocation, risk management, architecting; architectural heuristics, axiomatic design, analytical assessment of alternative architectures. Prerequisite: EMSE 6801.

EMSE 6807. Advanced Systems Engineering. 3 Credits.
Analysis of advanced systems engineering topics; system lifecycle models, INCOSE Vision 2025, requirements types and processes, architectural design processes and frameworks, DoDAF artifacts, enterprise architecture and enterprise systems engineering, complex adaptive systems (CAS), modeling languages and SysML, and Model Based Systems Engineering (MBSE). Applications of systems engineering tools and techniques. (Spring, Every Year).

EMSE 6810. Systems Analysis and Management. 3 Credits.
The systems or holistic approach as a methodology for making decisions and allocating resources. Analysis by means of objectives, alternatives, models, criteria, and feedback. Prerequisite: EMSE 6020 .

EMSE 6815. Requirements Engineering. 3 Credits.
Requirements in systems engineering, including requirement types, quality factors, elicitation methods, analysis, derivation of implicit requirements, management, traceability, verification, cross-requirement assessments, and validation. Focus on writing and managing quality requirements in complex systems. Prerequisite: EMSE 6801.

EMSE 6820. Program and Project Management. 3 Credits.
Problems in managing projects; project management as planning, organizing, directing, and monitoring; project and corporate organizations; duties and responsibilities; the project plan; schedule, cost, earned-value and situation analysis; leadership; team building; conflict management; meetings, presentations, and proposals. (Fall).

EMSE 6825. Project Cost and Quality Management. 3 Credits.
Developing project cost and resource estimates during the planning stages. Monitoring, forecasting, and controlling cost throughout the project life cycle. Project quality planning, assurance, and control. Relationships among project scope, time, cost, quality, human resources, communications, procurement, and risk. Preparation for the Project Management Professional examination. Prerequisite: EMSE 6820.

EMSE 6830. Human Factors Engineering. 3 Credits.
Study of the human–machine interface applied to system design, job design, and technology management. Human sensory–motor, perceptual, and cognitive functions; task analysis and allocation; contextual aspects of human factors engineering. Modeling, design, and evaluation methodologies. Applications to user-centered industrial and information systems. (As required).

EMSE 6840. Applied Enterprise Systems Engineering. 3 Credits.
Applications of systems engineering in the DoD, other parts of the federal government, and commercial sectors. Architectural frameworks and enterprise architecting concepts and practices, including JCIDS/DODAF, Federal Enterprise Architecture Framework, and Zachman™ Framework. Enterprise architecting and advanced modeling tools. Prerequisite: EMSE 6805.

EMSE 6850. Quantitative Models in Systems Engineering. 3 Credits.
Quantitative modeling techniques and their application to decision making in systems engineering. Linear, integer, and nonlinear optimization models. Stochastic models: inventory control, queuing systems, and regression analysis. Elements of Monte Carlo and discrete event system simulation. Prerequisite: APSC 3115 or EMSE 6020.

EMSE 6855. Reliability Analysis and Infrastructure Systems. 3 Credits.
Modeling basic variables and defining the limit-state surface. Computing the reliability index of an infrastructure system by approximating the limit-state surface—FORM and SORM. Modeling an infrastructure system. Reliability analysis using branch and bound, failure paths and failure modes, identification of dominant failure paths. Case studies. (Fall).

EMSE 6991. Project for Professional Degree. 3 Credits.
Limited to students in the Applied Scientist or Engineer degree program.

EMSE 6992. Special Topics. 3 Credits.
Selected topics in engineering management and systems engineering, as arranged. May be repeated for credit. Prerequisite: permission of instructor.

EMSE 6995. Research. 1-12 Credits.
Basic or applied research in engineering management or systems engineering. Open to master's degree candidates in the department. May be repeated for credit.

EMSE 6997. Advanced Topics in Operations Research. 3 Credits.
Advanced topics from the literature of operations research for analysis, presentation, and discussion. Reading assignments from professional journals selected by the instructor and the student. May be repeated for credit. Prerequisite: permission of instructor.

EMSE 6998. Thesis Research. 3 Credits.

EMSE 6999. Thesis Research. 3 Credits.

EMSE 8000. Research Formulation in Engineering Management and Systems Engineering. 3 Credits.
The first in a two-course sequence of doctoral seminars designed to give students their first exposure to the process of formulating and executing empirical research. Class format includes discussion, field experiments, data analysis, and theorizing. Study of core concepts in building theory from empirical data and classic works in technically-oriented management theory. Participants design and execute an research project. Restricted to Doctor of Engineering in the Field of Engineering Management degree candidates. (Spring, Every Year).

EMSE 8001. Research Methods for Engineering Management and Systems Engineering. 3 Credits.
Second in a two-course sequence introducing doctoral students to the fundamentals of research design and methods. Introduction to a range of research methods relevant to the study of engineering management and systems engineering, reading, writing, and critiquing the elements of a research proposal. Prerequisite: EMSE 8000. Restricted to Doctor of Engineering in the Field of Engineering Management degree candidates. (Fall).

EMSE 8010. Advanced Topics in Optimization. 3 Credits.
May be repeated for credit provided the topic differs. Prerequisite: EMSE 6701, EMSE 6705 or permission of instructor.

EMSE 8020. Advanced Stochastic Models in Operations Research. 3 Credits.
Applied probability models, including the Poisson process, continuous-time, denumerable-state Markov processes, renewal theory, semi-Markov regenerative processes. Applications to queues, inventories, and other operations research systems. Prerequisite: permission of instructor.

EMSE 8998. Adv Reading & Research. 1-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

EMSE 8999. Dissertation Research. 1-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

ENGLISH (ENGL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ENGL 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details.

ENGL 1050. Introduction to Literary Studies. 3 Credits.
How to read and interpret literature at the college level and beyond. Close readings of poetry, fiction, and drama, emphasizing genre and form.

ENGL 1210. Introduction to Creative Writing. 3 Credits.
An exploration of genres of creative writing (fiction, poetry, and/or playwriting). Basic problems and techniques; examples of modern approaches; weekly writing assignments; workshop and/or conference discussion of student writing.

ENGL 1305. Colonial/Post-Colonial British Literature. 3 Credits.

ENGL 1315. Literature and the Financial Imagination. 3 Credits.
Literary studies focused broadly on representations of business, finance, or commerce; the economics of literary production; and/or theories of economic class as they pertain to literary works. Topic, genre, and time period vary by instructor.

ENGL 1320. Literature of the Americas. 3 Credits.
American literature considered in a global framework as writing that probes and spans the boundaries of the nation, connecting the United States to the rest of the Americas and to other parts of the globe.

ENGL 1320W. Literature of the Americas. 3 Credits.
American literature considered in a global framework as writing that probes and spans the boundaries of the nation, connecting the United States to the rest of the Americas and to other parts of the globe. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 1330. Myths of Britain. 3 Credits.
Why much great English literature turns out not to be so English after all. The literature of the island within a transnational frame. Readings generally range from Beowulf to Arthurian myths to Shakespeare. Topic, genre, and time period vary by instructor.

ENGL 1330W. Myths of Britain. 3 Credits.
Why much great English literature turns out not to be so English after all. The literature of the island within a transnational frame. Readings generally range from Beowulf to Arthurian myths to Shakespeare. Topic, genre, and time period vary by instructor.

ENGL 1340. Essential Shakespeare. 3 Credits.
Links between Shakespeare's geographical and theatrical "Globes." How did Shakespeare and his company represent racial, cultural, and linguistic difference in the Globe? What place did they imagine for England and Europe in this newly globalized world?.

ENGL 1340W. Essential Shakespeare. 3 Credits.
Links between Shakespeare's geographical and theatrical "Globes." How did Shakespeare and his company represent racial, cultural, and linguistic difference in the Globe? What place did they imagine for England and Europe in this newly globalized world?.

ENGL 1351. Shakespeare Seminar. 3 Credits.
Seminar course for first-year students in the Dean's Scholars in Shakespeare Program. Literary study of Shakespeare's poems and plays along with those of his contemporaries. Topic, genre, and time period vary by instructor.

ENGL 1360. Fantasy And Speculative Fiction. 3 Credits.
General overview of fantasy and speculative fiction. Topics may vary.

ENGL 1370. Topics in Global Cinema. 3 Credits.
Topics vary by semester. Consult the Schedule of Classes for more details.

ENGL 1410. Introduction to English Literature I. 3 Credits.
Representative works by major British authors studied in their historical context; discussion of recurrent themes and introduction to various types and forms of imaginative literature. Middle Ages through the 18th century.

ENGL 1410W. Introduction to English Literature I. 3 Credits.
Representative works by major British authors studied in their historical context; discussion of recurrent themes and introduction to various types and forms of imaginative literature. Middle Ages through the 18th century.

ENGL 1411. Introduction to English Literature II. 3 Credits.
Continuation of ENGL 1410. Representative works by major British authors studied in their historical context; discussion of recurrent themes and introduction to various types and forms of imaginative literature. 19th and 20th centuries.

ENGL 1411W. Introduction to English Literature II. 3 Credits.
Continuation of ENGL 1410. Representative works by major British authors studied in their historical context; discussion of recurrent themes and introduction to various types and forms of imaginative literature. 19th and 20th centuries.

ENGL 1510. Introduction to American Literature I. 3 Credits.
Historical survey. From early American writing through Melville, Whitman, and Dickinson.

ENGL 1510W. Introduction to American Literature I. 3 Credits.
Historical survey. From early American writing through Melville, Whitman, and Dickinson.

ENGL 1511. Introduction to American Literature II. 3 Credits.
Continuation of ENGL 1510. Historical survey. From Twain, James, and Crane to the present.

ENGL 1511W. Introduction to American Literature II. 3 Credits.
Continuation of ENGL 1510. Historical survey. From Twain, James, and Crane to the present.

ENGL 1610. Introduction to Black American Literature I. 3 Credits.
Survey of several genres of African American literature. From the 18th through the late 19th centuries, in such cultural contexts as the developing concept of "race.".

ENGL 1610W. Introduction to Black American Literature I. 3 Credits.
Survey of several genres of African American literature from the 18th through the late 19th centuries, in such cultural contexts as the developing concept of "race." Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 1611. Introduction to Black American Literature II. 3 Credits.
Continuation of ENGL 1610. Survey of several genres of African American cultural production, including literary and oral forms. From the early 20th century to the present day, in such cultural contexts as the "new Negro" Renaissance and the civil rights and Black Power movements.

ENGL 1611W. Introduction to Black American Literature II. 3 Credits.
Continuation of ENGL 1610. Survey of several genres of African American cultural production, including literary and oral forms. From the early 20th century to the present day, in such cultural contexts as the "new Negro" Renaissance and the civil rights and Black Power movements. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 1710. Introduction to Postcolonial Literature and Film I. 3 Credits.
Introduction to postcolonial literature from the perspectives of colonizer and colonized in Great Britain, India, Pakistan, Bangladesh, Sri Lanka, Australia, New Zealand, Canada, Anglophone Africa, and the Caribbean region; literature written on the wing, in diaspora.

ENGL 1710W. Introduction to Postcolonial Literature and Film I. 3 Credits.
Introduction to postcolonial literature from the perspectives of colonizer and colonized in Great Britain, India, Pakistan, Bangladesh, Sri Lanka, Australia, New Zealand, Canada, Anglophone Africa, and the Caribbean region; literature written on the wing, in diaspora.

ENGL 1711. Introduction to Postcolonial Literature and Film II. 3 Credits.
Continuation of ENGL 1710. Introduction to postcolonial literature from the perspectives of colonizer and colonized in Great Britain, India, Pakistan, Bangladesh, Sri Lanka, Australia, New Zealand, Canada, Anglophone Africa, and the Caribbean region; literature written on the wing, in diaspora.

ENGL 1711W. Introduction to Postcolonial Literature and Film II. 3 Credits.
Continuation of ENGL 1710. Introduction to postcolonial literature from the perspectives of colonizer and colonized in Great Britain, India, Pakistan, Bangladesh, Sri Lanka, Australia, New Zealand, Canada, Anglophone Africa, and the Caribbean region; literature written on the wing, in diaspora.

ENGL 1712. Introduction to Bollywood Cinema. 3 Credits.
Historical introduction to the industry of popular Hindi film known as Bollywood.

ENGL 1830. Tragedy. 3 Credits.
Modes of tragedy as developed in drama, nondramatic verse, and prose fiction in literature from ancient to modern times—Book of Job to Beckett.

ENGL 1830W. Tragedy. 3 Credits.
Modes of tragedy as developed in drama, nondramatic verse, and prose fiction in literature from ancient to modern times—Book of Job to Beckett.

ENGL 1840. Comedy. 3 Credits.
Modes of comedy as developed in drama, nondramatic verse, and prose fiction—Chaucer to Borges.

ENGL 1840W. Comedy. 3 Credits.
Modes of comedy as developed in drama, nondramatic verse, and prose fiction—Chaucer to Borges.

ENGL 2210. Techniques in Creative Writing. 3 Credits.
The craft and technique of creative writing and/or theories of creative writing. Topics vary by semester. Consult the Schedule of Classes for more information.

ENGL 2240. Play Analysis. 3 Credits.
Traditional and nontraditional (Aristotelian and non-Aristotelian) approaches to the analysis of dramatic literature; literary and theatrical techniques used by playwrights. Same as TRDA 2240.

ENGL 2250. Dramatic Writing. 3 Credits.
A workshop in playwriting and screenwriting, with emphasis on dramatic structure. Same as TRDA 2250. Recommended preparation: ENGL 1210 and two semesters of literature courses.

ENGL 2460. Fiction Writing. 3 Credits.
The writing of fiction. Recommended preparation: ENGL 1210 and two semesters of literature courses.

ENGL 2470. Poetry Writing. 3 Credits.
The writing of poetry. Recommended preparation: ENGL 1210 and two semesters of literature courses.

ENGL 2560. Intermediate Fiction Writing. 3 Credits.
The writing of fiction. Prerequisite: ENGL 2460 .

ENGL 2570. Intermediate Poetry Writing. 3 Credits.
The writing of poetry. Recommended preparation: ENGL 1210 and two semesters of literature courses.

ENGL 2800. Introduction to Critical Theory. 3 Credits.
Topics and techniques of literary and cultural analysis. Introduction to major schools of critical theory, including psychoanalysis, Marxism, feminism, queer theory, and disability studies.

ENGL 2800W. Introduction to Critical Theory. 3 Credits.
Topics and techniques of literary and cultural analysis. Introduction to major schools of critical theory, including psychoanalysis, Marxism, feminism, queer theory, and disability studies.

ENGL 3210. Readings in Creative Writing. 3 Credits.
Intensive reading of one to three texts selected by the instructor with the goal of learning to read as a writer and developing close reading skills. Authors and texts vary. May be repeated for credit provided course coverage differs.

ENGL 3240. Introduction to Dramaturgy. 3 Credits.
Fundamentals of classical and contemporary dramaturgical practice, including analyzing plays, doing research, supporting directors and actors in rehearsal, writing program notes, and leading post-show discussions. Same as TRDA 3240.

ENGL 3250. Intermediate Dramatic Writing. 3 Credits.
A workshop developing scripts for both theatre and film. Same as TRDA 3250. Prerequisite: ENGL 2250 . May be repeated for credit with departmental approval.

ENGL 3360. Advanced Fiction Writing. 3 Credits.
Further workshop study of the writing of fiction. Prerequisite: ENGL 2560 . May be repeated for credit with departmental approval.

ENGL 3370. Advanced Poetry Writing. 3 Credits.
Further workshop study of the writing of poetry. Prerequisite: ENGL 2570 . May be repeated for credit with departmental approval.

ENGL 3380. Creative Writing Workshop. 3 Credits.
Taught by the Jenny McKean Moore Writer in Washington; for undergraduates and graduate students. May be repeated for credit if taught by a different instructor. Prerequisites: One of the following upper-level creative writing courses: ENGL 2210, ENGL 2240, ENGL 2250, ENGL 2460, ENGL 2470, ENGL 2560, ENGL 2570, ENGL 3210, ENGL 3240, ENGL 3250, ENGL 3360, ENGL 3370, or ENGL 3390.

ENGL 3390. Topics in Creative Writing. 3 Credits.
Topics announced prior to the registration period; may be repeated for credit provided the topic differs. Topics may include poetry and poetics; forms and methods in fiction; forms and methods in poetry; memoir and personal narratives; creative nonfiction; "Literature, Live"; avant-garde and experimental writing.

ENGL 3400. Topics in Literature and Finance. 3 Credits.
Capstone course for English minors in the School of Business. Analysis of economic theories as they pertain to literary works. Topics may vary.

ENGL 3410. Chaucer. 3 Credits.
Chaucer's major works seen as exciting, lively texts from the modern perspective and as products of specific economic, social, and cultural trends of the late 14th century. Focus on The Canterbury Tales, read in the original Middle English.

ENGL 3410W. Chaucer. 3 Credits.
Chaucer's major works seen as exciting, lively texts from the modern perspective and as products of specific economic, social, and cultural trends of the late 14th century. Focus on The Canterbury Tales, read in the original Middle English.

ENGL 3420. Medieval Literature. 3 Credits.
Readings from a wide range of medieval genres, including romances, saints' legends, mystical narratives, lyrics, civic drama, and social satires. How these texts responded to and shaped changing patterns of medieval culture, as the clergy, the aristocracy, and the urban bourgeoisie attempted to define a culture of their own.

ENGL 3420W. Medieval Literature. 3 Credits.
Readings from a wide range of medieval genres, including romances, saints' legends, mystical narratives, lyrics, civic drama, and social satires. How these texts responded to and shaped changing patterns of medieval culture, as the clergy, the aristocracy, and the urban bourgeoisie attempted to define a culture of their own.

ENGL 3430. The English Renaissance. 3 Credits.
Verse and prose written in the period 1515-1625, examined in relation to cultural practices and social institutions that shaped English life. More, Sidney, Spenser, Shakespeare, Donne, Jonson, Bacon, Herbert, many others.

ENGL 3440. Shakespeare I. 3 Credits.
Close study of six or seven plays each semester, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution.

ENGL 3440W. Shakespeare I. 3 Credits.
Close study of six or seven plays each semester, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution.

ENGL 3441. Shakespeare II. 3 Credits.
Continuation of ENGL 3440. Close study of six or seven plays each semester, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution.

ENGL 3441W. Shakespeare II. 3 Credits.
Continuation of ENGL 3440. Close study of six or seven plays, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution.

ENGL 3445. Shakespeare on Film. 3 Credits.
Students will learn in detail the history of a small but significant subset of American and European film production: adaptations of Shakespeare's plays using the original language.

ENGL 3446. Shakespearean London. 3 Credits.
Early modern London's emergence as a global capital and its influence on Shakespeare's plays. Instructor permission required.

ENGL 3450. Topics in Shakespeare Studies. 3 Credits.
Critical study of a particular aspect of Shakespeare's work, or of a distinctive approach to the plays. Projected topics: Shakespeare on film, the history plays and Elizabethan England, 18th-century rewritings of Shakespeare, Shakespeare as poet, cultural materialist readings of Shakespeare.

ENGL 3460. Milton. 3 Credits.
Study of the major works in verse and prose, following the course of Milton's career.

ENGL 3470. English Drama I. 3 Credits.
Shakespeare's contemporaries.

ENGL 3471. English Drama II. 3 Credits.
Continuation of ENGL 3470. Historical survey, 1660 to present.

ENGL 3480. The Eighteenth Century I. 3 Credits.
Readings in significant 18th-century English and Continental writers—Dryden, Swift, Pope, Johnson, Montesquieu, Voltaire, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies.

ENGL 3480W. The Eighteenth Century I. 3 Credits.
Readings in significant 18th-century English and Continental writers—Dryden, Swift, Pope, Johnson, Montesquieu, Voltaire, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies.

ENGL 3481. The Eighteenth Century II. 3 Credits.
Continuation of ENGL 3480. Readings in significant 18th-century English and Continental writers—Dryden, Swift, Pope, Johnson, Montesquieu, Voltaire, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies.

ENGL 3481W. The Eighteenth Century II. 3 Credits.
Continuation of ENGL 3480. Readings in significant 18th-century English and Continental writers—Dryden, Swift, Pope, Johnson, Montesquieu, Voltaire, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies.

ENGL 3490. Early American Literature and Culture. 3 Credits.
The shaping of America's early literary and cultural traditions as shown by significant writers of the colonial and early national periods: Bradstreet, Cotton Mather, Edwards, Franklin, Crevecoeur, and others.

ENGL 3490W. Early American Literature and Culture. 3 Credits.
The shaping of America's early literary and cultural traditions as shown by significant writers of the colonial and early national periods: Bradstreet, Cotton Mather, Edwards, Franklin, Crevecoeur, and others.

ENGL 3510. Children's Literature. 3 Credits.
Nineteenth- and twentieth-century children's texts that illuminate the several worlds of childhood: the "small world" of childhood perception, the larger world of social and historical forces, and the "secondary world" of fantasy.

ENGL 3520. American Romanticism. 3 Credits.
The shaping of America's literary and cultural traditions as shown by significant writers of the Romantic era: Poe, Emerson, Hawthorne, Melville, Thoreau, Whitman, Dickinson, and others.

ENGL 3520W. American Romanticism. 3 Credits.
The shaping of America's literary and cultural traditions as shown by significant writers of the Romantic era: Poe, Emerson, Hawthorne, Melville, Thoreau, Whitman, Dickinson, and others.

ENGL 3530. The British Romantic Period. 3 Credits.
Major figures and topics in English and Continental romanticism: Blake, Wordsworth, Coleridge, Lamb, Byron, Shelley, Keats, Hazlitt, DeQuincey, and others.

ENGL 3530W. The British Romantic Period. 3 Credits.
Major figures and topics in English and Continental romanticism: Blake, Wordsworth, Coleridge, Lamb, Byron, Shelley, Keats, Hazlitt, DeQuincey, and others.

ENGL 3540. Victorian Literature I. 3 Credits.
Major writers between 1830 and 1865: E. Brontë, Dickens; Tennyson, Browning, Arnold; Darwin, Carlyle, Ruskin.

ENGL 3540W. Victorian Literature I. 3 Credits.
Major writers between 1830 and 1865: E. Brönte, Dickens, Tennyson, Browning, Arnold, Darwin, Carlyle, Ruskin.

ENGL 3541. Victorian Literature II. 3 Credits.
Major writers between 1865 and 1900: Eliot, Hardy, Conrad, Swinburne, the Rossettis, Morris, Pater, and Wilde.

ENGL 3550. The English Novel I. 3 Credits.
The 18th century—Defoe, Richardson, Fielding, Sterne, and others.

ENGL 3551. The English Novel II. 3 Credits.
Continuation of ENGL 3550. The 19th century—Austen, the Brontës, Dickens, George Eliot, Hardy, and others.

ENGL 3551W. The English Novel II. 3 Credits.
Continuation of ENGL 3550. The 19th century—Austen, the Brontës, Dickens, George Eliot, Hardy, and others.

ENGL 3560. American Realism. 3 Credits.
The shaping of America's literary and cultural traditions as shown by significant writers of the Realist school: Twain, James, Crane, Howells, Wharton, Chopin, Robinson, and others.

ENGL 3560W. American Realism. 3 Credits.
The shaping of America's literary and cultural traditions as shown by significant writers of the Realist school: Twain, James, Crane, Howells, Wharton, Chopin, Robinson, and others.

ENGL 3570. 19th-Century Black Literature. 3 Credits.
Studies in 19th-century black literature of the Americas and the transatlantic. Writing from the United States, Latin America, the Caribbean, Britain, and Africa may be included. Topics and emphasis may vary.

ENGL 3610. Modernism. 3 Credits.
The emergence of modernist experimentation (and the sense of epistemological and moral crisis it expressed) in the poetry and prose of Pound, T.S. Eliot, Woolf, Kafka, and others.

ENGL 3620. American Poetry I. 3 Credits.
Close examination of major American poems from the beginnings to the early 20th century: Poe, Emerson, Whitman, Dickinson, and others.

ENGL 3620W. American Poetry I. 3 Credits.
Close examination of major American poems from the beginnings to the early 20th century: Poe, Emerson, Whitman, Dickinson, and others.

ENGL 3621. American Poetry II. 3 Credits.
Close examination of major American poems since the early 20th century: Frost, Eliot, Stevens, Bishop, Hughes, Ashbery, and others.

ENGL 3621W. American Poetry II. 3 Credits.
Close examination of major American poems since the early 20th century: Frost, Eliot, Stevens, Bishop, Hughes, Ashbery, and others.

ENGL 3630. American Drama I. 3 Credits.
19th-century melodrama and the emergence of realism; works by O'Neill and other dramatists of the early 20th century.

ENGL 3631. American Drama II. 3 Credits.
Continuation of ENGL 3630. Developments in modern American drama since World War II, including works by Williams, Miller, Albee, Shepard, Rabe, Guare, Mamet, Henley, Wasserstein, Shange, Hwang, Wilson, and others.

ENGL 3640. The American Novel I. 3 Credits.
Historical and critical study of major works in the American novelistic tradition. From the beginnings through the 19th century: Hawthorne, Melville, James, Twain, Dreiser, and others.

ENGL 3640W. The American Novel I. 4 Credits.
Historical and critical study of major works in the American novelistic tradition. From the beginnings through the 19th century: Hawthorne, Melville, James, Twain, Dreiser, and others.

ENGL 3641. The American Novel II. 3 Credits.
Continuation of ENGL 3640. Historical and critical study of major works in the American novelistic tradition. The 20th century: Wharton, Cather, Anderson, Hemingway, Fitzgerald, Faulkner, Wright, R.P. Warren, Nabokov, and others.

ENGL 3641W. The American Novel II. 3 Credits.
Continuation of ENGL 3640. Historical and critical study of major works in the American novelistic tradition. The 20th century: Wharton, Cather, Anderson, Hemingway, Fitzgerald, Faulkner, Wright, R.P. Warren, Nabokov, and others.

ENGL 3650. The Short Story. 3 Credits.
An extensive survey of short fiction by a wide variety of writers of the 19th and 20th centuries, about half of them American; readings on the art of the short story by writers and literary critics.

ENGL 3660. 20th-Century Irish Literature I. 3 Credits.
Irish writers from the time of the literary revival in the late 19th century to the present. Yeats and other Irish poets and playwrights of his time and after—Synge, O'Casey, Kavanagh, Heaney, and others.

ENGL 3661. 20th-Century Irish Literature II. 3 Credits.
Continuation of ENGL 3660. Irish writers from the time of the literary revival in the late 19th century to the present. Joyce through Ulysses and other fiction writers of later generations—O'Brien, Beckett, and others.

ENGL 3661W. 20th-Century Irish Literature I. 3 Credits.
Continuation of ENGL 3660. Irish writers from the time of the literary revival in the late 19th century to the present. Joyce through Ulysses and other fiction writers of later generations—O'Brien, Beckett, and others.

ENGL 3710. Contemporary Drama. 3 Credits.
Examines drama written since 1960 in the light of postmodernism as both a literary and a theatrical theory. Explores the ways contemporary playwrights and directors challenge the perceptions and assumptions of today's audience.

ENGL 3710W. Contemporary Drama. 3 Credits.
Examines drama written since 1960 in the light of postmodernism as both a literary and a theatrical theory. Explores the ways contemporary playwrights and directors challenge the perceptions and assumptions of today's audience.

ENGL 3720. Contemporary American Literature. 3 Credits.
Historical, critical, and theoretical study of American literature since the 1960s. Various authors and genres.

ENGL 3720W. Contemporary American Literature I. 3 Credits.
Historical, critical, and theoretical study of American literature since the 1960s. Various authors and genres.

ENGL 3730. Topics in Postcolonial Literature and Film. 3 Credits.
Representations of empire and culture in modern, global Anglophone literature and cinema; cross-cultural encounter, migration, identity, orientalism, gender, environment, conflict, and globalization. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

ENGL 3730W. Topics in Postcolonial Literature. 3 Credits.
Historical, critical, and theoretical study of post-colonial literatures—African, Asian, Commonwealth—written in English. Topics vary with instructor; may be repeated for credit provided the topic differs.

ENGL 3810. Selected Topics in Literature. 3 Credits.
Topics announced in the Schedule of Classes; may be repeated for credit provided the topic differs. Topics may include the Bloomsbury group; southern literature; the picaresque; literature of the Holocaust; literature and politics; Freud, Dostoevsky, and Shakespeare.

ENGL 3810W. Selected Topics in Literature. 3 Credits.
Topics announced in the Schedule of Classes; may be repeated for credit provided the topic differs. Topics may include the Bloomsbury group; southern literature; the picaresque; literature of the Holocaust; literature and politics; Freud, Dostoevsky, and Shakespeare.

ENGL 3820. Major Authors. 3 Credits.
In-depth studies of a single figure or two or three authors (of British, American, or other nationality) who have written in English. Topics announced in the Schedule of Classes; may be repeated for credit provided the topic differs.

ENGL 3820W. Major Authors. 3 Credits.
In-depth studies of a single figure or two or three authors (of British, American, or other nationality) who have written in English. Topics announced in the Schedule of Classes; may be repeated for credit provided the topic differs.

ENGL 3826. Toni Morrison and William Faulkner. 3 Credits.
Commonalities between the fictional and discursive practices of Toni Morrison and William Faulkner; specifically, how their texts reenact and resist racism and patriarchal structures, explore the ways in which memory and the past construct identity, experiment with style.

ENGL 3830. Topics in Literary Theory and Cultural Studies. 3 Credits.
Selected topics in the diverse theoretical methodologies and interdisciplinary studies that characterize contemporary English and American literary studies. May be repeated for credit provided that topic differs.

ENGL 3830W. Topics in Literary Theory and Cultural Studies. 3 Credits.
Selected topics in the diverse theoretical methodologies and interdisciplinary studies that characterize contemporary English and American literary studies. May be repeated for credit provided the topic differs.

ENGL 3840. Gender and Literature. 3 Credits.
Symbolic representations of culturally defined roles and assumptions in literature. Male and female gender roles as fundamental to culture; the representation of culture, in literature especially and in the arts and humanities generally. May be repeated for credit provided the topic differs.

ENGL 3840W. Gender and Literature. 3 Credits.
Symbolic representations of culturally defined roles and assumptions in literature. Male and female gender roles as fundamental to culture; the representation of culture, in literature especially and in the arts and humanities generally. May be repeated for credit provided the topic differs.

ENGL 3850. Ethnicity and Place in American Literature. 3 Credits.
The relationships among ethnic identity, authorship, regional setting, and national consciousness. Differences in the literary culture of ethnically, racially, and regionally diverse American populations, and how considerations of ethnicity and place have been reshaping the American literary canon. Texts and emphases vary by instructor.

ENGL 3860. Topics in the History of the English Language. 3 Credits.
The cultural and literary functions of English across time and space. Scope and methodology vary by instructor. Topics may include language and identity, theoretical and linguistic approaches to language, multilingualism, diasporic writing, or history and periodization.

ENGL 3910. Disability Studies. 3 Credits.
Consideration of cultural texts that illustrate or illuminate issues of ability and disability-terms that extend the prism through which human experience may be understood.

ENGL 3912. Disability and the Holocaust. 3 Credits.
Investigating the question of direct links between the medical mass murder of disabled people in German psychiatric institutions to the Holocaust during World War II; studies of contemporary memorialization practices are examined.

ENGL 3915. Literature and Madness. 3 Credits.
A literary history of mental unrest; madness as a condition of culture, as an adaptive cognitive style, and as a cognitive challenge; descriptive, medical, historical, and socio-critical perspectives.

ENGL 3918. Literature and Medicine. 3 Credits.
The experience of illness as determined by historical, social, and psychological contexts; narrative as a mode of both understanding and managing illness, pain, loss, and the injustice of suffering.

ENGL 3920. U.S. Latina/o Literature and Culture. 3 Credits.
Introduction to the basic texts in the Chicana/o, Cuban-American, Dominican-American, and Puerto Rican literary and cultural traditions. Works by U.S. writers of Central American origin are discussed as well.

ENGL 3930. Topics in U.S. Latina/o Literature and Culture. 3 Credits.
In-depth exploration of a critical issue in the field of Latina/o literary and cultural studies. Topics may include ideologies of literary recovery, transnationalism and diaspora, blackness, and latinidad.

ENGL 3930W. Topics in U.S. Latina/o Literature and Culture. 3 Credits.
In-depth exploration of a critical issue in the field of Latina/o literary and cultural studies. Topics may include ideologies of literary recovery, transnationalism and diaspora, blackness and latinidad.

ENGL 3940. Topics in African American Literary Studies. 3 Credits.
Intensive study of a single aspect of African American literature: major authors, genre, theme, movement. Substantial attention to the critical tradition.

ENGL 3945. African American Poetry. 3 Credits.
African American poetry from the Black Atlantic through contemporary spoken word and web-based experiments in hypertext composition. Topics vary and may include Langston Hughes, Gwendolyn Brooks, poetry manifestoes, poetry and social justice, or eco-poetics of the black experience.

ENGL 3950. Cultural Theory and Black Studies. 3 Credits.
Selected topics in critical and cultural theories—often interdisciplinary—as used in understanding African American literature and culture. Topics may include genre, medium, period, social change, and leading contemporary African American thinkers/writers.

ENGL 3950W. Cultural Theory and Black Studies. 3 Credits.
Selected topics in critical and cultural theories—often interdisciplinary—as used in understanding African American literature and culture. Topics may include genre, medium, period, social change, and leading contemporary African American thinkers/writers.

ENGL 3960. Asian American Literature. 3 Credits.
How Asian American writers construct their identities in dialogue with shifting ideas of "America." Asian American history, gendering subjects, orientalism and postcolonial subjectivity, interracial relations, canonization. Representative writers: Kingston, Hwang, Jen, Chang-rae Lee, Ondaatje, Lahiri, Bulosan, Hagedorn.

ENGL 3960W. Asian American Literature. 3 Credits.
How Asian American writers construct their identities in dialogue with shifting ideas of "America." Asian American history, gendering subjects, orientalism and postcolonial subjectivity, interracial relations, canonization. Representative writers: Kingston, Hwang, Jen, Chang-rae Lee, Ondaatje, Lahiri, Bulosan, Hagedorn.

ENGL 3965. Topics in Asian American Cultural Studies. 3 Credits.
Literary and cinematic texts of Asian diasporic writers, with a focus on Asian American authors, history, and culture; the globalization of Asian American literature.

ENGL 3970. Jewish American Literature. 3 Credits.
One hundred years of Jewish American writing including fiction, nonfiction, autobiography, poetry, and drama. The immigrant experience, American philosemitism and antisemitism, the Holocaust and after, the New York intellectuals, Jewish feminism, and the patriarchal tradition.

ENGL 3970W. Jewish American Literature. 3 Credits.
One hundred years of Jewish American writing in fiction, autobiography, poetry, drama, and non-fictional prose. The immigrant experience, American philosemitism and antisemitism, the Holocaust and after, the New York intellectuals, Jewish feminism, and the patriarchal tradition.

ENGL 3980. Queer Studies. 3 Credits.
Examination of literature and culture in the context of the history and experience of lesbian, gay, bisexual, and transgendered people, with consideration of sexual identity as a core component of human experience. May be repeated once for credit provided the topic differs.

ENGL 3980W. Queer Studies. 3 Credits.
Examination of literature and culture in the context of the history and experience of lesbian, gay, bisexual, and transgendered people, with consideration of sexual identity as a core component of human experience. May be repeated once for credit provided the topic differs.

ENGL 3990. Literary Studies Workshop. 1 Credit.
Topics vary by semester. Consult the Schedule of Classes for more details. May be repeated once for credit provided the topic differs.

ENGL 4020. Studies in Contemporary Literature. 1-3 Credits.
Theme-based studies of specific issues or figures in 21st-century literature.

ENGL 4040. Honors Seminar. 3 Credits.
Genre and genre theory; literature as cultural artifact and as instrument of cultural criticism; various critical approaches —ideological, historical, and ahistorical. Open only to first-semester senior honors candidates in English.

ENGL 4040W. Honors Seminar. 3 Credits.
Genre and genre theory; literature as cultural artifact and as instrument of cultural criticism; various critical approaches —ideological, historical, and ahistorical. Open only to first-semester senior honors candidates in English.

ENGL 4135. Folger Seminar. 3 Credits.
The history of books and early modern culture. Use of the archive at the Folger Shakespeare Library. Students must obtain departmental approval in the preceding semester. Same as HIST 4135/ FREN 4135.

ENGL 4220. Creative Writing Senior Thesis. 3 Credits.
Under the guidance of an instructor, the student composes an original manuscript of poetry or short fiction accompanied by an essay situating the student's work in the contemporary context. Open only to seniors admitted to the English and creative writing major.

ENGL 4220W. Creative Writing Senior Thesis. 3 Credits.
Under the guidance of an instructor, the student composes an original manuscript of poetry or short fiction accompanied by an essay situating the student's work in the contemporary context. Open only to seniors admitted to the English and creative writing major.

ENGL 4250. Honors Thesis. 3 Credits.
Under the guidance of an instructor, the student writes a thesis on an approved topic. Open only to senior honors candidates in English.

ENGL 4250W. Honors Thesis. 3 Credits.
Under the guidance of an instructor, the student writes a thesis on an approved topic. Open only to senior honors candidates in English.

ENGL 4360. Independent Study. 1-4 Credits.
For exceptional students, typically majors, whose academic objectives are not accommodated in regular courses. Students must obtain departmental approval and arrange for supervision by an appropriate member of the faculty.

ENGL 4470. Internship. 1-3 Credits.
Position of responsibility with a publication, educational project, firm, or cultural organization offering practical experience in research, writing, editing, etc. Restricted to junior and senior English majors; approval of supervising faculty required for registration. May be repeated for credit; a maximum of 3 credits may be counted toward the English major. P/NP grading only.

ENGL 6100. Introduction to Literary Theory. 3 Credits.
An overview of methodologies for examining texts as linguistic and cultural productions. Methodologies explored may include structuralism, formalism, deconstruction, cultural materialism, postcolonial theory, feminism, gender studies, and queer theory.

ENGL 6120. Advanced Literary Theory. 3 Credits.
The course focuses on a major figure or topic in theory (e.g., Foucault, Lacan, Barthes, Kristeva, Bakhtin, post-Marxist theory, language and power, the canon).

ENGL 6130. Selected Topics in Criticism. 3 Credits.
Topics may include cultural studies, film, gay/lesbian studies, others.

ENGL 6220. Topics in Medieval and Early Modern Studies. 3 Credits.
Topics may include gender and body; postcolonial approaches to the period; surveys of poetry and/or prose with a special thematic coherence.

ENGL 6240. Literature of the British Archipelago. 3 Credits.
The literary and historical texts of early modern and medieval Britain within a pan-insular framework: England in conflict and coexistence with Ireland, Wales, Scotland.

ENGL 6250. Transnational England. 3 Credits.
The early literature of England within a global framework: England, Spain, France, Italy, Turkey, the Levant, the Americas, Africa, India, the Caribbean.

ENGL 6260. Seminar in Medieval and Early Modern Studies. 3 Credits.
Trends and cutting-edge research in medieval and early modern studies.

ENGL 6350. Nineteenth Century I. 3 Credits.
Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6351. Nineteenth Century II. 3 Credits.
Continuation of ENGL 6350. Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6352. Nineteenth Century III. 3 Credits.
Continuation of ENGL 6351. Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6353. Nineteenth Century IV. 3 Credits.
Continuation of ENGL 6352. Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6450. Twentieth Century I. 3 Credits.
Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6451. Twentieth Century II. 3 Credits.
Continuation of ENGL 6450. Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6452. Twentieth Century III. 3 Credits.
Continuation of ENGL 6451. Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6453. Twentieth Century IV. 3 Credits.
Continuation of ENGL 6452. Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6510. Writing, Race and Nation. 3 Credits.
Literary culture as a basis for exploration of intersections of origins and evolution of racial and ethnic identities and national myths and political objectives.

ENGL 6520. Ethnicity and Identity. 3 Credits.
Literary culture is used to explore how individuals, communities, and societies construct self-awareness and knowledge about others for cultural exchange.

ENGL 6530. Conceptualizing Genders. 3 Credits.
Structures of sex and gender difference considered historically and theoretically, including masculinity/femininity, sexualities, and their textual representations.

ENGL 6540. Women and Writing. 3 Credits.
Selected topics in the traditions, theory, and texts of women's literary production and culture. Same as WSTU 6251.

ENGL 6550. Studies in Genre I. 3 Credits.
Questions of genre, considered theoretically and practically. Content varies.

ENGL 6551. Studies in Genre II. 3 Credits.
Continuation of ENGL 6550. Questions of genre, considered theoretically and practically. Content varies.

ENGL 6560. Postcolonialism. 3 Credits.
Postcolonial theory and texts by representative writers.

ENGL 6620. Medicine and Society. 3 Credits.
The interaction of medicine and society in ways that touch on philosophy, economics, sociology, and public policy, but that cannot be fully understood in terms of any single perspective. Society's effect on medicine and medicine's effect on society.

ENGL 6630. Literature and Medicine. 3 Credits.
Methods of critical theory applied to issues concerning the practice of medicine. The polar constructs of illness and health, life and death, and life's worth or its waste.

ENGL 6720. Independent Research. 3 Credits.
Written permission of instructor required. May be repeated for credit to a maximum of 9 hours.

ENGL 6740. Mastering the Canon. 3 Credits.
Independent reading under a faculty member.

ENGL 6810. Folger Institute Seminars I. 3 Credits.
Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the graduate advisor before registration.

ENGL 6811. Folger Institute Seminars II. 3 Credits.
Continuation of ENGL 6810. Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the graduate advisor before registration.

ENGL 6998. Thesis Research. 3 Credits.

ENGL 6999. Thesis Research. 3 Credits.

ENGL 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

ENGL 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit. ENGL 8999 must be taken as the final 12 credit hours of the degree.

ENGLISH FOR ACADEMIC PURPOSES (EAP)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EAP 1010. Academic Communication. 3 Credits.
Develops international students' oral academic English skills to prepare them for success in U.S. higher educational settings. Focus on listening and note-taking, leading and participating in class discussions, managing a variety of authentic academic literacy tasks, and delivering presentations. Additional emphasis on developing multi-literacy through intercultural, multimedia, and visual communication. Restricted to international students.

EAP 1015. American Multicultural Perspectives in Washington, D.C.. 3 Credits.
Designed to prepare international undergraduate students for university-level writing expectations. A structured academic writing course that explores the capital's rich multicultural heritage. Focus on the development of academic literacy skills, drafting and revising, and research-based writing. Upon successful completion of EAP 1015, students take UW 1020.

EAP 1016. Academic Skills Workshop. 1 Credit.
Development of critical academic skills for international students. Workshop topics may include grammar for academic writing, critical reading, listening and note-taking, academic vocabulary development, and discussion and presentation skills. Credit for this course cannot be applied to a degree.

EAP 1046. Independent Study. 1-4 Credits.
Individualized instruction in specific skill areas. Program director approval required. Credit for this course cannot be applied toward a degree.

EAP 6000. Academic Communication. 3 Credits.
Acclimation to the oral communication expectations of graduate school through developing listening and note-taking skills, expanding communicative vocabulary, leading and participating in class discussions, and preparing and delivering informal and formal presentations. Classroom activities directed toward scholarly and professional communication in students' fields of study whenever possible. Credit does not apply to any degree or certificate offered by GW.

EAP 6016. Academic Skills Workshop. 1 Credit.
Development of critical academic skills for international students. Workshop topics may include grammar for academic writing, critical reading, listening and note-taking, academic vocabulary development, and discussion and presentation skills. Credit for this course cannot be applied to a degree. (Same as EAP 1016).

EAP 6110. Academic Writing and Research for International Graduate Students I. 3 Credits.
The process of researching, planning, writing, and revising for academic purposes. Focus on key writing skills and critical thinking. Practice in reading and analyzing university-level materials and completing graduate-level academic exercises. Credit for this course does not apply toward any degree or certificate offered by GW.

EAP 6111. Academic Writing and Research for International Graduate Students II. 3 Credits.
An academic writing and research course for international students who demonstrate high proficiency in English. Focus on research paper writing, analysis of academic discourse, small-group work, and oral presentations on research. Credit for this course does not apply toward any degree or certificate offered by GW.

ENVIRONMENTAL RESOURCE POLICY (ENRP)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ENRP 6085. Topics in Environmental Resource Policy. 1-3 Credits.
Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ENRP 6097. Practicum in Environmental Resource Policy. 0 Credits.
International students engage in an unpaid internship. Restricted to students enrolled in the MA in environmental resource policy program.

ENRP 6101. Environmental Sciences I: Physical Sciences. 3 Credits.
Basic physical sciences crucial to environmental issues, including chemistry, geology, hydrology, climate science, and cross-media interactions; land, air, and water pollution, climate change, production and consumption of energy, sea level rise, and anthropogenic changes in the cryosphere. Restricted to students in the MA in environmental resource policy; graduate certificate in contexts of environmental policy; and BA/MA in environmental studies and environmental resource policy programs; permission of the instructor may be substituted.

ENRP 6102. Environmental Sciences II: Life Sciences. 3 Credits.
Basic life sciences crucial to environmental issues, including biology, ecology, environmental health and toxicology, epidemiology, and agriculture; biodiversity, ecosystem services, habitat preservation, deforestation, conservation biology, nutrient cycling, and the impacts of climate change on living systems. Restricted to students in the MA in environmental resource policy; graduate certificate in contexts of environmental policy; and BA/MA in environmental studies and environmental resource policy programs; permission of the instructor may be substituted.

ENRP 6140. Environmental Impact Statement Procedures and Environmental Law. 3 Credits.
The rationale for environmental impact statements from the viewpoint of the nature and origins of environmental concerns. Government agencies responsible for environmental impact statements; current statutes and regulations pertaining to the environment.

ENRP 6145. Global Environmental Justice and Policy. 3 Credits.
Environmental justice, considered as both a movement and a public policy. Examination of environmental injustices—both perceived and actual—affecting individuals, communities, and populations. Adherence to, and enforcement of, environmental laws and regulations that affect the allocation of environmental benefits and the distribution of sources of toxic pollution and other hazards.

ENRP 6295. Research Topics in Environmental Resource Policy. 1-3 Credits.
May be repeated for credit to a maximum of 6 credits.

ENRP 6298. Seminar in Environmental Resource Policy. 3 Credits.
The capstone seminar involves team development of a project sponsored by an external entity, such as a government agency or non-governmental organization, or participation in an aspect of a research project directed by a faculty member. The student team functions as an external consultant tasked with analysis of the chosen issue.

EPIDEMIOLOGY (EPID)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EPID 6295. Reading and Research. 1-12 Credits.
May be repeated for credit.

EPID 6998. Thesis Research. 3 Credits.

EPID 6999. Thesis Research. 3 Credits.

EPID 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

EPID 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

EXERCISE AND NUTRITION SCIENCES (EXNS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EXNS 1103. Professional Foundations in Exercise Science. 1 Credit.
Introduction to the science and practice of exercise and human movement as they relate to public health. Emphasis on the various sub-disciplines of exercise science, research related to the field, and professional and career development.

EXNS 1110. Applied Anatomy and Physiology I. 4 Credits.
Fundamentals of human anatomy and physiology for students preparing for health sciences professions. Emphasis on bones, joints, muscles, innervation, and blood supply. Laboratory fee.

EXNS 1111. Applied Anatomy and Physiology II. 4 Credits.
Continuation of EXNS 1110. Fundamentals of human anatomy and physiology for students preparing for health sciences professions. Emphasis on muscles, sensory and motor integration of the nervous system, function of the special senses, and the autonomic system. Laboratory fee. Prerequisites: EXNS 1110.

EXNS 1112. Current Issues in Coaching. 3 Credits.
Examination of current trends and issues in athletics, sport, and coaching from theoretical and applied perspectives. Study of a variety of timely topics using presentations, readings, videos, internet activities, and discussions.

EXNS 1114. Community Nutrition. 3 Credits.
Introduction to community nutrition and public health programs offered on the local, state, national, and international levels, targeting both individuals and groups. Topics include health policies, nutrition programs, nutrition assessment, and principles of nutrition education.

EXNS 1117. Principles of Coaching. 3 Credits.
Study of coach/athlete behavioral patterns and interactions, coaching methods, and interdisciplinary principles applicable to coaching.

EXNS 1118. Sport and Nutrition. 3 Credits.
Nutritional needs for recreational exercise and sports; skills in assessing nutritional needs; development of individual nutrition programs that are sport/activity-specific; and identification and correction of nutrition problems affecting sports performance. Prerequisites: EXNS 2119 or HLWL 1116.

EXNS 1119W. Children and Sport. 3 Credits.
Psychomotor, psychosocial, and physiological factors of children's participation in sports. The importance of sport to children, readiness to compete, adaptations to training, participation motives, social factors, fundamentals of training, nutrition, stress, and child protection. Theoretical aspects applied in a variety of sports settings.

EXNS 1199. Topics in Exercise and Nutrition Sciences. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

EXNS 2110. Injury Prevention and Control. 3 Credits.
Information and practical experience in the prevention, recognition, and/or treatment of injury, illness, and health conditions; anatomy review, injury recognition skills, and prevention, first aid, and treatment techniques. Prerequisites: EXNS 1110 and EXNS 1111.

EXNS 2111. Exercise Physiology I. 4 Credits.
Function of the human body under the influence of physical activity. Nutrition as a foundation for human performance, energy for physical activity, and comprehensive weight management. Laboratory fee. Prerequisites: EXNS 1110 and EXNS 1111.

EXNS 2112. Exercise Physiology II. 4 Credits.
Response of physiological systems of the body to acute and chronic exercise and neuromuscular adaptations to exercise. Exercise training program design, training in extreme environmental conditions, and training considerations for special populations. Laboratory fee. Prerequisites: EXNS 2111.

EXNS 2113. Kinesiology. 4 Credits.
How the human body functions as a mechanical movement generator; the design and function of joints and muscles and principles of mechanics applied to human movement. Common injuries to the musculoskeletal system, how these injuries might occur, and what effect they have on movement patterns. Laboratory methods including techniques for palpation and evaluation of movement. Laboratory Fees. Prerequisites: ANAT 2181 or BICS 2581 or EXNS 1110.

EXNS 2114. Nutrition Sciences I. 3 Credits.
Study of macronutrients (carbohydrate, fat, and protein) and how they are digested, absorbed, and metabolized by the human body. The unique functions and dietary applications of each macronutrient and its requirements, as well as how macronutrients are implicated in disease pathology, prevention, and management. Hormonal control of blood sugar levels, appetite, and satiety. Other topics include weight management, meal planning, fat and carbohydrate substitutes, alcohol metabolism, dietary guidelines, food labeling, and sports nutrition. Prerequisites: BISC 1111, BISC 1112, EXNS 1110, and EXNS 1111.

EXNS 2115. Nutrition Sciences II. 3 Credits.
Advanced study of how micronutrients (e.g. vitamins and minerals) are digested, absorbed, and metabolized by the human body. The unique functions of each essential micronutrient and nutrient-nutrient interactions supporting organ systems and metabolism. Other topics include hydration, functional ingredients, food additives, dietary supplements, food safety, lifecycle nutrition, and global micronutrient initiatives. Prerequisites: EXNS 2114.

EXNS 2116. Exercise and Health Psychology. 3 Credits.
The psychological, social, and environmental factors that influence the adoption and maintenance of physical activity/exercise and other health behaviors. The role of physical activity/exercise in the prevention of chronic disease. Emphasis on prominent theories used to understand and predict behavior change towards the initiation and maintenance of health behaviors. Issues specific to public health and diversity such as race/ethnicity, socioeconomic status, and gender are also addressed. Restricted to majors only. Prerequisites: PSYC 1001.

EXNS 2117. Sport Psychology. 3 Credits.
Introduction to current research and theoretical perspectives on psychological and psychosocial components of sport participation and competition. Participation motives, motivation, confidence, anxiety, aggression, and other factors that influence individuals and teams or groups. Prerequisites: PSYC 1001.

EXNS 2117W. Sport Psychology. 3 Credits.
Introduction to current research and theoretical perspectives on psychological and psychosocial components of sport participation and competition. Participation motives, motivation, confidence, anxiety, aggression, and other factors that influence individuals and teams or groups. Students complete written assignments to hone writing skills and apply course material. Prerequisites: PSYC 1001.

EXNS 2119. Introduction to Nutrition Science. 3 Credits.
Nutrition science as it relates to human growth and development. Dietary guidelines, digestion and absorption of nutrients, appetite, body weight, and chronic disease; how the body uses vitamins, minerals, and energy provided by fats, carbohydrates, and proteins; assessing nutritional status; nutrition on an individual and population level. Prerequisites: BISC 1111.

EXNS 2121. Orthopaedic Taping and Bracing. 1 Credit.
Advanced practical application of skills learned in EXNS 2110, including first aid techniques, injury recognition skills, taping, and treatment of injuries. Concurrent enrollment in EXNS 2110 is required for students in the Pre-athletic Training/Sports Medicine track.

EXNS 2122. Food Systems in Public Health. 3 Credits.
This course will explore systems thinking as it pertains to agriculture and food, attempt to define sustainability within the context of the global food system, examine the current state of the global food system from farm to fork, and analyze its impacts on health. The course will also examine several policies, programs, and proposals aimed at creating a healthier, more sustainable global food system.

EXNS 3101. Independent Study. 3 Credits.
Outline of intended project must be approved prior to course registration. Restricted to For departmental majors only.

EXNS 3102. Applied Sport Psychology. 3 Credits.
Theoretical perspectives and practical aspects of applied sport psychology. Psychological skills and peak mental performance. Development and practical application of mental skills programs for athletes and methods of assessing psychological skills in sports settings. Qualifications and training routes for becoming a sport psychologist and professional and ethical issues. Prerequisites: EXNS 2117.

EXNS 3110. Field Experience- Exercise & Nutrition Sciences. 1-9 Credits.
For undergraduate exercise and nutrition sciences majors. Application of classroom-based knowledge to practical experience within a professional setting. Restricted to undergraduate majors in exercise and nutrition sciences. Prerequisites: EXNS 2112 and permission of the instructor.

EXNS 3117. Injury Assessment. 4 Credits.
Students gain skills and practical experience in the assessment of injuries. Includes anatomy review, evaluation techniques and procedures, referral skills, and appropriate documentation. Prerequisites: EXNS 2110.

EXNS 3118. Therapeutic Modalities in Sports Medicine. 4 Credits.
Explanation and demonstration of the use of therapeutic modalities on the healing process, including discussion of the use of therapeutic modalities to enhance the rehabilitation process after athletic injury. Laboratory fee. Prerequisites: EXNS 3117 or permission of instructor.

EXNS 3119. Therapeutic Exercise in Sports Medicine. 4 Credits.
Explanation and demonstration of the use of therapeutic exercise on the rehabilitation process. Discussion and development of practical skills in techniques of therapeutic exercise and equipment to enhance the exercise routine after athletic injury. Prerequisites: EXNS 3117 or permission of instructor.

EXNS 3121. Medical Issues in Sports Medicine. 3 Credits.
Topics in general medical issues and pharmacology as they relate to the athletic training profession. Prerequisites: EXNS 1110 and EXNS 1111.

EXNS 3123W. Psychology of Injury and Rehabilitation. 3 Credits.
Injury and rehabilitation psychology and its application to working with athletic and general population clients. The psychological, social, and environmental factors that influence injury susceptibility, reaction to injury, and adherence to rehabilitation; basic assessment and intervention techniques to promote and facilitate adherence to rehabilitation in a variety of professional settings. Strong emphasis on writing, writing development, and use of scientific literature obtained through library resources throughout the course. Restricted to Exercise & Nutrition Sciences majors only.

EXNS 3125. Athletic Training Practicum. 3 Credits.
Students gain practical/clinical experience in athletic training and medical skills.

EXNS 4110. Current Issues in Exercise Science. 3 Credits.
Capstone course for senior exercise science majors in their final spring semester. Students are required to understand and apply identified competencies from the core exercise science curriculum. Restricted to Senior exercise science majors in their final spring semester.

EXNS 6202. Advanced Exercise Physiology I. 3 Credits.
Examination of acute and chronic cardiovascular and pulmonary adaptations to exercise training. Focus on mechanisms that affect oxygen delivery and utilization during aerobic exercise. Responses to exercise in extreme environmental conditions.

EXNS 6203. Advanced Exercise Physiology II. 3 Credits.
Metabolic and neuromuscular adaptations that occur in response to acute and chronic exercise. Biochemical pathways responsible for energy production during rest and exercise, and how these pathways adapt with chronic training. Neural, hormonal, and nutritional factors that influence exercise performance. Laboratory fees. Prerequisites: EXNS 6202 or permission of instructor.

EXNS 6204. Biostatistical Methods and Research Design. 3 Credits.
Basic principles, concepts, and procedures of research, sampling, and statistical design. Probability, hypothesis testing, and application of basic statistical techniques using calculators and statistical software packages.

EXNS 6207. Psychological Aspects of Sport & Exercise. 3 Credits.
Psychological, sociological, and environmental factors related to the adoption of exercise behavior and maintenance and achieving peak sport performance. The influence of psychology on exercise and sport behaviors, and techniques for changing and/or optimizing such behaviors using a person-centered, individual approach. Issues specific to public health and diversity including race, socioeconomic status, ethnicity, and gender are emphasized throughout the course.

EXNS 6208. Physical Activity: Physiology and Epidemiology. 2 Credits.
Introduction to health issues resulting from physical inactivity (or disuse). Basic principles of energy metabolism and both basic and leading edge methods for physical activity assessment. Topics include major physiological systems' adaptation to exercise training and to de-training and how this adaptation may vary by age and sex; the relationship between disuse and major chronic diseases across the age spectrum; and individual and community-based intervention strategies to modify behavior and ameliorate the putative effects of a sedentary lifestyle. Study of the role of the built environment as an environmental "toxin" using the basic principles of environmental health risk assessment. Prerequisites: EXNS 2111.

EXNS 6209. Advanced Concepts in Nutrition Science. 3 Credits.
Topics in nutrition and public health. Emerging issues, challenges, and controversies in nutrition science; the role of diet composition and physical activity in the maintenance of health and the development of chronic disease; and effectively communicating scientific findings and identifying key knowledge gaps in nutrition science literature.

EXNS 6210. Cardiac Rehabilitation. 3 Credits.
Overview of a wide range of clinical, public health, and healthcare topics associated with heart disease with an emphasis on coronary artery disease. Cardiac rehabilitation programming and services, secondary prevention, patient education, and current clinical guidelines, scientific statements, and selected regulations related to cardiac rehabilitation.

EXNS 6211. Assessments, Prescription, and Electrocardiogram. 3 Credits.
Information, techniques, and laboratory experiences related to accurate blood pressure determinations, clinical exercise testing and prescription, and other clinical assessments. Basic medications for cardiovascular disease and fundamentals of the electrocardiogram. Prerequisites: EXNS 6210 or permission.

EXNS 6212. Exercise in Selected Chronic Diseases. 3 Credits.
Basic pathophysiology in select chronic diseases. Application of clinical exercise testing and assessment and effects of acute and chronic exercise and exercise prescription on affected patients. Patient groups include children and the elderly, and individuals with pulmonary diseases, diabetes mellitus, hypertension, peripheral artery disease, stroke, obesity, spinal cord injury, cancer.

EXNS 6213. Clinical Internship I. 3 Credits.
Students work directly with a multidisciplinary health care or research team and patients and apply the knowledge and skills acquired from coursework in a clinical environment. Internships take place at pre-approved clinical sites, usually in the Washington, D.C., metropolitan area, and students are supervised by an on-site clinical instructor.

EXNS 6214. Clinical Internship II. 3 Credits.
Students work directly with a multidisciplinary health care or research team and patients and apply the knowledge and skills acquired from coursework in a clinical environment. Internships take place at pre-approved clinical sites, usually in the Washington, D.C., metropolitan area, and students are supervised by an on-site clinical instructor.

EXNS 6215. Clinical Exercise Physiology Rotations. 3 Credits.
Supervised clinical experience for students in the Clinical Exercise Physiology program. Working with clinical patient populations in hospitals in the Washington, D.C., metropolitan area, students observe and participate in the assessment and treatment of patients with a variety of chronic diseases.

EXNS 6216. Organization and Management of Clinical Programs. 1 Credit.
Administrative organization of programs providing clinical exercise services. Budgeting and staffing; equipment and supplies; policies, protocols, and program forms; Medicare regulations and coding; and safety issues. While cardiac rehabilitation is the program model for the majority of this topic, the information can be used in other types of clinical exercise physiology programs. Combination of classroom and online sessions.

EXNS 6220. Power Training for Sports Performance. 2 Credits.
Effective training programs for sports that require explosive performance. Emphasis on training methods that develop speed and power, such as plyometrics and Olympic weightlifting. Provides information on specific competencies for students interested in pursuing certification as a strength and conditioning specialist. Prerequisites: EXNS 2111 or equivalent.

EXNS 6221. Science & Theory of Training. 3 Credits.
Physiological adaptations to resistance training, with a primary focus given to the neuromuscular system. Functional and structural changes that occur in skeletal muscle following strength and power training. Programmatic concerns when developing a resistance training regimen for an athletic population.

EXNS 6222. Current Topics in Strength and Conditioning. 1-2 Credits.
Current scientific findings related to the field of strength and conditioning. Examination of how resistance training programs affect athletic performance in terms of increased strength, power, endurance, and resistance to injury. The health benefits of resistance training in non-athletic populations. Prerequisites: EXNS 6202 or permission of the instructor.

EXNS 6223. Biomechanical Analysis. 3 Credits.
Application of mechanical analysis techniques to the human body in motion. Statics and dynamics with emphasis on the link segment model, incorporating angular velocity and angular acceleration. Motion analysis systems and computer systems. Prerequisites: (EXNS 1110 or BISC 2581) and EXNS 2113. Recommended background: PHYS 1011.

EXNS 6232. Independent Study. 1-3 Credits.
Students gain or enhance public health knowledge and explore an area of interest related to public health research or the delivery and/or administration of health services. Permission of instructor or advisor required. Restricted to For MS degree candidates enrolled in the department.

EXNS 6233. Graduate Internship. 1-6 Credits.
Fieldwork, internship, and/or instructional practice related to the field of study as pre-approved by the advisor. May be repeated for credit up to a maximum of 6 credits with prior permission of the advisor. Restricted to Master's degree in Exercise Science students only.

EXNS 6242. Nutrition Throughout the Life Cycle. 2 Credits.
The science of nutrition as it relates to health throughout the human life cycle. Changes in human metabolic processes and nutrient needs during the course of the aging process. Nutrition-related disorders. Prerequisites: EXNS 2119 or permission of the instructor.

EXNS 6261. Thesis Seminar. 3 Credits.
Required for students planning to write a thesis. Principles, concepts, and procedures of research design, including interpreting the scientific literature, designing a statistical plan, applying basic statistical techniques, and communicating scientific findings to professional and general audiences. Students develop a research protocol.

EXNS 6299. Topics in Exercise Science. 1-3 Credits.
Topic to be announced in the Schedule of Classes.

EXNS 6998. Thesis Research. 3 Credits.
Students work independently to conduct research under the oversight of a faculty research committee. Restricted to MS in exercise science degree candidates.

FILM STUDIES (FILM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FILM 2151. Film Theory. 3 Credits.
A reading-intensive immersion in classical film aesthetics and a survey of the theoretical and critical canon of cinema literature. Laboratory fee.

FILM 2152. Genres of Film. 3 Credits.
An exploration of the relationship between cinematic structure and narrative content in various types of film. Laboratory fee.

FILM 2153. History of World Cinema I. 3 Credits.
A two-semester sequence covering 100 years of international cinematic history from an aesthetic and political point of view. Laboratory fee.

FILM 2154. History of World Cinema II. 3 Credits.
Continuation of FILM 2153. A two-semester sequence covering 100 years of international cinematic history from an aesthetic and political point of view. Laboratory fee.

FILM 2155. Screen Writing. 3 Credits.
Introduction to the art and craft of screenwriting—concept, genre, character, structure, dialogue, scene/sequence construction, and, ultimately, the preparation of scripts and treatments for a variety of screen formats.

FILM 2156. Advanced Screenwriting. 3 Credits.
Advanced phases of screenwriting culminating in the preparation of a full-length screenplay, with contextual study of contemporary, international, and classical films toward a fuller appreciation of movies as a cultural whole.

FILM 3390. Screen Writing. 3 Credits.

FINANCE (FINA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FINA 3001. Intermediate Finance. 3 Credits.
Theory and practice of acquiring and using funds. Simulations of business decisions by cases and/or models to assess the risk/return interaction of investment, financing, and dividend decisions. Prerequisite: BADM 3501.

FINA 3101. Investment and Portfolio Management. 3 Credits.
Theory and principles of security analysis and portfolio management, including analysis of the national economy, industry, company, and security markets. Risk–reward and computer-aided analysis. Prerequisite: BADM 3501.

FINA 3201W. Exploring Finance w/Simulation. 3 Credits.
Corporate financial analysis as explored through the FINGAME financial simulation software. Focus on intertemporal decision making for capital budgeting and financing of a simulated firm. Prerequisite: BADM 3501.

FINA 3301. Money and Capital Markets. 3 Credits.
The process of capital formation in a free enterprise economy, with special emphasis on factors affecting the level and structure of interest rates. Money market, capital market, and derivative contracts (futures and swaps) are evaluated from both investment and financing perspectives. Prerequisite: BADM 3501.

FINA 3401. A Brief History of Finance. 3 Credits.
History of financial events and practices and how finance has changed over time; how these events have shaped current practices and the impact of ethical issues.

FINA 3401W. A Brief History of Finance. 3 Credits.
History of financial events and practices and how finance has changed over time; how these events have shaped current practices and the impact of ethical issues. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

FINA 4001. Advanced Financial Management. 3 Credits.
Analysis and readings covering applications of theory to financial management. Case studies for decision making involving working capital, capital budgeting, financing, dividend policy, and valuation. Prerequisite or concurrent registration: BADM 3501 and FINA 3301 or FINA 3001.

FINA 4001W. Advanced Financial Management. 3 Credits.
Analysis and readings covering applications of theory to financial management. Case studies for decision making involving working capital, capital budgeting, financing, dividend policy, and valuation. Prerequisite or concurrent registration: BADM 3501 and FINA 3301 or FINA 3001.

FINA 4101. Applied Financial Securities Analysis. 3 Credits.
Practical security analysis techniques and investing approaches employed by professional investment managers. Prerequisite: BADM 3501.

FINA 4121W. Exploring Finance w/Simulation. 3 Credits.

FINA 4201. Real Estate Investment. 3 Credits.
Principles of real estate investment, including valuation, appraisal, financing, and development, in addition to a discussion of the mortgage market and its institutions. Prerequisite: BADM 3501.

FINA 4301. Financial Derivatives. 3 Credits.
The defining properties of and uses for financial derivatives. Institutional features; forward and futures contracts, option contracts, and swap agreements; and valuation methodologies. The proper use of financial derivatives and the potential for unintended consequences. Prerequisites: BADM 3501. Recommended background: undergraduate students in finance with exposure to another discipline such as mathematics, physics, computer science, economics, or statistics.

FINA 4900. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods. Prerequisite: BADM 3501.

FINA 4900W. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods.

FINA 4995. Independent Study. 1-15 Credits.
Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. Prerequisite: BADM 3501.

FINA 6220. Business Financial Management. 3 Credits.

FINA 6221. Financial Decision Making. 3 Credits.
Theory and practice of business finance, emphasizing the impacts of long- and short-term uses and sources of funds on the firm's market value. Prerequisite: MBAD 6234 or MBAD 6235.

FINA 6222. Capital Formation. 3 Credits.
Determinants of saving and investment and resultant funds flow are evaluated. Special emphasis on the level and risk structure and term structure of interest rates. The role and management of financial institutions is stressed. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6223. Investment Analysis and Portfolio Management. 3 Credits.
Risk–reward analysis of security investments, including analysis of national economy, industry, company, and market; introduction to portfolio management; emphasis on theory and computer methods. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6224. Financial Management. 3 Credits.
Advanced case studies in domestic and international financial management; working capital policy, capital budgeting, financing with debt and equity, dividend policy, valuation, project finance, venture capital, and mergers and acquisitions. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6230. Urban Development Economics. 3 Credits.

FINA 6231. Sem:Investment & Portfolio Mgt. 3 Credits.

FINA 6234. New Venture Financing: Due Diligence and Valuation Issues. 3 Credits.
Fundamentals and practice of due diligence and screening of early-stage investment opportunities. Prerequisites: MBAD 6234 or MBAD 6235. (Same as MGT 6293).

FINA 6235. Futures Markets: Trading and Hedging. 3 Credits.
Organization and regulation of futures markets. Alternative strategies for trading of futures contracts for possible hedging uses. High risk–high return investment alternatives. The use of futures markets to manage risks. Recommended: FINA 6221. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6236. Options. 3 Credits.
Pricing of options on financial instruments. Role of options in risk management, trading strategies, hedging implications for national and international investors, financial engineering, and structure and regulation of option markets. Recommended: FINA 6221. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6237. Private Wealth Management and Personal Financial Advising. 3 Credits.
Income and estate taxation, retirement plans and pensions, life and disability insurance, investment portfolio management, and personal finances. Prerequisites: MBAD 6234 or MBAD 6235. Recommended background: ACCY 6401 and knowledge of Excel.

FINA 6238. Financial Engineering. 3 Credits.
Valuation and risk management theory for bonds, forward contracts, swaps, options, exotic options, and interest rate options. Development of financial software, including Monte Carlo simulation modeling. Case studies of innovative solutions to investment, corporate finance, and financial institution management problems. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6239. Applied Portfolio Management. 3 Credits.
Synthesis of the theoretical concepts of securities analysis and portfolio management with the application of analyzing securities and building an actual portfolio. Prerequisites: (MBAD 6234 or MBAD 6235) and permission of instructor.

FINA 6240. Real Estate Development. 3 Credits.
Examination of the forces that shape real estate development; market analysis methods and techniques to evaluate project feasibility; the institutional and legal framework within which real estate development occurs and that influences controls, land value, and development potential. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6241. Financing Real Estate. 3 Credits.
Principles of real estate finance; evaluating different methods of financing real estate; sources of real estate funding with emphasis on securitization. Incentives provided by governments. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6242. Real Estate Valuation and Investment. 3 Credits.
Understanding the valuation of different types of real estate from different viewpoints. Analysis of the risks and opportunities of investing. Solid theoretical framework is augmented with practical examples and applications. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6245. Land Development Law. 3 Credits.

FINA 6247. Urban Development Economics. 3 Credits.

FINA 6248. Real Estate Development Cases. 3 Credits.
Case study analysis of large-scale commercial real estate developments to gain comprehension of financial, political, legal, and technical complexities and constraints inherent in the real estate development process. Prerequisite: FINA 6221 or permission of instructor.

FINA 6250. Securities Regulation and Financial Scandals. 3 Credits.
Philosophy and framework of laws governing the sale of securities, including stocks, bonds, and investment contracts; financial scandals and the role that changes in securities law and housing policy has played in such events.

FINA 6271. Financial Modeling and Econometrics. 4 Credits.
Applied statistical and econometric analysis and modeling in finance. Methodologies include descriptive and inferential statistics, multivariate regression, and time series analysis. Empirical studies are reviewed, and a series of research projects are undertaken. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6272. Global Financial Markets. 4 Credits.
Theories explaining domestic and international interest rate and exchange rate structures. Roles of financial institutions and markets are investigated and forecasting methodologies are applied. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6273. Cases in Financial Management and Investment Banking. 4 Credits.
Computer modeling for analysis and forecasting of a firm's financial statements to reflect possible future performance. Application and integration of financial accounting and financial analysis, using a different case study each week. Financial issues faced by companies and their commercial and investment bankers as tactical and strategic decisions are made about organic growth, growth through merger and acquisition, and corporate reorganization. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6274. Corporate Financial Management and Modeling. 4 Credits.
Causal connections between decisions made by business firms, their expected performance, and the resulting current valuation of the firm's common stock. Factors affecting the level and structure of interest rates, which are incorporated by many financial models, theories, and decisions. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6275. Investment Analysis and Global Portfolio Management. 4 Credits.
Financial markets and instruments viewed from the investor's perspective. Analysis of the value of equity and fixed-income securities and the construction of efficient portfolios in a global financial market. Issues of market efficiency, tax structures, and investment funds; computer-based models. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6276. Financial Engineering and Derivative Securities. 4 Credits.
Mathematical and theoretical foundations to value-derivative securities, including options, futures, and swaps; hedging and trading applications of these contracts. Arbitrage trading across cash and derivative markets and its role in maintaining equilibrium prices. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6277. Comparative Financial Market Regulation and Development. 4 Credits.
Theory and current status of comparative regulation of domestic and international financial institutions and markets. Effects on country economic development and international trade. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6278. Financial Theory and Research. 4 Credits.
Theoretical constructs of business investment and financing decisions and of financial asset pricing structures in domestic and international environments. Analytical and numerical models are developed, and empirical studies are evaluated. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6279. Real Estate Finance and Fixed-Income Security Valuation. 4 Credits.
Application of financial theory to real estate investment: the housing market, mortgage valuation and securitization, commercial properties, CMBS, and REITs. Fixed-income security valuation with focus on theory and data applications on interest rate movements, fixed-income security and derivative pricing, and credit risk. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6280. Financial Institution Management and Modeling. 4 Credits.
Analysis of the financial performance and condition of a bank, toward understanding of the financial environment in which banks operate and regulation of the banking system. Application of asset/liability management principles and statistical and mathematical models employed in bank risk management. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6281. Cases in Financial Modeling and Engineering. 4 Credits.
Through the use of real-world examples from various aspects of finance, students are exposed to the modeling of complex financial instruments and techniques used in market and credit risk management. Underlying mathematics and theoretical constructs are explored and solidified through modeling exercises that make use of analytical solutions and numerical methods. As a practical course, students are asked to implement models. Examples may be motivated by corporate finance, corporate and investment banking, asset management, or other activities. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6282. Advanced Financial Econometrics and Modeling. 0-4 Credits.
Testing of several types of applied financial econometric models typically used in practice. Advanced quantitative techniques applied to aspects of financial markets, the behavior of agents, and market and credit risk management. Various software packages used to implement and program models. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6290. Special Topics. 0-3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated once for credit.

FINA 6297. International Management Experience. 3 Credits.
Same as IBUS 6297/ MGT 6297/ MKTG 6297/ SMPP 6297. May be repeated for credit.

FINA 6298. Directed Readings and Research. 2-4 Credits.

FINA 6299. Thesis Seminar. 3 Credits.

FINA 6999. Thesis Research. 3 Credits.

FINA 8311. Seminar: PublicPrivate Sector Institutions and Relationships. 3 Credits.
An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Same as SMPP 8311.

FINA 8321. Seminar: Financial Markets Research. 3 Credits.
Market efficiency, utility testing, the capital asset pricing model, the arbitrage pricing theory, the option pricing model, and aggregate market volatility.

FINA 8322. Seminar: Corporate Finance Research. 3 Credits.
Capital budgeting, capital structure issues, dividend policy, microeconomic foundations, mergers, and agency theory.

FINA 8323. Seminar: Continuous-Time Finance. 3 Credits.
Review of the stochastic calculus methods needed for continuous-time pricing models. The most important continuous-time models, including pricing of derivative securities, consumption-portfolio selection models, continuous-time capital asset pricing models, consumption-based capital asset pricing models, continuous-time arbitrage pricing theory, and different yield curve models.

FINA 8324. Seminar: Financial Markets and Institutions. 3 Credits.
Multi-period asset pricing, term structure of interest rates, market imperfections and institutional factors, auctions, manipulation, derivative markets, market microstructure, and financial institutions.

FINA 8397. Doctoral Seminar. 1-3 Credits.

FINA 8998. Advanced Reading and Research. 1-12 Credits.
Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

FINA 8999. Dissertation Research. 1-12 Credits.
Limited to doctoral candidates. May be repeated for credit.

FINE ARTS (FA)

Explanation of Course Numbers

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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FA 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Laboratory fee. Restricted to first-year students in CCAS.

FA 1014. Handbuilt Ceramics. 3 Credits.
Working with clay as an art form. Pinch, coil, slab, hump and press mold, paddling, and hollowing techniques. Sketch studies, clay and glaze making, reduction and oxidation kiln firings.

FA 1015. Wheelthrown Ceramics. 3 Credits.
Development of cylindrical and open forms. Sketch studies, trimming, clay and glaze making, reduction and oxidation kiln firings.

FA 1017. Sculpture I. 3 Credits.
Beginning study of design and fabrication of sculpture. Basic sculptural techniques for various media, including clay, plaster. stone, and wood.

FA 1018. Sculpture II. 3 Credits.
Continuation of FA 1017. Beginning study of design and fabrication of sculpture. Basic sculptural techniques for various media, including clay, plaster. stone, and wood.

FA 1021. Drawing I. 3 Credits.
Development of a fundamental understanding of line, shape, value, contrast, composition, and mark making. Emphasis on working directly from life, along with a variety of conceptual issues. Consideration of traditional and contemporary strategies and skills toward development of technique, process, and meaning.

FA 1022. Drawing II. 3 Credits.
Continuation of FA 1021. Development of a fundamental understanding of line, shape, value, contrast, composition, and mark making. Emphasis on working directly from life, along with a variety of conceptual issues. Consideration of traditional and contemporary strategies and skills toward development of technique, process, and meaning. FA 1021 is prerequisite to FA 1022.

FA 1026. Painting: Visual Thinking. 3 Credits.
Development of technical and perceptual skills that are the foundation of visual expression. Beginning projects start with a simple introduction to the mechanics of paint handling: how to begin a painting, apply paint, and model form. Value, line, color, and abstraction.

FA 1028. Painting: Watercolor. 3 Credits.
Working with basic issues of light, color, and paint quality, students learn a variety of techniques, including working transparently, wet-on-wet, wet-on-dry, lifting, masking, and drybrush. Exploration of the medium's inherent qualities as well as those it shares with other painting media.

FA 1041. Black & White Photography. 3 Credits.
Introduction to the materials and processes of black-and-white photography. Camera operations, film processing, printing, and presentation methods. Gaining technical skills. Issues concerned with the visual language of photography.

FA 1042. Color Photography. 3 Credits.
Introduction to the materials and processes of color photography. Color theory, exposure techniques, film scanning, digital color correcting, and printing. The use of color as a means of visual communication and creative expression.

FA 1071. New Media: Digital Art. 3 Credits.
A survey of the computer as a creative art tool. Topics covered include bit-mapped and vector graphics, digital sound and imaging, basic time-based media, and digital text, integrated with fundamental design principles of concept development, composition, color theory and presentation.

FA 1075. East Asian Calligraphy. 3 Credits.
Writing of Chinese characters with traditional writing implements. No knowledge of the language required. Covers the history, aesthetics, and philosophy of East Asian scripts and calligraphy and their relationships to paintings, seal carving, and literature. Same as EALL 1075.

FA 1101. Introduction to Handbuilt Ceramics. 3 Credits.
Introduction to working with clay as an art form; fundamental hand-building techniques such as pinch, coil, and slab; basic surface, glaze, and firing techniques. Introductory history of ceramics. Materials fee.

FA 1201. Sculpture: Material Investigations. 3 Credits.
Beginning study of design and fabrication of sculpture. Introduction to sculptural techniques across multiple media, with a focus in hand-built processes including textile, wood, and found object techniques. Materials fee.

FA 1301. Drawing Fundamentals. 3 Credits.
Fundamentals of line, shape, value, contrast, composition, and mark making. Emphasis on working directly from life. Traditional and contemporary strategies and skills for developing technique, process, and meaning. Conceptual issues. Materials fee.

FA 1401. Painting: Visual Thinking. 3 Credits.
Development of technical and perceptual skills that are the foundation of visual expression. Beginning projects start with a simple introduction to the mechanics of paint handling: how to begin a painting, apply paint, and model form. Value, line, color, and abstraction.

FA 1501. Black & White Photography. 3 Credits.
Introduction to the materials and processes of black-and-white photography. Camera operations, film processing, printing, and presentation methods. Technical skills. The visual language of photography. Materials fee.

FA 1502. Color Photography. 3 Credits.
Introduction to the materials and processes of color photography. Color theory, exposure techniques, film scanning, digital color correcting, and printing. The use of color as a means of visual communication and creative expression. Materials fee.

FA 1601. New Media: Digital Art. 3 Credits.
Introduction to the tools and processes of digital, electronic, and time-based arts. Development of technical skills necessary for using the computer as a creative tool. The history and current role of digital representation and distribution in art, ideas, and relationships. Materials fee.

FA 2001. Concept Lab. 3 Credits.
Connecting concept, materials, media, and audience; addressing challenges using materials and media. Cross-disciplinary thinking and individual and collaborative creative practices as well as historical, contemporary, and theoretical context of art works. Materials fee. Restricted to students who have completed a minimum of 6 credits in Fine Arts (FA) courses.

FA 2111. Ceramic Design in Handbuilt Forms. 3 Credits.
Further development of handbuilding techniques in ceramic sculpture; pinching, coiling, paddling, and hollowing; use of slabs and hump and press molds. Students produce clay and glazes and experiment with those materials in various reduction and oxidation firing ranges. Materials fee. Prerequisites: FA 1014 or FA 1101 or permission of the instructor.

FA 2112. Ceramic Design in Wheelthrown Forms. 3 Credits.
Use of the wheel to create intricate elements and practices that accompany advanced functional and non-functional ceramic forms, including sculptural applications. Clay and glazes in various reduction and oxidation firing ranges; relationships between clay, surface, and fire. Materials fee. Prerequisites: FA 1015 or FA 1102 or permission of the instructor.

FA 2113. Ceramic Sculpture. 3 Credits.
Sculptural ceramic forms that integrate quality and creativity; transferring ideas into forms using techniques in hollow and solid construction; varied temperature firings in oxidation and reduction atmospheres. Materials fee. Prerequisites: FA 1101 or FA 1102 or FA 1014 or FA 1015.

FA 2125. Ceramics: Wheelthrown Functional Forms. 3 Credits.
Aesthetic and technical development of wheelthrown ceramic forms. Exploration of attachments: lids, spouts, handles, and footing devices. Sketches and technical drawings, clay and glaze-making tests, varied temperature firings in reduction and oxidation atmospheres. Prerequisite FA 1015.

FA 2127. Ceramic Design in Handbuilding. 3 Credits.
Handbuilding techniques of pinch, coil, slab, hump and press mold, paddling, and hollowing. Sketch studies, clay and glaze tests. Orientation to studio operations and maintenance.

FA 2131. Ceramic Sculpture. 3 Credits.
Developing an understanding of the sculptural ceramic form that integrates both quality and creativity. Techniques in hollow and solid construction. Varied temperature firings in reduction and oxidation atmospheres.

FA 2139. Special Topics: Ceramics. 3 Credits.
Prerequisite: FA 1014 or FA 1015 or permission of instructor.

FA 2140. Sculpture III. 3 Credits.
Advanced techniques in a variety of media. Prerequisite: FA 1017 or FA 1018.

FA 2149. Special Topics: Sculpture. 3 Credits.
Prerequisite: FA 1017 or FA 1018 or permission of instructor.

FA 2151. Advanced Drawing Techniques. 3 Credits.
Investigation of the common concerns and creative processes that have dissolved boundaries between drawing and painting in the late 20th century. Prerequisite: FA 2150.

FA 2159. Special Topics: Drawing. 3 Credits.
Prerequisite: FA 1021 or FA 1022 or permission of instructor.

FA 2160. Figure Painting: Observation and Gesture. 3 Credits.
Consideration of the process of vision as mediated through manipulation of paint to form an image. Development of solutions to clarity, articulation, energy, and finish. Prerequisite: FA 1026 or FA 1027.

FA 2161. Problems in Color. 3 Credits.
Exploration of the objective rationale and subjective experience of color through the execution of problems in color contrast and color scales. Prerequisite: FA 1026 or FA 1027.

FA 2162. Painting: Contemporary Issues. 3 Credits.
Examples from contemporary art serve as starting points for discussion of the creative process. Postmodern strategies to rethink and challenge various hierarchies of subject, style and medium. Prerequisite: FA 1026 or FA 1027.

FA 2169. Special Topics: Painting. 3 Credits.
Prerequisite: FA 1026 or FA 1027 or permission of instructor.

FA 2172. Photography: Contemporary Issues. 3 Credits.
Emphasis on the incorporation of contemporary strategies, trends, and approaches into the student's personal practice. The work of contemporary artists who use photography will inform the work produced. Prerequisite: FA 1041 or FA 1042.

FA 2179. Special Topics: Photography. 3 Credits.
Prerequisite: FA 1041 or FA 1042 or permission of instructor.

FA 2189. Special Topics: New Media. 3 Credits.
Prerequisite: FA 1071 or permission of instructor.

FA 2190. Special Topics: Fine Arts. 3 Credits.

FA 2211. Sculpture Fabrication. 3 Credits.
Intermediate to advanced fabrication techniques including woodworking, metal fabrication, mold-making, and textiles. Focus on developing safe and creative uses of more advanced sculptural techniques and tools in the context of site-specific projects. Materials fee. Prerequisites: FA 1017 or FA 1201 or permission of the instructor.

FA 2212. Sculpture: Design in Action. 3 Credits.
The design, fabrication, and implementation of artwork to address real world problems using a variety of materials and techniques. Students put their sculptures into action in site-specific contexts. Materials fee. Prerequisites: FA 1017 or FA 1201 or permission of the instructor.

FA 2213. Digital Fabrication. 3 Credits.
Basic principles of digital fabrication; the intersection between digital and physical methods of fabrication; hands-on building projects such as woodworking, simple mold-making, and multi-media solutions. Materials fee. Prerequisites: FA 1017 or FA 1071 or FA 1201 or FA 1601 or permission of the instructor.

FA 2311. Drawing: Perception and Mark Making. 3 Credits.
Further study of the fundamentals of drawing; perceptual and conceptual development; observational practice of drawing and exploration of historical and contemporary developments in drawing. Materials fee. Prerequisites: FA 1021 or FA 1301 or permission of the instructor.

FA 2312. Advanced Drawing Techniques. 3 Credits.
Investigation of drawing as an organizing tool for thought, analysis, and personal imagery. Drawing as a method to integrate complex ideas and concepts into the visual field. Materials fee. Prerequisites: FA 1021 or FA 1301 or permission of the instructor. Same as FA 2151.

FA 2411. Painting: Watercolor. 3 Credits.
Working with basic issues of light, color, and paint quality, students learn a variety of techniques, including working transparently, wet-on-wet, wet-on-dry, lifting, masking, and drybrush. Exploration of the medium's inherent qualities as well as those it shares with other painting media. Laboratory fee. Prerequisites: FA 1026 or FA 1401 or permission of the instructor.

FA 2412. Painting a Figure. 3 Credits.
Perceptual painting of the figure with a focus on developing visual analysis skills. Materials, construction processes, and formal language of painting; narrative and symbolic language and political critiques of representation; and the history of figure painting and its critical issues. Materials fee. Prerequisites: FA 1026 or FA 1401 or permission of the instructor.

FA 2413. Painting: Process and Materials Lab. 3 Credits.
The traditional and contemporary construction processes and materials used in fine art painting: support material, grounds, paints, application tools, and action by the painter. Materials fee. Prerequisites: FA 1026 or FA 1401 or permission of the instructor.

FA 2431. Painting: Contemporary Issues. 3 Credits.
The variety of historical and contemporary painting practices; deepening our understanding of painting construction and its meaning-making; developing our own interests, pleasures, and concerns. A critical look at the history and conventions of painting, asking "painting for whom and to what purpose?" How do painted images circulate and function? By deconstructing the vocabulary of painting, we can repurpose it to our own individual ends. Prerequisites: FA 1026 or FA 1401 or permission of the instructor.

FA 2511. Photography: Abstraction versus Representation. 3 Credits.
Theory and practice of abstract and representational photography in historical and contemporary contexts; chemical and digital photographic processes. Materials fee. Prerequisites: FA 1501 or FA 1041 or FA 1502 or FA 1042, or permission of the instructor.

FA 2512. Photography: Altered Landscapes. 3 Credits.
Theory and practice of abstract and representational photography in historical and contemporary contexts; chemical and digital photographic processes. Materials fee. Prerequisites: FA 1501 or FA 1041 or FA 1502 or FA 1042 or permission of the instructor.

FA 2513. Photography: From Photograms to Scanograms. 3 Credits.
Low-tech methods of producing analogue photographs and generating digital images. Working in both the chemical darkroom and digital lab. Analyzing examples of photography from the earliest practitioners to work being produced by contemporary artists. Laboratory fee. Prerequisites: One of FA 1041, FA 1042, FA 1501 or FA 1502 or permission of the instructor.

FA 2531. Photography: Contemporary Issues. 3 Credits.
Emphasis on the incorporation of contemporary strategies, trends, and approaches into the student's personal practice; study of the work of contemporary artists who use photography. Laboratory fee. Prerequisites: One of FA 1041, FA 1042, FA 1501 or FA 1502 or permission of the instructor.

FA 2611. Video Art and Time-based Media. 3 Credits.
Video art production with a focus on the skills needed to be a technically proficient and thoughtful video maker. The history of video art since 1965; avant-garde moving image languages; and theoretical and social contexts that have informed the development and use of the medium. Laboratory fee. Prerequisites: One of FA 1042, FA 1071, FA 1502 or FA 1601 or permission of the instructor.

FA 2612. Video: Remixing the Archive. 3 Credits.
The appropriation and documentary functions of moving images through direct reuse in edited or live remix or as sources for restaging new versions. Projects introduce students to the substantial archival resources in Washington, D.C., as well as the ever-increasing collections of material that can be found online. Prerequisites: One of FA 1042, FA 1071, FA 1502 or FA 1601 or permission of the instructor.

FA 2613. Site and Sound. 3 Credits.
An overview of contemporary sonic art practice and audio production. Audio storytelling, spatialized sound, and site-based sonic artwork. Critical perspectives on sound and audio practice. Prerequisites: One of FA 1042, FA 1071, FA 1502 or FA 1601 or permission of the instructor.

FA 3101. Special Topics: Ceramics. 3 Credits.
Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Laboratory fee. Prerequisites: One of FA 1014, FA 1015, FA 1101 or FA 1102 or permission of the instructor.

FA 3201. Special Topics: Sculpture. 3 Credits.
Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Laboratory fee. Prerequisites: FA 1017 or FA 1201 or permission of the instructor.

FA 3301. Special Topics: Drawing. 3 Credits.
Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Laboratory fee. Prerequisites: FA 1021 or FA 1301 or permission of the instructor.

FA 3401. Special Topics: Painting. 3 Credits.
Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Laboratory fee. Prerequisites: FA 1026 or FA 1401 or permission of the instructor.

FA 3501. Special Topics: Photography. 3 Credits.
Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Laboratory fee. Prerequisites: FA 1041 or FA 1042 or FA 1501 or FA 1502 or permission of the instructor.

FA 3601. Special Topics: New Media. 3 Credits.
Issues in contemporary new media practices. Topics vary by semester. May be repeated provided the topic differs. See the schedule of classes for more details. Materials fee. Prerequisites: FA 1071 or FA 1601 or permission of the instructor.

FA 3901. Special Topics: Fine Arts. 3 Credits.
Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Laboratory fee. Prerequisites: FA 1014 or FA 1015 or FA 1017 or FA 1021 or FA 1026 or FA 1041 or FA 1042 or FA 1071 or FA 1101 or FA 1102 or FA 1201 or FA 1301 or FA 1401 or FA 1501 or FA 1502 or FA 1601 or permission of the instructor.

FA 3911. Collaborative Practices: Social Practices of Art. 3 Credits.
The effects of artists using their work to participate in political, social and/or cultural change. Ethical, cultural, and political implications of using art in the public sphere. Philosophical, theoretical, and historical background of these practices. Laboratory fee. Prerequisites: One of FA 1101, FA 1014, FA 1015, FA 1017, FA 1021, FA 1026, FA 1041, FA 1042, FA 1102, FA 1201, FA 1301, FA 1401, FA 1501, FA 1502, FA 1601, or FA 1071, or permission of the instructor.

FA 3912. The Cinematic in Contemporary Art. 3 Credits.
The influence of cinema on contemporary art in historical, conceptual, and aesthetic contexts. Students employ cinematic strategies through projects that explore setting, sequencing, camera angle, point of view, tracking, lighting, performance, narrative, and sound. Materials fee. Prerequisites: One of FA 1041, FA 1042, FA 1501, FA 1502, FA 1601 or FA 1071; or permission of the instructor.

FA 3951. Creative Photovoltaics. 3 Credits.
The fabrication process of solar devices and the parameters of solar cells in design and art applications. Students build a small solar device and conceptualize innovative proposals for new solar technology solutions. Materials fee. Prerequisites: One of FA 1017, FA 1071, FA 1201 or FA 1601; or permission of the instructor.

FA 4193. Professional Practices. 3 Credits.
A wide overview of the contemporary art world, including how artists promote their work to galleries, public art organizations, and museums; writing successful grant proposals, artist statements, essays, and reviews; and comparing the quality of venues for art and art journalism. (Same as FA 6293).

FA 4195. Critical Practices. 3 Credits.
This structured independent study consists of weekly group critiques that bring together students working in a variety of media. Discussions, which range from practical to aesthetic issues, challenge students to focus and articulate their visual knowledge. Prerequisite: permission of instructor.

FA 4199. Internship. 3 Credits.
Open only to candidates for the B.A. in fine arts with approval of the advisor in fine arts. May not be repeated for credit toward the degree. May be taken P/NP only.

FA 6101. Special Topics: Ceramics. 3 Credits.
Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Materials fee. Restricted to graduate students.

FA 6231. Ceramic Sculpture. 3 Credits.
Developing an understanding of the sculptural ceramic form that integrates both quality and creativity. Techniques in hollow and solid construction. Varied temperature firings in reduction and oxidation atmospheres.

FA 6233. Architectural Ceramics. 3 Credits.
Advanced studies in ceramic murals and sculptures designed for indoor and outdoor architectural concepts. Laboratory tests and activities.

FA 6239. Special Topics: Ceramics. 3 Credits.

FA 6249. Special Topics: Sculpture. 3 Credits.

FA 6250. Drawing III. 3 Credits.
Advanced investigation of drawing as an organizing tool for thought, analysis, and personal imagery. Traditional and contemporary approaches to topics related to perceptual and conceptual concerns.

FA 6251. Advanced Drawing Techniques. 3 Credits.
Investigation of the common concerns and creative processes that have dissolved boundaries between drawing and painting in the late 20th century.

FA 6259. Special Topics: Drawing. 3 Credits.

FA 6260. Figure Painting: Observation and Gesture. 3 Credits.
Consideration of the process of vision as mediated through manipulation of paint to form an image. Development of solutions to clarity, articulation, energy, and finish.

FA 6261. Problems in Color. 3 Credits.
Exploration of the objective rationale and subjective experience of color through the execution of problems in color contrast and color scales.

FA 6262. Painting: Contemporary Issues. 3 Credits.
Examples from contemporary art serve as starting points for discussion of the creative process. Postmodern strategies to rethink and challenge various hierarchies of subject, style and medium.

FA 6269. Special Topics: Painting. 3 Credits.

FA 6270. Advanced Photography: Exposure and Printing Techniques. 3 Credits.
Pre-visualization, accurate exposure and development, and the craft of black-and-white printmaking. Techniques and strategies for creation of a portfolio that is aesthetically and conceptually engaging.

FA 6271. Advanced Photography: Digital Color Printing. 3 Credits.
Further development of color theory and the technical skills to make high-quality inkjet prints. Critiques and discussion of contemporary artistic practice.

FA 6272. Photography: Contemporary Issues. 3 Credits.
Emphasis on the incorporation of contemporary strategies, trends, and approaches into the student's personal practice. The work of contemporary artists who use photography will inform the work produced.

FA 6279. Special Topics: Photography. 3 Credits.

FA 6280. New Media: Digital Illustration. 3 Credits.
Advanced investigation of two- and three-dimensional drawing and illustration techniques. Print and/or digital portfolio preparation. Prerequisite: FA 1071 or permission of instructor.

FA 6281. New Media: Digital Imaging. 3 Credits.
Advanced examination of bit-mapped imaging techniques. Methods of electronic dissemination of visual information. Prerequisite: FA 1071 or permission of instructor.

FA 6282. New Media: Time-based Visual Expression. 3 Credits.
An examination of contemporary two-dimensional animation, video, and multimedia systems and applications, including individual portfolio projects. Prerequisite: FA 1071 or permission of instructor.

FA 6289. Special Topics: New Media. 3 Credits.
Prerequisite: FA 1071 or permission of instructor.

FA 6290. Special Topics: Fine Arts. 3 Credits.
May be repeated for credit provided the topic differs. Restricted to graduate students only. (Same as FA 2190).

FA 6291. Contemporary Art and Theory for Artists I. 3 Credits.
Part I of a two-semester course that addresses a detailed and thematic history of contemporary art since the late 1960s, along with an introduction to key theoretical ideas shaping contemporary philosophy, art practices, and art history. Restricted to MFA in Fine Arts students or departmental permission only.

FA 6292. Contemporary Art and Theory for Artists II. 3 Credits.
Part II of a two-semester course that addresses a detailed and thematic history of contemporary art since the late 1960s, along with an introduction to key theoretical ideas shaping contemporary philosophy, art practices, and art history. Restricted to MFA in Fine Arts students or departmental permission only. Recommended background: FA 6291.

FA 6293. Professional Practices. 3 Credits.
A critical guide for understanding the infrastructure of the art world through analysis of various sustainable models of contemporary art practice for young artists. Establishing practical modes of criticism, promotion, fundraising and entrepreneurship in relation to exhibiting one's work, seeking venues, conducting studio visits, managing budgets, and writing grants, press releases, and artist statements. Restricted to Graduate students only. (Same as FA 2193).

FA 6294. Writing in Practice. 3 Credits.
Consideration of a wide variety of key artists' writings and the ways in which artists incorporate writing into their overall artistic practices. Issues and methods discussed may include questions of intention, the reciprocity of an artwork, agency and locational identity, defining a public/audience, and perceptions of care and engagement. Writing exercises in observation, concepts, and medium/genre. Restricted to Graduate students only.

FA 6295. Critical Practices. 3-7 Credits.
This structured independent study consists of weekly group critiques that bring together students working in a variety of media. Discussions, which range from practical to aesthetic issues, challenge students to focus and articulate their visual knowledge.

FA 6296. Studio Visits. 3 Credits.
Ongoing critical discourse about each student's creative work through regular studio visits with the instructor, as well as one-time visits by international, national, and regional artists. This course will challenge students to interrogate and more fully articulate their individual practices. Restricted to MFA in fine arts students only.

FA 6298. Internship. 3-6 Credits.
Open only to M.F.A. candidates with the approval of the advisor in fine arts. May be repeated to a maximum of credits.

FA 6301. Special Topics: Drawing. 3 Credits.
Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students.

FA 6312. Advanced Drawing Techniques. 3 Credits.
Drawing as an organizing tool for thought, analysis, and personal imagery. Traditional and contemporary approaches to topics related to perceptual and conceptual concerns. Restricted to graduate students.

FA 6401. Special Topics in Painting. 3 Credits.
Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Materials fee. Restricted to graduate students.

FA 6412. Painting a Figure. 3 Credits.
Perceptual painting of the figure with a focus on developing skills of visual analysis; materials, construction processes, and formal language of painting; history of figure painting and its critical issues; narrative and symbolic language and political critiques of representation. Materials fee. Restricted to graduate students.

FA 6413. Painting: Process and Materials Lab. 3 Credits.
The traditional components of fine arts paintings, including a support material, a ground, paints, application tools, and action by the painter; traditional and contemporary materials and construction processes. Materials fee. Restricted to graduate students.

FA 6431. Painting: Contemporary Issues. 3 Credits.
Theory and practice of contemporary painting practices and critical investigation of historical precedents; how painted images circulate. Student project. Materials fee. Restricted to graduate students.

FA 6501. Special Topics in Photography. 3 Credits.
Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Materials fee. Restricted to graduate students.

FA 6511. Photography: Abstraction versus Representation. 3 Credits.
Photography beyond an objective conveyer of visual information; abstract and representational photography from a theoretical perspective; practical approaches to photography within aesthetic traditions of historical and contemporary abstract and representational art. Chemical and digital photographic processes. Materials fee. Restricted to graduate students.

FA 6512. Photography: Landscape/Cityscape. 3 Credits.
Exploration of imagery that conforms to and contradicts the well-established artistic conventions of landscapes; study of artists who take the landscape as their subject matter. Students produce a final portfolio that investigates local landscape in and around the Washington, D.C., metropolitan area. Materials fee. Restricted to graduate students.

FA 6513. Photography: From Photograms to Scanograms. 3 Credits.
Low-tech means of producing analogue photographs and generating digital images; moving between the chemical darkroom to the digital lab; review of images captured by the earliest practitioners to work being produced by contemporary artists. Materials fee. Restricted to graduate students.

FA 6531. Photography: Contemporary Issues. 3 Credits.
The incorporation of contemporary strategies, trends, and approaches into the student's personal practice; learning is informed by the work of contemporary artists who use photography. Materials fee. Restricted to graduate students.

FA 6601. Special Topics: New Media. 3 Credits.
Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Materials fee.

FA 6611. Video Art and Time-based Media. 3 Credits.
Video art production skills needed for technical and creative proficiency. The history of video art since 1965; avant-garde moving image languages; theoretical and social contexts that have informed the development and use of the medium. Materials fee. Restricted to graduate students.

FA 6612. Video Remix Archive. 3 Credits.
Study of the reuse of moving images in documentary and experimental contexts or as sources for re-staging new versions. Students make use of archival resources in Washington, D.C. Materials fee. Restricted to graduate students.

FA 6613. Site and Sound. 3 Credits.
Audio production for multiple uses; contemporary sonic art practice; development of audio storytelling, spatialized sound; and site-based sonic artwork. Materials fee. Restricted to graduate students.

FA 6901. Special Topics in Fine Arts. 3 Credits.
Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Materials fee. Restricted to graduate students. Prerequisites: FA 1014, FA 1015, FA 1017, FA 1021, FA 1026, FA 1041, FA 1042, FA 1071, FA 1101, FA 1102, FA 1201, FA 1301, FA 1401, FA 1501, FA 1502 or FA 1601.

FA 6913. Painting: Off the Wall. 3 Credits.
Non-traditional approaches to painting; painting combined with other creative fields such as architecture, sculpture, social practice, performance, and film/video. Materials fee. Restricted to graduate students. Prerequisites: .

FA 6951. Creative Photovoltaics. 3 Credits.
The fabrication of solar devices and the use of these solar cells in design and art applications; scientific methodology for art and design students as well as material protocols and safety procedures. Materials fee. Restricted to graduate students.

FA 6998. Thesis Research. 3 Credits.

FA 6999. Thesis Research. 3 Credits.

FORENSIC PSYCHOLOGY (FORP)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FORP 6101. Psychology and the Legal System I. 3 Credits.
Focuses on the paradigm differences in the mental health and legal systems and the challenges associated with integrating the two. Provides the students with an overview of the American legal system and the American mental health system. Discusses various areas of the intersection of the two systems in criminal, civil, juvenile, and family law settings. The role and ethics of the mental health professional in legal settings is addressed.

FORP 6102. Psychology and the Legal System II. 3 Credits.
Students will be introduced to basic legal research with an emphasis on developing an ability to read and understand primary legal materials. Legal concepts of criminal competence and legal insanity are discussed. Constitutional notions of due process and fair treatment as they pertain to the mentally ill, developmentally disabled and children are reviewed with an emphasis on their evolution and current trends. The concept of dangerousness as it applies in both criminal civil commitment and sex offender commitment proceedings is reviewed. Prerequisites: FORP 6101.

FORP 6103. Theories of Criminal Behavior. 3 Credits.
Theories of criminal behavior; psychodynamic, biological, genetic, social learning, behavioral, and cognition; developmental and cultural issues in criminal behavior; sociological theories; violence and aggression; sex offenses and the role of substance abuse in criminal behavior. Restricted to students in the forensic psychology program.

FORP 6104. Psychopathology. 3 Credits.
The etiology and classification of mental disorders; manifestations, symptoms, and basic treatment issues within the framework of the DSM-5 diagnostic manual; disorders and categories that are a primary focus in forensic settings. Restricted to students in the forensic psychology program.

FORP 6105. Basics of Psychological Assessment. 3 Credits.
Introduction to the field of psychological assessment; test design, methodology, psychometrics, and report design; survey of frequently used objective and projective measures in the areas of cognitive, personality, and emotional functioning and their forensic application. Restricted to students in the forensic psychology program.

FORP 6106. Ethics in Forensic Psychology. 3 Credits.
Professional, ethical, and legal issues in forensic psychology practice; professional and ethical behavior as defined by applicable ethical codes; ethical dilemmas or conflicts between psychology and the law. Restricted to students in the forensic psychology program.

FORP 6107. Research and Statistics. 3 Credits.
Research methods, techniques, and implementation; basic descriptive and inferential statistics in psychology; interpreting published studies and normative data in assessments. Restricted to students in the forensic psychology program.

FORP 6108. Consultation and Testimony. 3 Credits.
The role of the forensic practitioner in providing services within the legal system and other related organizations; evidentiary issues with regard to expert testimony; techniques for successfully presenting psychological testimony; effective consultation with other disciplines, including attorneys, mental health providers, and criminal justice personnel. Restricted to students in the forensic psychology program.

FORP 6109. Evaluation and Treatment of Offenders. 3 Credits.
Approaches to classification of offenders; dangerousness and psychopathy; treatment approaches in different settings within the criminal justice system; history of offender treatment and the relative merits of different treatment models. Restricted to students in the forensic psychology program.

FORP 6110. Forensic Psychological Assessment. 3 Credits.
Forensic evaluations, including competency to stand trial, criminal insanity defenses, pre-sentencing, and risk of dangerousness evaluations; communicating assessment results to the courts or other referral sources; selecting and administering specialized forensic assessment instruments; legal and ethical responsibilities. Restricted to students in the forensic psychology program. Prerequisites: FORP 6105.

FORP 6111. Evaluation and Treatment of Sex Offenders. 3 Credits.
Measures used in assessing sex offenders; predicting dangerousness and recidivism; theories concerning interpersonal and intrapsychic presentations in such areas as deviant arousal and cognitive distortions; treatment modalities; legal and ethical difficulties arising from mandatory treatment and long-term commitment. Restricted to students in the forensic psychology program or with departmental permission.

FORP 6112. Substance Abuse Evaluation and Treatment. 3 Credits.
Underlying ideas of the pathology of addiction; psychodynamic, genetic and biological, and and environmentally-focused theories; current assessment and intervention techniques; current treatments including psychopharmacological, psychodynamic and cognitive-behavioral approaches. Restricted to students in the forensic psychology program or with departmental permission.

FORP 6113. Victimology. 3 Credits.
The psychology of the victim within social and cultural contexts; violent, sexual, and psychological victimization; relationship between prior victimization as a precursor in criminal behavior; prevention, intervention, and policy issues. Restricted to students in the forensic psychology program or with departmental permission.

FORP 6114. Issues in Family Law. 3 Credits.
Psycho-legal issues concerning divorce, child custody, guardianship, and intrafamily violence and sex offending; dispute resolution methods as an alternative to litigation with a particular emphasis on divorce mediation; child custody evaluation and the evaluation of the elderly; ethical and legal difficulties. Restricted to students in the forensic psychology program or with departmental permission.

FORP 6115. Children and Adolescents in the Legal System. 3 Credits.
The differences between the treatment of juvenile and adults offenders in the legal system; history and role of the juvenile justice system from both legal and mental health perspectives; developmental aspects of the offending juvenile; the role of the psychologist in court proceedings. Restricted to students in the forensic psychology program or with departmental permission.

FORP 6117. Interrogation and Interviewing. 3 Credits.
Techniques of interrogation and interviewing in both criminal- and terrorism-related investigations. Cultural aspects of interviewing, the problem of false confessions, and the use of the polygraph. Legal and ethical issues surrounding interrogations, including the use of coercive techniques. Restricted to students in the forensic psychology program. Prerequisites: FORP 6101, FORP 6103 and FORP 6104.

FORP 6118. Psychological Profiling. 3 Credits.
The strengths and limitations of psychological profiling in criminal investigations. The main psychological principles upon which criminal profiling is based and crime scene analysis and its relationships to both the demographic and psychological characteristics of a pool of unknown offender suspects. Methods to identify potential serial offenses will be examined. Legal and ethical issues with regard to the use of profiling will be explored. Restricted to Forensic Psychology students. Prerequisites: FORP 6101, FORP 6103, and FORP 6104.

FORP 6119. Police Psychology. 3 Credits.
Psychological aspects of working within or for police agencies; personality assessment for suitability for police work, the stress involved in the work with attendant adverse psychological consequences, and continuing assessment of police officers after critical incidents; ethical and practical problems for the mental health professional when working within or for a police organization and services available for troubled officers. Restricted to students in the forensic psychology program or with departmental permission.

FORP 6120. Counterintelligence. 3 Credits.
Counterintelligence considered from the perspectives of intelligence agencies, terrorist groups, and industry. The interconnection of psychological factors, motivations, strategic intent, and defense measures. Current and potential threats are assessed, including cybersecurity and cognition security. Restricted to students in the major; departmental permission may be substituted.

FORP 6128. Terrorism and Counterterrorism. 3 Credits.
Examination of the history and current status of terrorism and counterterrorism; psychological constructs motivating terrorist activity and countering the terror of terrorism; current scientific studies of the interplay between psychological factors, cultural norms, and religious ideations; and potential and future threats related to internet crime. Restricted to students in the forensic psychology program.

FORP 6130. Practicum/Externship. 0-1 Credits.
Students undertake 250 hours of externship training tailored to their professional interests. The course may be completed over multiple semesters; students enroll for 1 credit in the semester in which they will complete the required training hours, and for 0 (zero) credits in all other semesters during which they work toward, but do not complete, requirements. Restricted to students in the forensic psychology program. Prerequisites: FORP 6101, FORP 6103 and FORP 6104.

FORP 6150. Advanced Topics in Forensic Psychology. 0-12 Credits.
Current topics in forensic psychology. Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Prerequisites: FORP 6101, FORP 6103, and FORP 6104.

FORENSIC SCIENCES (FORS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FORS 2104. Introduction to Forensic Sciences. 3 Credits.
Topics in the application of science to the criminal justice system, including personal identification, analysis of drugs, forms of trace evidence, identification of biological fluids, forensic pathology, and forensic toxicology. Prerequisites: two semesters of a laboratory science other than astronomy and permission of instructor.

FORS 2104W. Introduction to Forensic Sciences. 3 Credits.
Topics in the application of science to the criminal justice system, including personal identification, analysis of drugs, forms of trace evidence, identification of biological fluids, forensic pathology, and forensic toxicology.

FORS 2118. Introduction to Computer Systems for Security Professionals. 3 Credits.
Aspects of computer systems and software that directly relate to media analysis, i.e., storage, memory, the structure of file systems, and system peripherals that may contain evidence. Laboratory fee.

FORS 2119. Introduction to Network Systems for Security Professionals. 3 Credits.
Aspects of network tools, administrative tools, network protocols, and fundamentals of TCP/IP that can be used to carry out a network-based attack. Development of a working knowledge of how information is processed and can be intercepted on the Internet/Intranet. Laboratory fee.

FORS 2190. Topics in Forensic Science. 3 Credits.
Prerequisite: Any combination of two courses from BISC 1005–BISC 1006 or CHEM 1003– CHEM 1004 and junior standing.

FORS 6004. Fundamentals of Forensic Science I. 3 Credits.
This course will survey crime scene investigation techniques, medicolegal death investigation, and patterned evidence examination. This will satisfy the 10 hours instruction for a FEPAC accredited MFS degree in the core topics of crime scene investigation, physical evidence concepts, and pattern evidence. This course will help students prepare for the American Board of Criminalistics ("ABC") examination in the disciplines of firearms and toolmarks, fingerprints, and questioned documents. Lectures will be given by faculty members and guest lecturers who are subject matter experts on the topic presented. This course includes a four hour laboratory (fingerprints). This is a required course for MFS and CSI students. This course, along with FORS 6005 Fundamentals of Forensic Science II, replaces FORS 6213, Elements of Forensic Science (3 Credits). Prerequisites: None.

FORS 6005. Fundamentals of Forensic Science II. 3 Credits.
This course will survey the traditional crime laboratory (criminalistics) disciplines—specifically forensic drug chemistry, forensic toxicology, trace evidence, fire debris, explosives, and forensic molecular biology. This will satisfy the 10 hours instruction for a FEPAC accredited MFS degree in the core topics of analytical chemistry and instrumental methods of analysis, drug chemistry/toxicology, microscopy and materials analysis, and forensic biology. This course will help students prepare for the American Board of Criminalistics ("ABC") examination in the disciplines of forensic biology, trace evidence, fire debris, controlled substances, and toxicology/blood alcohol determinations. Lectures will be given by faculty members and guest lecturers who are subject matter experts on the topic presented. This course includes three four hour laboratories (mass spectrometry, microscopy, DNA). This is a required course for MFS and CSI students. This course, along with FORS 6004 Fundamentals of Forensic Science I, replaces FORS 6213, Elements of Forensic Science (3 Credits). Restricted to None.

FORS 6010. Bloodstain Pattern Analysis I. 3 Credits.
Human blood in flight and the patterns it makes on target surfaces. Crime scene investigation, crime scene analysis, and crime scene reconstruction. Laboratory fee. Restricted to graduate students. Recommended background: FORS 6251 and FORS 6256.

FORS 6011. Bloodstain Pattern Analysis II. 3 Credits.
Continuation of the concepts learned in FORS 6010. Serving as an expert witness; refining blood pattern analysis and documentation skills; effectively communicating observations, analysis, and conclusions in the courtroom. Laboratory fee. Restricted to graduate students. Prerequisites: FORS 6010. Recommended background: FORS 6251 and FORS 6256.

FORS 6020. Ethics, Professional Responsibility, and Quality Assurance. 2 Credits.
Issues of forensic science laboratory professional responsibility, including ethics, public policy, and quality assurance. Satisfies 10 hours of instruction for a Forensic Science Education Programs Accreditation Commission (FEPAC) accredited M.F.S. degree in the core topics of ethics and professional responsibility and quality assurance; also assists in preparation for the American Board of Criminalistics examination in the area of ethics. Taken online during the summer session.

FORS 6201. Forensic Biology. 3 Credits.
Principles of the forensic analysis of blood and other biological materials. Specific procedures and techniques used in forensic biology and serology. Laboratory fee.

FORS 6202. Instrumental Analysis. 3 Credits.
Principles and application of various instrumental methods to the examination of physical evidence, including chromatographic and spectroscopic techniques and mass spectrometry. Laboratory fee.

FORS 6203. Examination of Questioned Documents. 3 Credits.
Theory and principles of handwriting and handprinting, duplicating processes, paper manufacture and fiber analysis; studies of paper and methods of examining questioned documents. Laboratory fee.

FORS 6204. Firearms and Toolmark Identification. 3 Credits.
Methods for identifying firearms, bullet cartridge casings, toolmarks, gunshot residue, obliterated serial numbers, tire marks, and footprints. Laboratory fee.

FORS 6206. Trace Evidence Analysis. 3 Credits.
Principles that govern the analysis of trace evidence, including recovery, transference, interpretation, and comparison. Assessment of evidentiary value, reporting, and court testimony. Laboratory fee.

FORS 6207. Photography in the Forensic Sciences. 3 Credits.
Basic use of forensic photography, including selection and use of equipment, photographs as evidence, close-up work, and common misconceptions. Laboratory fee.

FORS 6210. Advanced Instrumental Analysis. 3 Credits.
Theory and practice of modern instrumental methods used in forensic laboratories, including mass spectrometry, optical spectroscopy, microscopy, chromatographic and electrophoretic separations. It is a required course for MFS students with concentration in Forensic Chemistry and Forensic Toxicology. Recommended background: undergraduate analytical methods.

FORS 6213. Elements of of Forensic Sciences. 3 Credits.

FORS 6215. Science of Fingerprints. 3 Credits.
A general overview of the history and biology of and principles underlying the science of fingerprints. Latent print development methods, recording, classification, and methodology of comparison of fingerprints and palm prints to include latent prints. Subject matter is covered at an introductory level; additional study is required to develop expertise as a latent fingerprint examiner. Restricted to None. Prerequisites: None.

FORS 6216. Development of Latent Prints. 3 Credits.
This Advanced Fingerprint Science Course will provide the students an increased understanding of the main principles of fingerprint identification: uniqueness and persistence. The course is broken down into three main sections, which will address the chemistry behind processing fingerprints, the anatomy and physiology of friction ridge skin and the extensive research that has been conducted in the field of fingerprint science. The students will be required to complete a skills processing exam to assess their understanding and ability to develop latent prints on items of evidence. In addition, there will be a written examination covering the topics of biology and development of friction ridge skin and a final comprehensive exam. Upon conclusion of this course, each student should have a firm grasp of why friction ridge skin can be used as a means of identification. Recommended background: FORS 6215.

FORS 6217. Fingerprint Comparisons. 3 Credits.
In-depth study of analysis, comparison, evaluation, and verification (ACE-V) methodology; assessing the quality and quantity of information and establishing a tolerance for comparison using the effects of distortion; uniqueness and persistence; anatomy and embryology of friction ridge skin. Laboratory fee. Prerequisites: FORS 6215.

FORS 6219. Digital Image Processing. 3 Credits.
Digital images of marginal value can be processed to reveal details which had been in the original, but were difficult to see. These changes must be done in ways to survive court challenges. Best practices for doing so are provided. Prerequisites: FORS 6207 or permission of the instructor. Recommended background: graduate level work in MS/CSI, MFS/FRA, MS/FRA or Grad Cert in Forensic Investigations; graduate-level work in crime scene investigation and/or friction ridge analysis, or in the graduate certificate program in forensics investigations.

FORS 6224. Criminal Law for Forensic Scientists. 3 Credits.
This course will provide an overview of criminal law offenses, criminal law procedures, issues of evidence recovery, admissibility of scientific evidence, and expert testimony, with an emphasis on the interaction between the criminal process and forensic science. A moot court experience is integral to this course. (This course combines and replaces Crim Law I and III.).

FORS 6225. Statistics for Forensic Scientists. 3 Credits.
Statistics with a focus on forensic applications. Emphasis on the Bayesian approach. Logical, probabilistic statistical reasoning skills, and R software skills. Course content is the basis for an examination question on the comprehensive examination. Students must have taken an undergraduate statistics course before registering. Restricted to None. Prerequisites: An undergraduate statistics course.

FORS 6231. Principles of Toxicology. 3 Credits.
Concepts of toxicology, including its historical development and modern applications, drug disposition, mechanisms of toxicity; factors that influence toxicity and toxicity evaluation.

FORS 6232. Analytical Toxicology. 3 Credits.
Principles and procedures used in the isolation, identification, and quantitation of drugs of abuse from human samples. Prerequisite: FORS 6202 or permission of instructor.

FORS 6234. Medicinal Chemistry I. 3 Credits.
Theory and principles of classification, synthesis, and structure activity relationships of drugs. Discussion of the complex chemical events that take place between administration of a drug and its action on the user, with emphasis on drugs of abuse.

FORS 6235. Medicinal Chemistry II. 3 Credits.
Chemical, pharmacological, toxicological, and pathological characteristics of commonly abused drugs, including ethanol, barbiturates, narcotics, stimulants, and hallucinogens.

FORS 6236. Forensic Toxicology I. 3 Credits.
Biological, chemical, and pharmacological principles that underlie forensic toxicology. Prerequisite: FORS 6235 or permission of instructor.

FORS 6237. Forensic Toxicology II. 3 Credits.
Lectures, student seminars, and projects dealing with topics of current interest in forensic toxicology. Prerequisite: FORS 6236 or permission of instructor.

FORS 6238. Forensic Chemistry I. 3 Credits.
Examination of glass and soils. Laboratory exercises include refractive index measurements using immersion methods; polarized light observations of minerals; x-ray diffraction analysis of minerals; and classical chemical and physical methods of analysis. Prerequisite: FORS 6202 or permission of instructor. Laboratory fee.

FORS 6239. Forensic Chemistry II. 3 Credits.
Examination of arson accelerants, textile fibers, plastics, and paints. Laboratory exercises include infrared spectrometry and pyrolysis–gas–liquid chromatography of polymeric materials, as well as classical chemical and physical methods of analysis. Prerequisite: FORS 6238 or permission of instructor. Laboratory fee.

FORS 6240. Forensic Drug Analysis. 3 Credits.
Examination of dosage forms of drugs. Laboratory exercises include color spot tests, crystal tests, infrared spectrometry and gas chromatography-mass spectrometry. Laboratory fee.

FORS 6241. Forensic Molecular Biology I. 3 Credits.
Techniques of molecular biology applied to the collection, examination, analysis, and interpretation of biological evidence.

FORS 6242. Forensic Molecular Biology II. 3 Credits.
Advanced methods of forensic molecular biology. Laboratory examinations and classifications of dried blood and other biological materials through a variety of nuclear and mitochondrial markers. Laboratory fee. Prerequisite: FORS 6241 and permission of instructor.

FORS 6243. Forensic Molecular Biology III. 3 Credits.

FORS 6246. Human Genetic Variation. 3 Credits.
The genetic variation in human populations as a framework for measurement and analysis of genetic diversity and evolutionary process. Consideration of the possible roles of cultural change leading to adaptive/selective events. Same as ANTH 6406.

FORS 6247. Population Genetics. 3 Credits.
Origin, maintenance, and possible significance of genetic variation in populations. Selection, genetic drift, and population structure are emphasized. Both theoretical and applied aspects of population genetics are discussed. Same as BISC 6228.

FORS 6250. Crime Scene Investigation for Lab Personnel. 3 Credits.
A condensed offering of the subject matter of FORS 6251–FORS 6252. FORS 6250 cannot be taken for credit toward the crime scene investigation concentration. Laboratory fee.

FORS 6251. Crime Scene Investigation I. 3 Credits.
Examination, analysis, and reconstruction of crime scenes. Principles from biology, chemistry, and physics applied to identification, documentation, preservation, and collection of physical evidence. Laboratory fee.

FORS 6252. Crime Scene Investigation II. 3 Credits.
Continuation of FORS 6251. Examination, analysis, and reconstruction of crime scenes. Principles from biology, chemistry, and physics applied to identification, documentation, preservation, and collection of physical evidence. Laboratory fee.

FORS 6254. Forensic Psychiatry. 3 Credits.
Introduction to the constructs of dynamic psychiatry, psychiatric treatment, and the nomenclature of mental disorders. Consideration of expert testimony, direct examination, and cross-examination in hospitalization and criminal cases.

FORS 6255. Investigation of Child Abuse. 3 Credits.
This course integrates medical, scientific, psychological, sociological and legal information for investigators and professionals involved in the field of child abuse. Special emphasis will be placed on the application of research-supported data to situations involving the murder, abuse and exploitation of children.

FORS 6256. Forensic Pathology. 3 Credits.
Terminology and scientific techniques used in medico-legal investigations, sudden or unexpected deaths, homicides, suicides, accidental deaths, and trauma.

FORS 6257. Medicolegal Death Investigation. 3 Credits.
Medical, scientific, sociological, and legal methodologies applied to forensic investigations. Aspects of death scene analysis by a medical examiner, including autopsy procedures, unidentified remains, child death investigations, and mass disaster investigations. Prerequisite: FORS 6256 and permission of instructor. Laboratory fee.

FORS 6258. The Investigation of Sexual Assault and Other Sex Crimes. 3 Credits.
This course integrates medical, psychological, sociological and legal information for investigators and professionals involved in the field of sex crime investigation. Special emphasis will be placed on the application of research-supported data to situations involving the sexual exploitation and victimization of adults.

FORS 6259. Computer Related Law. 3 Credits.
A problem-oriented course that focuses on applying the holdings of cases and analysis of statutes to different criminal fact patterns. The course is designed to examine criminal law, criminal procedures, and evidence as it relates to computer crime and the collection/analysis of digital evidence. Open only to students enrolled in off-campus forensic sciences programs.

FORS 6260. Security Case Law. 3 Credits.
Negligence and liability, international torts, compensatory and punitive damages, and contract law. The exercise of security functions by private individuals and organizations.

FORS 6261. Security Management. 3 Credits.
An overview of the factors that shape modern security management: technology, law, ethics and societal changes. The course focuses on risk assessment and the necessity to identify, analyze, and counter threat.

FORS 6264. Computer Network Defense. 3 Credits.
Identification of common threats to enterprise information systems and the tools, techniques, and strategies for mitigating those threats. Access control concepts, methodologies, and implementation within centralized and decentralized environments across an enterprise's computer systems; common methods of cyber-attacks; principles, means, and methods for ensuring system integrity, confidentiality, and availability; auditing and monitoring technologies for preventative, detective, and corrective measures.

FORS 6270. Digital Artifacts: Points of Evidence. 3 Credits.
The inner workings of common activity on a computer system, the digital trail these activities leave, and how to recover, interpret, and present such artifacts forensically.

FORS 6271. Cyberpsychology. 3 Credits.
How cyberpsychology can be used in the conduct of digital forensic investigations; the role of the psychologist in and methods used for investigating cybercrime cases.

FORS 6273. RschMethods for SecurityProfs. 3 Credits.

FORS 6277. Computer Forensics I: File System Analysis. 3 Credits.
An introduction to the tools and procedures used for digital investigations. Analysis of the FAT, NTFS, EXT, and HFS file systems. How data is stored at the file system level. Laboratory fee. Restricted to students enrolled in the department or with approval of the program director.

FORS 6278. Computer Forensics II: Applied Computer Forensics. 3 Credits.
Application of the tools and techniques learned in FORS 6277. Digital forensics as it relates to both civil and criminal investigations; best practices in securing, processing, acquiring, examining, and reporting on digital evidence. Prerequisite: FORS 6277.

FORS 6279. Incidence Response: Understanding and Identifying Network-Based Attacks. 3 Credits.
Computer network operations and network-based computer crime. Fraud schemes related to electronic commerce, theft of sensitive computer information, compromise of computer networks, and identity theft. Elements of proof of network-based crime are discussed. Prerequisite: FORS 6277 or approval of program director. Laboratory fee.

FORS 6280. Advanced Incidence Response: Investigating Network-Based Attacks. 3 Credits.
Detecting and responding to network- and host-based intruders, integrating intrusion detection systems into network topologies, identifying methods hackers use to break into network systems, analyzing network traffic and detecting attacks, and creating an effective response strategy. Prerequisite: FORS 6279. Laboratory fee.

FORS 6283. Steganography and Electronic Watermarking. 3 Credits.
Digital data hiding techniques. Investigation of data hiding and labeling techniques, attacks against steganography and watermarked information; countermeasures to such attacks. Open only to students enrolled in the department or by approval of the program director. Laboratory fee. Prerequisite: FORS 6277, FORS 6278.

FORS 6284. Security Mgt Capstone Course. 3 Credits.

FORS 6285. Digital Forensics Capstone. 3 Credits.
The culminating experience in the digital forensics program allows students to integrate the knowledge and skills they have acquired in the program and demonstrate their command, analysis, and synthesis of the material. Restricted to students in the MS in digital forensics program.

FORS 6287. Project Management for Security Professionals. 3 Credits.

FORS 6288. The Investigative Process for Computer Forensics. 3 Credits.
In-depth examination of the investigative process for computer-related crime in both criminal and civil sectors. Topics include identification and validation of information sources, development and handling of informants, interview and interrogation techniques, and managing the investigative process.

FORS 6290. Selected Topics. 3 Credits.
Current issues in research, investigation, and law.

FORS 6291. Computer Forensics III: Advanced Techniques. 3 Credits.
Further examination of methods and techniques used to conduct and report high-technology crime investigations. Open only to students enrolled in the department or by approval of the program director. Laboratory fee. Prerequisite: FORS 6278.

FORS 6292. Graduate Seminar. 1 Credit.
Students in designated forensic sciences degree programs must register for this course in their first semester and again after completion of the required independent research project.

FORS 6295. Research. 1-12 Credits.
Research on problems approved by the department, under the supervision of an appropriate member of the program faculty. Admission by permission only.

FORS 6298. Forensic Sciences Practicum. 1-3 Credits.
Internship experience in a forensic science laboratory or criminal justice agency, under the supervision of an appropriate member of the program faculty. Students must preregister for this course. Admission by permission only.

FORS 6998. Thesis Research. 3 Credits.

FORS 6999. Thesis Research. 3 Credits.

FRENCH (FREN)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FREN 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

FREN 1001. Basic French I. 4 Credits.
Handling the immediate context of daily experience in spoken and written French: identifying, describing, and characterizing people, objects, places, and events; giving information and instructions; issuing simple commands and requests. Laboratory fee.

FREN 1002. Basic French II. 4 Credits.
Speaking and writing in French about past and future events: telling a story (narrating and describing in the past), promising, predicting, and proposing simple hypotheses and conjectures. Prerequisite: FREN 1001 . Laboratory fee.

FREN 1003. Intermediate French I. 3 Credits.
Increasing active vocabulary, reinforcing mastery of basic grammar, dealing with more complex structures (verbal phrases, subordinate clauses), and using some patterns of indirect speech (e.g., repeating or relaying messages, giving reports, summarizing). Prerequisite: FREN 1002 . Laboratory fee.

FREN 1004. Intermediate French II. 3 Credits.
Consolidation and further expansion of the ability to understand as well as produce a more complex level of oral and written discourse emphasizing subjective expression: issuing indirect commands and requests; giving opinions; making proposals, building arguments; defending and criticizing ideas. Prerequisite: FREN 1003 . Laboratory fee.

FREN 1006. French Language & Culture I. 3 Credits.
Offered through the GW Paris Business Studies Program.

FREN 1007. French Language & Cultures II. 3 Credits.
Continuation of FREN 1006. Offered through the GW Paris Business Studies Program.

FREN 2005. Language, Culture & Society I. 3 Credits.
Development of strong conversational skills and the rudiments of expository writing. The vocabulary and structures necessary to move from handling everyday experience and subjective expression to the exposition of more abstract thought and ideas and discussion of political, social, and cultural issues. Prerequisite: FREN 1004. Laboratory fee.

FREN 2006. Language, Culture & Society II. 3 Credits.
Continued expansion of the range and complexity of conversational skills and further development of the writing of effective expository prose on a broad range of contemporary subjects. Short texts serve as the basis for oral discussion, analytical reading, and writing brief critical essays. Prerequisite: FREN 2005. Laboratory fee.

FREN 2049. French for Graduate Students. 0 Credits.
For graduate students preparing for reading examinations. No academic credit. Tuition is charged at the rate of 3 credit hours.

FREN 3010W. Advanced French Grammar and Style. 3 Credits.
Composition, drills, dictations. Translations into French. Study of vocabulary and syntax, with emphasis on stylistic devices. Prerequisite: FREN 2006.

FREN 3020. Contemporary France. 3 Credits.
Emphasis on advanced oral work. Discussion of French culture and civilization, based on contemporary writings and video documents. Prerequisite: FREN 2006. Laboratory fee.

FREN 3030. Business & Commercial French. 3 Credits.
Structure and language of French economic institutions. Discussion of legal, financial, and administrative documents. Oral and written reports. Preparation for the certificate of the Paris Chamber of Commerce. Prerequisite: FREN 2006.

FREN 3100. Introduction to French Literature. 3 Credits.
Readings, textual analysis, and writing on a broad selection of texts from different genres and periods. French and Francophone literatures in their cultural contexts. Close reading approach and introduction to literary vocabulary. Prerequisite: FREN 2006.

FREN 3100W. Introduction to French Literature. 3 Credits.
Readings, textual analysis, and writing on a broad selection of texts from different genres and periods. French and Francophone literatures in their cultural contexts. Close reading approach and introduction to literary vocabulary. Prerequisite: FREN 2006.

FREN 3210. Medieval and Early Modern French Literature in Context. 3 Credits.
Texts of the Middle Ages to the 17th century studied in their historical, social, and cultural contexts. Topics may include feudal society and the literature of courtly love; humanism, Rabelais, and Renaissance poetry; women and salon writing; Versailles, absolutism, and classical theater.

FREN 3220. Modern French Literature. 3 Credits.
Texts of the 18th century to the present in historical, social, and cultural contexts. Topics may include philosophes and the rise of social consciousness; the French Revolution and Romanticism; dada and surrealism; existentialism and World War II; decolonization and francophone literature.

FREN 3290. Textual Analysis. 3 Credits.
Methodology and vocabulary of literary criticism. Application of various principles of textual analysis and critical approaches to literature.

FREN 3300. Topics in French and FrancophoneLiteratures and Cultures in Translation. 3 Credits.
Dynamics of French-speaking societies and their cultures studied through literature, art, or film. Topics vary. Readings and lectures in English. The course may be repeated for credit. A laboratory fee may be required.

FREN 3400. Studies in Genre. 3 Credits.
Study in narrative, dramatic, or lyric form. Topics vary. May be repeated for credit.

FREN 3520. The Age of Classicism. 3 Credits.
Drama, philosophy, criticism, poetry, and fiction of the 17th century. Topics may include préciosité, baroque, Jansenism, classicism, and rationalism in the context of the major social, political, and religious movements of the period.

FREN 3530. The Age of Enlightenment. 3 Credits.
The major novelists, dramatists, and philosophes of the 18th century. The works of Montesquieu, Voltaire, Rousseau, and Diderot and their relationship to the social, political, and philosophical thought of the period.

FREN 3550. Studies in 20th-Century French Literature. 3 Credits.
Major literary movements of the 20th century: avant-garde, surrealism, existentialism, nouveau roman, and nouveau théâtre.

FREN 3560. Topics in Contemporary Francophone Literature and Cinema. 3 Credits.
Analysis of relations between France and its former colonies as manifested in the literature and cinema of France and the Francophone world. Race and gender relations; exile; nationalism; and identity and place as seen through various literary and cinematic responses to the discourses of metropolitan France by its former colonies. Prerequisite: FREN 3100W.

FREN 3600. Special Topics in French Literature. 3 Credits.
May be repeated for credit provided the topic differs.

FREN 3600W. Special Topics in French Literature and Culture. 3 Credits.
Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Laboratory fee. Prerequisites: French 3100.

FREN 3700. History of French Cinema. 3 Credits.
French cinema from its inception to the "New Wave." The relationship of filmmaking and audience reception to the evolution of French society and political institutions. The language of cinema as it evolves according to periods and genres and as critics and filmmakers create a theoretical discourse specific to film. Laboratory fee.

FREN 4135. Folger Seminar. 3 Credits.
The history of books and early modern culture. Use of the archive at the Folger Shakespeare Library. Students must obtain departmental approval in the preceding semester. Same as ENGL 4135/ HIST 4135.

FREN 4470. Writing Women. 3 Credits.
Dynamics of gender in French literature and culture with emphasis on women as agents and objects of representation. Gender roles in the formation of social biases, norms, and power structures. Texts range from the Middle Ages to the present.

FREN 4500. Studies in Medieval French Literature. 3 Credits.
Readings and analysis of the major literary texts from the 11th through 15th centuries. Chansons de geste, courtly literature, fabliaux, drama, lyric and didactic poetry.

FREN 4510. French Literature of the Renaissance. 3 Credits.
Sixteenth-century prose and poetry in the context of cultural and historical movements. Topics may include humanism; concepts of self and subjectivity; the wars of religion; the discovery of the New World; court and city life; the private and public spheres; religious and secular love.

FREN 4540. 19th-Century French Literature and Culture. 3 Credits.
Key aspects of 19th-century French literature in its historical, cultural, and political context. Major authors and literary movements are studied through the lens of a particular theme, which varies from year to year.

FREN 4600. Special Topics in French Literature. 3 Credits.
May be repeated for credit provided the topic differs.

FREN 4650. Lustful Women in French Medieval Literature. 3 Credits.
The representation of lustful women in French medieval texts and arts. We will read some of the most important novels and short stories of the Middle Ages, such as La Châtelaine de Vergy, Tristan et Yseut, and Les Lais de Marie de France. Prerequisites: FREN 3100W.

FREN 4700. Race Matters: Literature, Culture and Identity in Contemporary France. 3 Credits.
An interdisciplinary examination of cultural, political, and economic realities for Black populations in France. Prerequisites: FREN 3100W.

FREN 4800. Independent Study. 1-4 Credits.
Admission by permission of department chair and instructor. May be repeated for credit.

FREN 4910. Proseminar: Rdgs for the Major. 3 Credits.
Required of all majors; preparation of the senior essay. The specified topic in the history of French literature varies by year.

FREN 4920W. Proseminar II. 3 Credits.
Continuation of FREN 4910. Required of all majors; preparation of the senior essay. The specified topic in the history of French literature varies by year.

GEOGRAPHY (GEOG)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GEOG 1000. Dean's Seminar. 3 Credits.

GEOG 1001. Introduction to Human Geography. 0-3 Credits.
A systematic survey of human geography; spatial perspectives on demographic, social, cultural, economic, and political changes around the world.

GEOG 1002. Introduction to Physical Geography. 4 Credits.
A systematic survey of environmental geography; perspectives on environments and human ecology, including ecosystems and their use, and resource geography. Laboratory fee.

GEOG 1003. Society and Environment. 0-3 Credits.
An introduction to the dynamic relationship between society and the physical environment, with focus on population, natural resources, environmental degradation, pollution, and conservation.

GEOG 2104. Introduction to Cartography and GIS. 3 Credits.
Fundamentals of cartography; geographic data structure and information systems. Laboratory fee.

GEOG 2105. Techniques of Spatial Analysis. 3 Credits.
Nature of geographical inquiry and analytical methods used in the study of spatial processes and patterns. Laboratory fee.

GEOG 2107. Introduction to Remote Sensing. 3 Credits.
Remote-sensing techniques using digital satellite imagery and aerial photography. Application to rural and urban settings, vegetation, and environmental monitoring. Laboratory fee. Prerequisite: GEOG 2105 or permission of instructor.

GEOG 2108. Weather and Climate. 3 Credits.
The elements and controls of weather and climate. Topics include energy and water balances, atmospheric general circulation, and severe weather events. Prerequisite: GEOG 1002.

GEOG 2110. Climate and Human Ecology. 3 Credits.
Interrelationships between human activities and the climatic environment. Emphasis on global climatic change. Prerequisite: GEOG 1002.

GEOG 2120. World Regional Geography. 3 Credits.
Practical approach to the themes, concepts, and tools appropriate for in-depth examination of the geography of the world's. Historical and physical regional geographies; contemporary regional issues; and intra- and interregional issues.

GEOG 2124. Urban Transportation. 3 Credits.
The relationship between freight and passenger transportation systems and urban land use patterns and structure. Prerequisite: GEOG 1001.

GEOG 2125. Transportation Systems and Networks. 3 Credits.
The structure and evolution of transportation networks and their impact on regional development.

GEOG 2127. Population Geography. 3 Credits.
Patterns of world population; factors contributing to population pressures, growth, and migrations.

GEOG 2128. Geomorphology. 3 Credits.
Understanding the nature, origin, and development of landforms in the field and through the use of maps and aerial photos. Prerequisite: GEOG 1002.

GEOG 2133. People, Land, and Food. 3 Credits.
The relationship between humans and their food sources through exploration of nutritional dynamics, food sourcing, agricultural land use, and food markets.

GEOG 2134. Energy Resources. 3 Credits.
Analysis of regional patterns and trends in consumption and production of energy resources. Examination of international energy linkages and energy policies of selected nations. Prerequisite: GEOG 1002.

GEOG 2134W. Energy Resources. 3 Credits.
Analysis of regional patterns and trends in consumption and production of energy resources. Examination of international energy linkages and energy policies of selected nations. Prerequisite: GEOG 1002.

GEOG 2136. Water Resources. 3 Credits.
Analysis of the global spatial patterns, development, use, and quality of water resources. Prerequisite: GEOG 1002.

GEOG 2137. Environmental Hazards. 3 Credits.
Examination of environmental hazards with an emphasis on physical geography, economics, and the basics of geographic information systems (GIS).

GEOG 2140. Cities and Societies. 3 Credits.
The design and function of cities in the United States; contemporary, economic, political, and social change. Prerequisite: GEOG 1001.

GEOG 2140W. Urban Geography. 3 Credits.
The design and function of cities in the United States; contemporary, economic, political, and social change. Prerequisite: Geog 1001.

GEOG 2141. Cities in the Developing World. 3 Credits.
Urbanization processes, problems, and management in the developing world. Focus on urban location, politics, housing, services, employment, and environmental issues. Prerequisite: GEOG 1001.

GEOG 2144. Explorations in Historical Geography. 3 Credits.
Examination of selected themes in the cultural geography of the United States over the course of its history, in relation to an overview of the historical geography of the country. Same as AMST 2144.

GEOG 2145. The Cultural Landscape. 3 Credits.
The distribution and dynamics of cultural patterns around the world; analysis of culture as a process.

GEOG 2145W. Cultural Geography. 3 Credits.
The distribution and dynamics of cultural patterns around the world; analysis of culture as a process.

GEOG 2146. Political Geography. 3 Credits.
Interrelationships among the human and physical environment and political systems; the organization of political territories.

GEOG 2147. Military Geography. 3 Credits.
An examination of environmental and locational factors and their impact on military planning and operations.

GEOG 2148. Economic Geography. 3 Credits.
Locational influences on and spatial variation of the development of manufacturing, services, trade, and finance. Prerequisite: GEOG 1001.

GEOG 2196. Field Methods in Geography. 3 Credits.
For geography and environmental studies majors in their junior or senior year. Field research in human and physical geography. Students participate in several field exercises and develop their skills of observation, field mapping, repeat photography, and surveys. Laboratory fee.

GEOG 3106. Intermediate Geographic Information Systems. 3 Credits.
Principles of geographic information systems and their use in spatial analysis and information management. Laboratory fee. Prerequisite: GEOG 2104 and GEOG 2105.

GEOG 3132. Environmental Quality and Management. 3 Credits.
The evolution of environmental management philosophies and tools. The global distribution, utilization, and degradation of natural resources. Prerequisite: GEOG 1002.

GEOG 3143. Urban Sustainability. 3 Credits.
Relationship between urban spaces and the environment through the lens of sustainability. Prerequisite: GEOG 1001.

GEOG 3143W. Urban Sustainability. 3 Credits.
Relationship between urban spaces and the environment through the lens of sustainability. Prerequisite: GEOG 1001.

GEOG 3154. Geography of the Middle East and North Africa. 3 Credits.
Cultural and physical regional patterns of the Middle East and North Africa. Prerequisite: Geog 1001 or GEOG 1002.

GEOG 3161. Geography of Latin America. 3 Credits.
Examination of spatial characteristics of physical and cultural phenomena in Latin America.

GEOG 3164. The Geography of Africa. 3 Credits.
Human and environmental geography of Africa south of the Sahara desert, including study of patterns and processes, culture and environment, and development issues. Prerequisites: GEOG 1001 or GEOG 1002.

GEOG 3165. Geography of South Asia. 3 Credits.
An examination of the complex interplay of environmental, economic, sociocultural, and political factors in South Asia and their effects at the local and regional levels.

GEOG 3189. Readings in Geography I. 1-12 Credits.
Prerequisite: 12 credit hours of geography and permission of instructor.

GEOG 3190. Readings in Geography II. 1-12 Credits.
Continuation of GEOG 3189. Prerequisite: 12 credit hours of geography and permission of instructor.

GEOG 3193. Environmental Law and Policy. 3 Credits.
An introduction to selected pieces of major environmental legislation. The role of the courts and bureaucracy in implementing and interpreting legislation and their impacts on decision making. Designed for students with no training in law Prerequisites: None.

GEOG 3194. Special Topics in Physical Geography. 3 Credits.
Topics covering physical principles of the Earth's physical geography and natural environment including the hydrosphere, atmosphere, biosphere, and lithosphere. Enrollment requires permission of the instructor.

GEOG 3195. Special Topics in Human Geography. 3 Credits.
Topics in human geography including population, urban, cultural, political and economic issues amongst others. Enrollment requires permission of the instructor.

GEOG 3196. Special Topics in Techniques. 3 Credits.
Topics covering specific skills in geographic information systems and field methods. Enrollment requires permission of the instructor.

GEOG 3197. Special Topics in Regional Geography. 3 Credits.
Various topics in regional geography, including world regional geography as well studies of specific regions of interest. Enrollment requires permission of the instructor.

GEOG 3198. Special Topics. 3 Credits.
Consideration of geographic aspects of topical and future problems of society. May be repeated for credit provided that the topic differs. Prerequisite: GEOG 1001 or GEOG 1002.

GEOG 3810. Planning Cities. 3 Credits.
An examination of historical and contemporary trends and dynamics in urban planning in the United States and abroad. Same as AMST 3810. Prerequisite: GEOG 1001.

GEOG 4195. Proseminar in Geographic Thought. 3 Credits.
For students completing the major in geography. Development of geographic thought, theories, and methodologies; geographic curricula. Prerequisite: permission of the advisor.

GEOG 4195W. Proseminar in Geographic Thought. 3 Credits.
For students completing the major in geography. Development of geographic thought, theories, and methodologies; geographic curricula. Prerequisite: permission of the advisor.

GEOG 4199. Internship. 1-3 Credits.
Fieldwork, internship, or other controlled assignment with an agency or organization engaged in work in applied geography. Prerequisite: 12 credit hours of geography courses and permission of instructor. May be repeated for credit to a maximum of 6 credits.

GEOG 4307. Digital Image Processing and Analysis. 3 Credits.
Land use/land cover change analysis using satellite and aircraft platforms. Digital image processing techniques, analysis, and applications. Prerequisites: GEOG 2107 and GEOG 3106.

GEOG 4309. GIS for Emergency Management. 3 Credits.
Introduction to the theoretical principles of geographic information systems and examination of its history, current uses, and potential for emergency management through case studies, guest lectures, and hands-on training on various GIS products. Prerequisites: GEOG 3106.

GEOG 4311. Open Source GIS. 3 Credits.
Geospatial project management, from design through implementation. Students work exclusively with open source technology for data capture, management, analysis, and communication; open source solutions and the effectiveness and sustainability of project management. Prerequisite: GEOG 3106.

GEOG 6201. Geographic Thought. 3 Credits.
For first-year master's students, a survey of geographic thought and theories. Emphasis on contemporary issues in geography and on the development of research.

GEOG 6207. Urban Planning and Development. 3 Credits.
Selected problems in urban and regional planning: applications of zoning, environmental controls, and other techniques for achieving sustainable urban development.

GEOG 6208. Land Use and Urban Transportation Planning. 3 Credits.
Relationships between land use and the movement of goods and people. Examination of land use and transportation planning principles, issues, and techniques. Roles of public and private interests in land use and transportation planning and management.

GEOG 6219. Seminar: Climatology. 3 Credits.
Inadvertent climate modification due to urbanization and impacts on environmental and human health.

GEOG 6220. Seminar: Climatic Change. 3 Credits.
Examination of natural and human-induced climatic change, at global, regional, and local scales.

GEOG 6222. Seminar: Resources and the Environment. 3 Credits.
Topics related to the spatial variations and interrelationships of resources and the environment; applications of geographic information systems and remote sensing. Prerequisite: permission of instructor.

GEOG 6223. Seminar: Population and Health. 3 Credits.
Interrelationships between population characteristics and dynamics and impacts on human health.

GEOG 6224. Seminar:Political Geography. 3 Credits.
Examination of political factors in location theory and analysis of the nature of political territories and conflict.

GEOG 6225. Seminar: Transportation and Development. 3 Credits.
Transportation and communication in the organization of space.

GEOG 6230. Seminar: Environmental Issues in Development. 3 Credits.
A consideration of the geographical dimensions of the links between development and the environment.

GEOG 6232. Migration and Development. 3 Credits.
Analysis of migration's impact on development at various scales for both the sending and receiving localities.

GEOG 6243. Seminar: Urban Geography. 3 Credits.
Topics concerning social, political, economic, and environmental issues in U.S. cities.

GEOG 6244. Urban Sustainability. 3 Credits.
Urban sustainability and environmental issues in developed and developing cities.

GEOG 6245. Water Resources Policy and Management. 3 Credits.
In this course, we will examine the history and practice of water resources policy and management in the context of integrated water resource management. Thus, we will address management issues and policy responses to such topics as the impacts of urban and agricultural runoff on water quality; provision of wastewater and water quality services; water supply, water allocation and scarcity; and modification of waterbodies for the purposes of flood control, hydropower, navigation, and recreation. In addition, non-human water requirements: e.g. for fish and wildlife, as well as the need to preserve the natural ecosystems that provide and sustain water resources will be central to each discussion. We will examine management and policy issues in the United States and worldwide at a range of scales: local, state, federal and international. In the course of these examinations, students will gain an understanding of how current issues such as growing populations, increasing affluence, and climate change may impact water resource policy and management.

GEOG 6250. Geographical Perspectives on Development. 3 Credits.
Theory and debates surrounding economic development in a globalizing world, with case studies.

GEOG 6261. Geographical Perspectives on Latin America. 3 Credits.
Natural resources, the environment, and population dynamics through time.

GEOG 6262. Geographical Perspectives on the Middle East. 3 Credits.
Examination of selected topics related to political, economic, social, cultural, and geographic patterns and processes in the region.

GEOG 6265. Geography of Russia and Its Neighbors. 3 Credits.
A deeper understanding of Post-Soviet geography with a focus on the physical and environmental characteristics of the region, geography of natural and human resources, ethnic, cultural and religious diversity, characteristics of economic and political regions, and recent geopolitical developments.

GEOG 6290. Principles of Demography. 3 Credits.
Introduction to basic demographic perspectives and data; methods for analysis of population size, distribution, and composition; determinants and consequences of population trends. Departmental prerequisite waived. Same as ECON 6290/ SOC 6290/ STAT 6290.

GEOG 6291. Methods of Demographic Analysis. 3 Credits.
Basic methods for analysis of mortality, natality, and migration; population estimates and projections; estimation of demographic measures from incomplete data. Departmental prerequisite waived. Same as ECON 6291/ SOC 6291/ STAT 6291.

GEOG 6293. Special Topics. 3 Credits.
Consideration of geographic aspects of topical social or environmental problems. May be repeated for credit provided the topic differs.

GEOG 6295. Research. 1-12 Credits.
May be repeated for credit.

GEOG 6299. Internship. 1-3 Credits.

GEOG 6300. Geography Capstone Internship. 3 Credits.
This course will provide hands-on experiential learning in a local government agency, NGO, or corporation while allowing the candidate to use his/her geographical skills in a real world setting. Restricted to Geography graduate students only. Prerequisites: GEOG 6201.

GEOG 6304. Geographical Information Systems I. 3 Credits.
Fundamentals of cartography; geographic data structure and geographic information systems.

GEOG 6305. Geospatial Statistics. 3 Credits.
Nature of geographical inquiry and the analytical and statistical methods used in the study of spatial processes and patterns.

GEOG 6306. Geographical Information Systems II. 3 Credits.
Advanced principles of geographic information systems and their use in spatial analysis and information management. Prerequisites: GEOG 6304 and GEOG 6305.

GEOG 6307. Digital Image Processing. 3 Credits.
This course introduces students to the theoretical, technical and applied aspects of remote sensing as a tool for monitoring and managing earth resources. This course will provide students with the knowledge for analyzing and applying remotely sensed data for problem solving as it applies to land cover. Prerequisite: GEOG 6304.

GEOG 6309. GIS for Emergency Management. 3 Credits.
This course will introduce students to the theoretical principles of geographic information systems and will examine its history, current uses and potential for emergency management through case studies, guest lectures and hands-on training on various GIS products. Prerequisites: GEOG 6304.

GEOG 6998. Thesis Research. 3 Credits.

GEOG 6999. Thesis Research. 3 Credits.

GEOLOGY (GEOL)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GEOL 1001. Physical Geology. 3 Credits.
Lecture, laboratory. An introduction to the principal features of the composition and structure of the earth. Topics include the nature of minerals and rocks, surface and deep earth processes, mineral and energy resources, and plate tectonics. Laboratory fee. Credit will not be given for both GEOL 1001 and GEOL 1005.

GEOL 1002. Historical Geology. 3 Credits.
Lecture, laboratory. An introduction to the history of the earth. Topics include sedimentary environments, plate tectonics, origin of life, and evolution. Laboratory fee. Prerequisite: GEOL 1001 or GEOL 1005.

GEOL 1005. Environmental Geology. 3 Credits.
Lecture, laboratory. An introduction to the impact of geology on the environment, with emphasis on the relation of people and society to natural environments; population evolution, natural hazards, and mineral resources. Laboratory fee. Credit will not be given for both GEOL 1001 and GEOL 1005.

GEOL 1006. Science & the Environment. 3 Credits.
The large-scale processes operating within the atmosphere, oceans, and solid Earth. Prerequisite: GEOL 1001 or GEOL 1005.

GEOL 2106. Oceanography. 3 Credits.
The ocean with its many environments represents the last largely unexplored frontier on earth. Origin of the ocean systems and plate tectonics, ocean habitats and their biota, marine hydrology and ocean currents; air–sea interaction and climate control; ocean mapping techniques; environmental regulations covering marine resources. Laboratory fee. Prerequisite: GEOL 1001 or GEOL 1005.

GEOL 2111. Mineralogy. 4 Credits.
Lecture and laboratory. Introduction to the crystallography and chemical systematics of rock-forming and ore minerals. Exercises emphasize the analysis of mineralogic data and the paragenesis of mineral assemblages. Prerequisite: GEOL 1001 or GEOL 1005 or permission of instructor. Laboratory fee.

GEOL 2112. Igneous and Metamorphic Petrology. 4 Credits.
Lecture and laboratory. Introduction to basic light theory and the identification and characterization of minerals through optical properties. Laboratory exercises provide an introduction to petrologic analysis of igneous and metamorphic mineral systems. Prerequisite: GEOL 2111 or permission of the instructor. Laboratory fee.

GEOL 2122. Structural Geology. 3 Credits.
Lecture and laboratory. Study of natural and experimental rock deformation and the relationships between stress and strain as recorded by geologic structures. Prerequisite: GEOL 1001 or GEOL 1005. Laboratory fee.

GEOL 2151. History of Life. 3 Credits.
A review of the origin of life, the geologic record, and the evolutionary history of the major groups of organisms, including the origin of life and evolution of invertebrates, vertebrates, and plants. Prerequisite: GEOL 1001 or GEOL 1002 or BISC 1111– BISC 1112. Laboratory fee. Same as BISC 2451.

GEOL 2159. Geobotanical Ecology of the Central Appalachians. 4 Credits.
A multidisciplinary approach to Appalachian ecology involving application of scientific principles from both geology and botany, stressing interrelationships between geological, geochemical, and biological processes. Field trips. Laboratory fee. Prerequisite: GEOL 1001 or GEOL 1005 and BISC 1111–BISC 1112; with permission of instructor.

GEOL 2190. Special Topics in Geology. 1-3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

GEOL 2333. Evol/Extinction of Dinosaurs. 3 Credits.
The 165-million-year history of dinosaurs; different groups and their evolution, end-Cretaceous extinction event, the origin of birds, and the biology of the group. Prerequisites: BISC 1111 and BISC 1112; or GEOL 1001 and GEOL 1002 or GEOL 1002 and GEOL 1005. Same as BISC 2333.

GEOL 3118. Volcanology. 3 Credits.
Fundamental principles and geologic processes associated with volcanism. Eruptive styles, processes leading to magma production and transport, triggering mechanisms, plate tectonic settings, volcanic hazards, and disaster mitigation. Case histories of selected volcanic eruptions examined in detail. Prerequisite: GEOL 2111 or permission of instructor. Laboratory fee.

GEOL 3119. Field Experience in Volcanology. 1 Credit.
Week-long field exercise at a major volcanic center in the western United States. Field-based interpretation and analysis of volcanic and related rocks. The geology of each site and the processes responsible for volcanism discussed in detail. Corequisite: GEOL 3118. Deposit for expenses is required.

GEOL 3123. Crustal Dynamics. 0-3 Credits.
Basic plate tectonic processes and features; the plate tectonic paradigm in historical evolutionary framework. Students present an original research project orally and in writing. Prerequisite: GEOL 2122. Laboratory fee.

GEOL 3126. Sedimentology and Stratigraphy. 4 Credits.
Lecture and laboratory. Introduction to sedimentation and stratigraphy; origin and classification of sediments and sedimentary rocks; introduction to clastic and carbonate depositional environments and stratigraphic principles. Prerequisite: GEOL 1002, GEOL 2111. Laboratory fee.

GEOL 3131. Global Climate Change. 3 Credits.
Fundamental causes and patterns of climate change. Methods of reconstruction of past climates; modeling and predicting climate change.

GEOL 3138. Hydrogeology. 3 Credits.
Principles and theory of basic and applied hydrology: surface water hydrology, geology of groundwater systems, groundwater flow, surface water–groundwater interactions, contamination and remediation technologies, conservation, management, and regulations. Prerequisite: GEOL 2111, GEOL 2122; MATH 1221 or MATH 1231; or permission of instructor. Laboratory fee.

GEOL 3140. Geochemistry. 3 Credits.
Chemical systems and processes on the planet Earth; origins and interactions among and within the Earth's lithosphere, oceans, and atmosphere; origin, distribution, and behavior of the elements; radioactive and stable isotope systems. Aqueous geochemistry; geochemical cycles. Same as CHEM 3140. Prerequisite: GEOL 1001 or GEOL 1005; CHEM 1111– CHEM 1112 .

GEOL 3189. Geophysics. 3 Credits.
Principles of magnetic, gravity, seismic and electrical methods applied to geological problem-solving. Prerequisite: GEOL 2122 or permission of instructor.

GEOL 3191. Geology of Energy Resources. 3 Credits.
Principles of geology applied in energy exploration, exploitation, and production; the geology of energy resources in ocean basins; borehole and surface geophysical applications and reconnaissance mapping techniques; management and regulation of energy resources; sustainability, efficiency, and conservation issues. Prerequisite: GEOL 2122 or permission of instructor. Laboratory fee.

GEOL 4195. Geological Field Methods. 4 Credits.
Weekend field trips. Methods of outcrop analysis, geologic mapping, and data interpretation. The geological evolution of the central Appalachian mountains and the plate tectonic processes responsible for their formation emphasized. Prerequisite: GEOL 2111, GEOL 2122. Field trip fee.

GEOL 4195W. Geological Field Methods. 4 Credits.

GEOL 4199. Undergraduate Research or Reading. 1-12 Credits.
Problems approved by the staff. May be repeated for credit.

GERMANIC LANGUAGE AND LITERATURE (GER)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GER 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details. Restricted to First-year students in CCAS.

GER 1001. First-Year German I. 4 Credits.
Fundamentals of speaking, understanding, reading, and writing German. Laboratory fee.

GER 1002. First-Year German II. 4 Credits.
Continuation of GER 1001. Fundamentals of speaking, understanding, reading, and writing German. Prerequisite: GER 1001. Laboratory fee.

GER 1003. Second-Year German I. 4 Credits.
Fundamentals of speaking, understanding, reading, and writing German. Prerequisite: GER 1002 . Laboratory fee.

GER 1004. Second-Year German II. 4 Credits.
Continuation of GER 1003. Fundamentals of speaking, understanding, reading, and writing German. Prerequisite: GER 1003. Laboratory fee.

GER 1005. Intensive Beginning German I. 8 Credits.
Intensive course in fundamentals of speaking, understanding, reading, and writing German (equivalent to GER 1001– GER 1002). Recommended for majors. Laboratory fee.

GER 1006. Intensive Beginning German II. 8 Credits.
Continuation of GER 1005. Intensive course in fundamentals of speaking, understanding, reading, and writing German (equivalent to GER 1003– GER 1004). Prerequisite: GER 1002 or GER 1005. Recommended for majors. Laboratory fee.

GER 2009. Intermediate German I. 3 Credits.
Practice in speaking, listening, reading, and writing at the intermediate level. Prerequisite: GER 1004 or GER 1006 or permission of instructor.

GER 2010. Intermediate German II. 3 Credits.
Continuation of GER 2009. Practice in speaking, listening, reading, and writing at the intermediate level. Prerequisite: GER 1004 or GER 1006 or permission of instructor.

GER 2091. Introduction to German Literature—in English I. 3 Credits.
Survey of German literature 1700–1830, including the Enlightenment through Sturm und Drang, classicism, and romanticism.

GER 2092. Introduction to German Literature—in English II. 3 Credits.
Continuation of GER 2091. Survey of German literature 1830–1950, including Young Germany through realism, naturalism, expressionism, and the literature of the Third Reich years (exile literature and inner emigration).

GER 2101. Readings in Contemporary German I. 3 Credits.
Analysis of representative readings of expository prose from German newspapers, periodicals, and other publications. Prerequisite: for GER 2101, GER 1004 or GER 1006 .

GER 2102. Readings in Contemporary German II. 3 Credits.
Continuation of GER 2101. Analysis of representative readings of expository prose from German newspapers, periodicals, and other publications. Prerequisite: GER 2101.

GER 2109. Introduction to German Studies I. 3 Credits.
An introduction to approaches, concepts, and analytical tools for study in the field, complemented by advanced practice in speaking, listening, reading, and writing. Prerequisite: GER 2010 or permission of instructor.

GER 2109W. Introduction to German Studies I. 3 Credits.
An introduction to approaches, concepts, and analytical tools for study in the field, complemented by advanced practice in speaking, listening, reading, and writing. Prerequisite: GER 2010 or permission of instructor.

GER 2110. Introduction to German Studies II. 3 Credits.
Continuation of GER 2109. An introduction to approaches, concepts, and analytical tools for study in the field, complemented by advanced practice in speaking, listening, reading, and writing. Prerequisite: GER 2010 or permission of instructor.

GER 2110W. Introduction to German Studies II. 3 Credits.
Continuation of GER 2109. An introduction to approaches, concepts, and analytical tools for study in the field, complemented by advanced practice in speaking, listening, reading, and writing. Prerequisite: GER 2010 or permission of instructor.

GER 2111. Business German. 3 Credits.
Introductory course preparing students to function in business-related communicative situations, with an emphasis on language skills necessary for work in areas such as marketing and finance. Prerequisite: GER 2010 or permission of instructor.

GER 2161. German Culture—in English I. 3 Credits.
The central problems, issues, and events that have shaped the development of German culture from antiquity to the present. Emphasis on products and processes of German culture in social, historical, and political contexts.

GER 2162. German Culture—in English II. 3 Credits.
Continuation of GER 2161. The central problems, issues, and events that have shaped the development of German culture from antiquity to the present. Emphasis on products and processes of German culture in social, historical, and political contexts.

GER 2165. 20th-Century German Literature—in English. 3 Credits.
Survey of the major trends in the works by modernist, exile, postwar, and contemporary German writers such as Kafka, Thomas Mann, Duerrenmatt, and Grass.

GER 3181. History of German Cinema—in English. 3 Credits.
A detailed historical and cultural survey of German cinema from the first moving picture devices (1895) to the expressionistic classics of the 1920s and the collapse of the Nazi film industry in 1945. All films are subtitled.

GER 3182. The Fairy Tale from the Grimms to Disney—in English. 3 Credits.
Survey of the changing form, structure, and meaning of the fairy tale in its traditional contexts, modern transformations and critical interpretations, with readings by 19th-century European collectors and 20th-century critics.

GER 3183. Berlin Before & After the Wall. 3 Credits.
The political, social, and cultural developments in Berlin from 1945 to the present through a reading of selected primary documents, historical analyses, and short literary texts.

GER 3184. German Thought - in English. 3 Credits.
An overview of German ideas about culture, religion, society, and politics from the 16th century to the present. Readings from such writers as Luther, Leibniz, Kant, Schiller, Hegel, Marx, Nietzsche, Freud, Weber, Heidegger, Adorno, and Habermas.

GER 3185. Literary Voices and the Fascist Experience—in English. 3 Credits.
A survey of writers anticipating as well as reflecting on Germany's plunge into the totalitarian abyss of fascist politics, including H. Mann, Kafka, Juenger, Brecht, Werfel, Thomas Mann, Lenz, Frisch, Duerrenmatt, and various forms of Holocaust poetry.

GER 3186. German Women Writers of the 19th and 20th Centuries. 3 Credits.
The changing literary and social roles of German women of the 19th and 20th centuries, examined through selected readings of women's literary production and culture.

GER 3187. German Cinema after 1945. 3 Credits.
The evolution of German cinema, from postwar examinations of the Nazi period through the social and political developments in the two German states. National and international influences; filmic treatments of the two German pasts since unification.

GER 3188. The Lives of East Germans. 3 Credits.
Consideration of what it meant to grow up and live in the German Democratic Republic and the changes and challenges to East German identity since unification. The course draws upon historical, political, and sociological studies as well as literary and filmic representations of East German experience.

GER 3189. Dealing with the Communist Past in Germany and Eastern Europe. 3 Credits.

GER 4171. The Age of Goethe-in German. 3 Credits.
Readings of major works of Weimar classicism in their historical and cultural context.

GER 4172. From Romanticism to Realism. 3 Credits.
Readings in German romanticism, literature of the "young Germany" movement (Heine), and realism (Fontane, Storm).

GER 4173. Naturalism to Expressionism. 3 Credits.
Study of various literary movements between 1880 and 1914: naturalism, impressionism, symbolism, and expressionism (Hauptmann, Hesse, Thomas Mann, Kafka).

GER 4174. Inside/Outside the Third Reich. 3 Credits.
Analysis of literary developments inside the Nazi state (propaganda literature, literature of resistance, and inner immigration) and the literature of exile (Seghers, Remarque).

GER 4175. Literature of two Germanies. 3 Credits.
Evolution of East and West German literatures after World War II, their separate developments and ultimate unification.

GER 4176. Contemporary German Literature. 3 Credits.
Analysis of works by former East and West German writers after unification as well as the generation of young German writers, who came of age after or around the time of unification. Emphasis on memoirs, family narratives, essays, and films examining Germany's transition from fascism and socialism to democracy.

GER 4195. Special Topics. 1-3 Credits.
May be repeated for credit provided the topic differs.

GER 4197. Senior Honors Thesis I. 3 Credits.
Senior honors thesis on a topic related to German language, literature, or culture. Required of and open only to honors candidates in the department.

GER 4198. Senior Honors Thesis II. 3 Credits.
Continuation of GER 4197. Senior honors thesis on a topic related to German language, literature, or culture. Required of and open only to honors candidates in the department.

GOVERNMENT CONTRACTS (GCON)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GCON 6290. Special Topics. 0-3 Credits.
Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details. Recommended background: GCON 6502 and GCON 6503.

GCON 6501. Capstone Research and Writing Project. 3 Credits.
Students produce an original project to demonstrate accumulated learning and professional development in the government contracts field. Course requirements are fulfilled through completion of either a research thesis of approximately 6,000 words or alternate projects determined in consultation with the program director. Restricted to For Master of Science in Government Contracts candidates.

GCON 6502. Formation of Government Contracts. 3 Credits.
Survey of the law pertaining to government procurement, including an analysis of the unique features of government contracting and a discussion of the functions of Congress, the executive branch, and the courts in the procurement process. Focus on the contract formation process, including techniques for awarding contracts and litigation and protests involving awards. (Same as LAW 6502).

GCON 6503. Performance of Government Contracts. 3 Credits.
Substantive problems that most frequently arise during the performance of government contracts. Interpretation of specifications and the most generally used contract clauses; analysis of the rights of the parties when performance in accordance with the terms of the contract is not obtained. Analysis of the methods that can be used by the parties to a government contract to obtain legal relief, including detailed coverage of the disputes procedure, actions for breach of contract, and forms of equitable and extraordinary relief. (Same as LAW 6503).

GCON 6504. MSGC Capstone Scholarly Writing. 1 Credit.
A research and writing project completed under the supervision of the law school that integrates students' cumulative learning experiences in and demonstrates their understanding of government contract law and business. The project addresses a current acquisition issue of interest to the student. Students are expected to produce a final paper for submission to a relevant scholarly journal for publication. Restricted to Master of Science in Government Contracts candidates.

GCON 6505. Marketing for the Government Marketplace. 3 Credits.
The key elements of the business environment that affect marketing for the federal government. Important characteristics of government versus consumer and business markets; segmentation, targeting, and positioning; brand equity and the importance of building strong brands. Key issues and decisions associated with the marketing mix (products, pricing, distribution, and promotion). Application of marketing principles and theories to federal government contracting opportunities.

GCON 6506. Pricing Issues in Government Contracts. 3 Credits.
Fundamentals of government contracts cost and pricing. The regulatory, accounting, estimating and financial foundations of cost and pricing, including Federal Acquisition Regulation ("FAR") Part 15, FAR Part 31, and Cost Accounting Standards ("CAS"). Topics examined from both contractor and government perspectives include evaluating cost and pricing of government contract proposals, negotiating fair and reasonable contract prices, evaluating requests for equitable adjustment and claims that arise in government contract performance, and settlement proposals in terminations for convenience. Case studies and class presentations allow students to practice and enhance their skills based on practical issues that arise in the cost and pricing arena.

GCON 6510. Foreign Government Contracting. 3 Credits.
An introduction to the practical challenges of transnational public procurement. Legal and policy issues, including export controls, anti-corruption requirements, and unique legal rules for certain types of foreign assistance. (Same as LAW 6509).

GCON 6514. Anti-Corruption Policy and Compliance in Procurement. 3 Credits.
Domestic and international anti-corruption policy and compliance. U.S. bribery and gratuity laws, honest services fraud, government ethics laws, the U.S. Foreign Corrupt Practices Act, the Procurement Integrity Act, fraud actions under the False Claims Act, contractor compliance programs, mandatory disclosure rules, the suspension and debarment regime, and the implementation and enforcement of these laws and programs. International anti-corruption efforts both in enforcement and through international instruments, such as the Organization for Economic Cooperation and Development Anti-Bribery Convention,the United Nations Convention Against Corruption, the UK Anti-Bribery Act, and other emerging anti-corruption regimes are covered. (Same as LAW 6509).

GCON 6515. Analytical Research and Writing for Government Contracts. 2 Credits.
Development of advanced government contracts writing skills. Deconstruction, analysis, and application of writing processes for professional and academic papers. Restricted to master of science in government contracts degree candidates. Same as LAW 6509.

GREEK (GREK)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GREK 1001. Beginning Classical Greek I. 4 Credits.
Study of the grammar, vocabulary, and structure of ancient Greek. Reading of selected ancient authors.

GREK 1002. Beginning Classical Greek II. 4 Credits.
Continuation of GREK 1001. Study of the grammar, vocabulary, and structure of ancient Greek. Reading of selected ancient authors. Prerequisite: GREK 1001 .

GREK 2001. Intermediate Classical Greek I. 3 Credits.
Reading of ancient Greek prose or poetic works (e.g., selections from Homer, Plato, Euripides). Review of grammar. Prerequisite: GREK 1002 .

GREK 2002. Intermediate Classical Greek II. 3 Credits.
Continuation of GREK 2001. Reading of ancient Greek prose or poetic works (e.g., selections from Homer, Plato, Euripides). Review of grammar. Prerequisite: GREK 2001 .

GREK 2002W. Intermediate Classical Greek II. 3 Credits.
Continuation of GREK 2001. Reading of ancient Greek prose or poetic works (e.g., selections from Homer, Plato, Euripides). Review of grammar. Prerequisite: GREK 1001–GREK 1002 .

GREK 3001. Major Greek Authors I. 3 Credits.
Selections from a wide variety of Greek prose, drama, and poetry, suited to the needs of the class. May be repeated for credit with permission of instructor. Prerequisite: GREK 2002 .

GREK 3001W. Major Greek Authors II. 3 Credits.
Selections from a wide variety of Greek prose, drama, and poetry, suited to the needs of the class. May be repeated for credit with permission of instructor. Prerequisite: GREK 2002 .

GREK 3002. Major Greek Authors II. 3 Credits.
Continuation of GREK 3001. Selections from a wide variety of Greek prose, drama, and poetry, suited to the needs of the class. May be repeated for credit with permission of instructor. Prerequisite: GREK 2002 .

GREK 3002W. Intermediate Classical Greek II. 3 Credits.
Continuation of GREK 3001. Selections from a wide variety of Greek prose, drama, and poetry, suited to the needs of the class. May be repeated for credit with permission of instructor. Prerequisite: GREK 2002 .

HEALTH CARE QUALITY (HCQ)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HCQ 6200. Introduction to Health Care Quality. 3 Credits.
An overview of the US health care system and the influence of health policy development and implementation on health care quality. Introduction to fundamental concepts of health care quality, patient safety, leadership, and change management.

HCQ 6201. Building a Quality Culture. 3 Credits.
Application of leadership and organizational change theories and principles to the implementation of quality and patient safety initiatives. Focus on strategies for developing the culture and infrastructure needed to support patient safety and continuous quality improvement.

HCQ 6202. Health Care Quality Landscape. 3 Credits.
Analysis of quality and patient safety challenges in US health care with a focus on political and environmental influences.

HCQ 6203. Quality Improvement Science. 3 Credits.
An introduction to quality improvement and patient safety theories, models, methods and tools and their application to quality and safety improvement challenges in health care.

HCQ 6204. Health Care Quality Analysis. 3 Credits.
Application of measurement, data management and statistical analysis principles to quality improvement and patient safety challenges. Focus on the importance and design of effective measures and the selection of appropriate analysis tools.

HCQ 6205. Patient Safety Systems. 3 Credits.
An examination of the epidemiology and sources of error in health care, risk assessment, and the design of processes and systems to improve patient safety. Focus on the application of process and technology-based systems to reduce the incidence of error.

HCQ 6275. Leadership and Change. 3 Credits.
A capstone course focusing on the concept of leading change within the contexts of health professionals, health systems, and health policy. Organizational, management, and change theories as well as characteristics of personal and professional change leadership are explored in relation to expectations for successful executive leadership and performance in today's dynamic health care environments.

HEALTH CARE SCIENCE (HCS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HCS 0982. Continuous Enrollment. 3 Credits.

HCS 0985. GWU/GMU Joint NP/MSN Program. 1-12 Credits.

HCS 1011. Applied Anatomy & Physiology. 4 Credits.

HCS 1012. Mathematics-Health Providers. 2 Credits.

HCS 2100. Clinical Medicine Review. 5 Credits.

HCS 2101. Environmental Biostatistics. 3 Credits.

HCS 2102. Food and Water Sanitation. 3 Credits.

HCS 2103. Academic Curriculum Tutorial. 1-12 Credits.

HCS 2135. Clinical Assessment II. 4 Credits.

HCS 2140. Clinical Decision Making. 2 Credits.

HCS 2153. Gynecology Outpatient: NP's. 1-12 Credits.

HCS 2154. Clinical Geriatrics. 1-12 Credits.

HCS 2158. Cardiothoracic Med Elect-PA's. 4 Credits.

HCS 2159. Dermatology Elective for PA's. 4 Credits.

HCS 2160. Medical Inpatient. 5 Credits.

HCS 2161. Sports Medicine for PA's. 1-12 Credits.

HCS 2163. Medical Outpatient. 1-12 Credits.

HCS 2166. Surgical Inpatient. 1-12 Credits.

HCS 2168. Urology. 2 Credits.

HCS 2169. Obstetrics and Gynecology. 1-12 Credits.

HCS 2172. Pediatric Outpatient. 1-12 Credits.

HCS 2173. Spec Proj Elect-PA/MPH Studnts. 4 Credits.

HCS 2175. Primary Care Preceptorship. 1-12 Credits.

HCS 2176. EMed Elective For PA's. 4 Credits.

HCS 2177. General Med Elective for PA's. 4-6 Credits.

HCS 2178. Emergency Medicine. 1-12 Credits.

HCS 2180. Practicum-Environmental Health. 7 Credits.

HCS 2186. Orthopaedics Elective for PA's. 4 Credits.

HCS 2187. Radiology Elective for PA's. 4 Credits.

HCS 2188. Shock Trauma Elective for PA's. 4 Credits.

HCS 2189. Alcohol Rehabilitation Unit. 2 Credits.

HCS 2190. Dermatology. 1,2 Credit.

HCS 2191. Eye, Ear, Nose, and Throat. 4 Credits.

HCS 2192. Orthopaedics. 4 Credits.

HCS 2194. Pract-Gerontlgy/Geriatric Care. 1-12 Credits.

HCS 2195. Ophthalmology. 4 Credits.

HCS 2197. Current Topics in Bioethics. 1 Credit.

HCS 2198. Psychiatry. 4 Credits.

HCS 4199. Independent Study. 1-12 Credits.

HCS 6201. Practicum in Geriatric Care. 1 Credit.

HCS 6202. Introduction to Health Policy. 1 Credit.

HCS 6203. Spirituality,Healing,Art-Med. 1 Credit.

HCS 6208. Clinical Exp-Urban Health Care. 1 Credit.

HCS 6228. Preclin Prim Care Apprenticshp. 2 Credits.

HCS 6230. Stat Applctns for Health Prof. 3 Credits.

HCS 6231. Research Design. 3 Credits.

HCS 6232. Methods-Reading Medical Lit. 1 Credit.

HEALTH SCIENCES PROGRAMS (HSCI)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HSCI 2100. Writing and Composition in the Health Sciences. 3 Credits.
Basic writing mechanics and methods for developing paragraphs and essays; conceptualizing papers, such as crafting outlines and assessing sources; and basics of APA style. Students practice analyzing writing through peer review exercises.

HSCI 2101. Psychosocial Aspects of Health and Illness. 3 Credits.
Comprehensive introduction to the psychological and social aspects of health and wellness. Emphasis on the development of communication skills and the establishment of caring relationships. Discussions of special situations such as working with dying patients and patients with self-destructive behaviors.

HSCI 2102. Pathophysiology. 3 Credits.
Biomedical and scientific framework for the understanding of human disease mechanisms and biologic processes. Overview of infectious, immunologic, cardiovascular, genetic, respiratory, gastrointestinal, neoplastic, reproductive, renal, hematologic, neurologic, and musculoskeletal diseases.

HSCI 2103. Health Policy and the Health Care System. 3 Credits.
Incorporates economic theory and policy analysis methodology to analyze the impact of changes in the health care system on the practice of health sciences professionals and the quality and process of health care. Development of critical thinking skills through review of current medical literature.

HSCI 2104. Management of Health Science Services. 3 Credits.
Application of management and organizational principles to the delivery of services provided by health sciences disciplines. Issues addressed include information systems, leadership, team building, fiscal management, human resources management, quality improvement, and management of conflict and change.

HSCI 2105. Current Issues in Bioethics. 3 Credits.
Basic issues, approaches, and requirements of ethically acceptable decision making with patients, including patient confidentiality, conflicts of interest, allocation of scarce resources, occupational risks in health care, and professional responsibility for overall quality of care.

HSCI 2107. Health Care in Literature. 3 Credits.

HSCI 2108. QualityImprovement/HealthCare. 3 Credits.
Analysis of the structures in place to enhance the quality of health care delivery and political and economic influences that affect quality improvement programs. Assessment of specific interventions to enhance health care from the perspectives of providers and patients.

HSCI 2109. Trends&Innovations/HealthCare. 3 Credits.
Examination of new technologies, health care delivery models, and the phenomenon of sophisticated consumers. Assessment of the impact of science, technology, ethics, and government on the provision of health care.

HSCI 2110. Disease Prev/Health Promotion. 3 Credits.
An overview of basic public health concepts for health sciences students, including epidemiology, health promotion, and disease prevention. Review of current issues in health promotion. Completion of a public health project in a clinical site.

HSCI 2111. Dev/Health Care Professions. 3 Credits.
Students will analyze the history and evolution of health care professions, and compare them to general changes in science and culture. Students will compare and contrast how the evolution of health care professions has changed practice and informed how we may view clinical practice in the future.

HSCI 2112. Writing in the Health Sciences. 3 Credits.
Introduction to the health sciences literature. Emphasis is on construction, evaluation and organization of written communication of health sciences information.

HSCI 2112W. Writing in the Health Sciences. 3 Credits.

HSCI 2113. Informatics in the HSci. 3 Credits.
Introduction to healthcare informatics, including management and clinical information systems and their role in administration, clinical, and research arenas in health care.

HSCI 2114. Healthcare/Developing Nations. 3 Credits.
An introduction to health concerns in the developing world. Students will explore interventional approaches for such issues as malaria, HIV/AIDS, clean water, maternal and women's health, and childhood mortality.

HSCI 2115. Intro Biostatistics-Health Sci. 3 Credits.
Basic concepts of biostatistics with application to the health sciences professions. Research design, frequency distributions, descriptive measures, probability, sampling, regression and correlation, analysis of variance, hypothesis development/testing and data organization/analysis options are covered.

HSCI 2117. Introduction to Statistics for Health Sciences. 3 Credits.
Foundational concepts in descriptive and inferential statistics, including probability, sampling distribution, estimation, correlation, t-Test, simple linear regression, and chi-square. Application of statistical concepts and methods within the health sciences.

HSCI 2130. Primary Care Skills Practicum. 2 Credits.

HSCI 2131. Adult Primary Care Practicum. 2 Credits.
Clinical course on caring for adults with common primary care problems and understanding concepts of health promotion and disease prevention. Students conduct in-depth examinations of specific primary care problems; review current pathophysiology literature; explore pharmacologic and non-pharmacologic treatment modalities; and diagnose and manage acute and chronic problems prominent in ambulatory health clinics serving the general adult population. A minimum of 80 clinical hours is required.

HSCI 2132. Primary Care Mental Hlth Pract. 2 Credits.

HSCI 2133. Specialized Clinicl Experience. 2 Credits.

HSCI 2190. Independnt Study-Clin Hlth Sci. 1-12 Credits.
Independent study and special projects involving student-defined learning objectives. Students must get permission of the faculty member who will direct the study.

HSCI 2195. Special Topics in Health Sci.. 1-3 Credits.

HSCI 3101. General Chemistry I. 4 Credits.
Introduction to physical and inorganic chemistry. Topics include atomic structure, chemical bonding, common types of reactions, stoichiometry, thermochemistry and the properties of gases, liquids, and solids. Didactic lectures augmented by a corresponding hands-on laboratory component.

HSCI 3102. General Chemistry II. 4 Credits.
Continuation of HSCI 3101 General Chemistry I. Topics include kinetics, equilibrium, acid-base chemistry, precipitation reactions, coordination chemistry, thermodynamics, and electrochemistry. Didactic lectures augmented by a corresponding hands-on laboratory component.

HSCI 3103. Organic Chemistry I. 4 Credits.
Introduction to synthetic organic chemistry through exploration of the reactivity and potential biological activity of chemicals with different functional groups. Didactic lectures augmented by a corresponding hands-on laboratory component.

HSCI 3104. Organic Chemistry II. 4 Credits.
Continuation of HSCI 3103 Organic Chemistry I. Reactions combined in a step-wise process, enabling creation of complex and interesting organic molecules. Spectroscopic methods used to determine organic structures; combined with chemical observations, allowing the deduction of structures of increasingly complex substances. Examination of the chemistry of biologically important macromolecules. Didactic lectures augmented by a corresponding hands-on laboratory component.

HSCI 3105. Biochemistry. 3 Credits.
The chemical properties of low molecular weight biochemical molecules, macromolecules and supermolecular complexes essential for life are explained in addition to basic reaction mechanisms and the integration and regulation of biochemical processes. Prerequisites: Organic Chemistry I Organic Chemistry II.

HSCI 3106. Microbiology for Health Sciences. 3 Credits.
Principles of microbiology with emphasis on microorganisms that impact health and cause human disease. Topics include an overview of microbiology and aspects of medical microbiology, identification and control of pathogens, disease transmission, host resistance, and immunity. Restricted to students who have taken at least one course in biology, or chemistry, or anatomy and physiology, or MLS 2000, or MLS 2001.

HSCI 3117. Principles of Biostatistics for Health Sciences. 3 Credits.
Biostatistics for health science professionals. Concepts and methods, including confidence intervals, ANOVA, multiple and logistic regression, and non-parametric analyses. Scientific literature is used to provide a comprehensive context in which analytical evidence is employed to support practices in the health sciences. Prerequisites: HSCI 2117 or permission of the instructor.

HSCI 3201. Biology I. 4 Credits.
Students develop a strong foundation in biological chemistry, cell biology, evolution, and genetics. Didactic lectures are augmented by a corresponding practical laboratory component.

HSCI 3202. Biology II. 4 Credits.
Biological diversity (microbes, protists, invertebrates and vertebrates), animal physiology, and ecology. Didactic lectures are augmented by a corresponding practical laboratory component. Prerequisite: students in the post-baccalaureate certificate in pre-medicine program. Recommended background: completion of HSCI 3201 or an equivalent 4-credit general biology I course.

HSCI 3301. Physics I. 4 Credits.
Classical physics, including mechanics, Newton's laws of motion, force, gravitation, equilibrium, work and energy, momentum, and rotational motion; periodic motion, waves, and sound; heat and thermodynamics. Didactic lectures augmented by a corresponding hands-on laboratory component.

HSCI 3302. Physics II. 4 Credits.
Continuation of HSCI 3301 Physics I, including electrostatics, electromagnetism, direct and alternating current circuits, and electromagnetic radiation; geometrical and physical optics; special relativity; quantum theory; atomic physics; nuclear physics; particle physics; astrophysics and cosmology. Didactic lectures augmented by a corresponding hands-on laboratory component.

HSCI 4102. HumanPhysiology/ExtremeEnviro. 3 Credits.
The course examines human physiology and the pathophysiology of acute illnesses and injuries, and evaluates appropriate mitigation strategies associated with living and working in extreme environments.

HSCI 4103. Health Care Law/Regulation. 3 Credits.

HSCI 4105. Case Studies in Health Care. 3 Credits.

HSCI 4106. Intro to Epidemiology for HS. 3 Credits.
An introduction to epidemiological methods and their applications in the prevention and control of illness, community and clinical interventions, and health services.

HSCI 4112. Rsrch/Wrtng in Health Sciences. 3 Credits.

HSCI 4112W. Rsrch/Wrtng in Health Sciences. 3 Credits.

HSCI 4198. Mentored Res. I. 3 Credits.

HSCI 4199. Mentored Res. II. 3 Credits.

HSCI 6212. Teaching Strategies in the Health Professions. 3 Credits.
Teaching skills pertinent to the delivery of education in health professions. Course design illustrates teaching and learning practices grounded in andragogy, contributing to curriculum program objectives of enhancing teaching skills. (Same as EHS 6212, OT 8212).

HSCI 6213. Curriculum Development in the Health Professions. 3 Credits.
Curriculum development and assessment skills in the health professions. Variables that affect the manner in which individuals learn and interact within professions and organizations. (Same as EHS 6213).

HSCI 6223. Topics -Health Care Leadership. 3 Credits.
Theories and styles of leadership, including organizational management and values, strategic planning, communication strategies, managing change, and negotiating conflict in the context of the health care delivery system.

HSCI 6231. Advanced Pediatric Hlth Needs. 3 Credits.
Service delivery to children with disabilities from infancy through early schooling. Emphasis on learning disabilities, ADHD, sensory processing disabilities, and intellectual disabilities with co-occurring developmental and emotional disorders. Special e.

HSCI 6233. Pathology-Hlth Sci Students I. 1 Credit.

HSCI 6234. Pathology-Hlth Sci Students II. 3 Credits.
Basic concepts and language of pathology, infectious diseases, and fundamental disease processes. Emphasis on pathogenesis and dynamics of disease. Causation, evolution, and morphology of pathological changes in the principal diseases of each organ system.

HSCI 6240. Issues & Trends in Health Syst. 3 Credits.
Analysis of key contemporary issues in U.S. health and social policy that affect the design and structure of the health care system. The health policy process and initiatives that shape care delivery.

HSCI 6241. The Health Care Enterprise. 3 Credits.
An overview of global business principles related to health care systems: the management of patient-centered care delivery, marketing, finance and fiscal management principles, information technology, and quality improvement.

HSCI 6261. Fdtn in Clinical/Trans.Rsrch. 3 Credits.
Overview and analysis of the translational research principles and practice through the application of basic, clinical, community health and health services research concepts.

HSCI 6262. Transdisciplanary Sem/Pract.. 3 Credits.
Transdisciplinary analysis of key translational research concepts delivered in a practicum and workshop framework. Individualized experiential practicum to address educational and experiential gaps.

HSCI 6263. Biostatistics Transl Research. 3 Credits.
Basic concepts and methods of biostatistics applied to translational research. Topics include distributions, populations and sample selection, variables, interaction and confounding, hypothesis formulation, correlation, t-tests, ANOVA, regression, and ch.

HSCI 6264. Epidemiology Translational Res. 3 Credits.
Basic concepts and methods of epidemiology and their application in measuring, studying and improving the health of populations applied to applications for translational research.

HSCI 6265. Grantsmanship in Trans Res. 3 Credits.
Writing grant proposals to fund clinical research, with an emphasis on translational research proposals. Emphasis is on persuasive communication, conceptually based hypotheses and research methods and the grant application process, including communicating.

HSCI 6270. Resear Meth Hlth Prof I. 3 Credits.
Methodological issues of basic, applied, and clinical research. Students develop the knowledge and skills to critically appraise and synthesize research results, analyze qualitative and quantitative data, evaluate evidence-based methods, develop research questions, and identify appropriate inquiry methodologies. Students become familiar with all elements of a research proposal, including those relating to the use of human subjects and informed consent.

HSCI 6271. Rsch Meth Hlth Prof II. 3 Credits.
Methodological issues of basic, applied, and clinical research. Students develop the knowledge and skills to critically appraise and synthesize research results, analyze qualitative and quantitative data, evaluate evidence-based methods, develop research questions, and identify appropriate inquiry methodologies. Students become familiar with all elements of a research proposal, including those relating to the use of human subjects and informed consent.

HSCI 6273. Bioinformatics for Genomics. 3 Credits.
The bioinformatics tools for different analytical situations. Strengths and limitations of the most common bioinformatics strategies. Principally limited to analysis of genomic data, the course is planned to enable students to generalize the acquired knowledge and its underlying principles and techniques to other types of 'big data' applications for the purpose of interpretation of results.

HSCI 6275. Transdisciplinary Rsrch Prop.. 3 Credits.
The integration of competencies acquired throughout the program. The development and submission of a transdisciplinary research proposal that responds to a Call for Proposals from an external sponsor, such as the National Institutes of Health.

HSCI 6285. Principles of Collaboration and Team Science. 3 Credits.
Approaching health, technology, social, and environmental problems with cross-disciplinary engagement and collaboration. Foundational and practical principles and their impact on collaborative and team science engagements. Restricted to PhD candidates in translational health sciences; permission of the instructor may be substituted.

HSCI 6287. Biology of HIV/AIDS. 3 Credits.
The basic science, pathogenesis, natural history, and laboratory identi?cation of the human immunode?ciency virus.

HSCI 6291. Advncd Topics/Health Sciences. 1-3 Credits.
Topics vary depending on current issues of interest and faculty availability. Open to undergraduates with permission of the instructor.

HSCI 6297. Indpendnt Study/Health Profess. 1-5 Credits.
Independent study involving analysis of a clinical topic, a patient education project, or an on-site mentored clinical research practicum.

HEALTH SERVICES MANAGEMENT AND LEADERSHIP (HSML)

Explanation of Course Numbers

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HSML 6202. Intro/Health Services Delivery. 2 Credits.
Introduction to the systems that define and shape delivery of health services in the United States. Case studies and presentations on major issues develop an appreciation of dilemmas confronting policymakers, providers, and patients: balancing cost, quality and access. Access and disparity, health care professions, facilities, managed care organizations and government health care programs. Policy changes that have had major impact on American health care in the past century. Fall.

HSML 6203. Introduction to Health Management. 2 Credits.
Introduction to management theory essential for those seeking management positions in organizations providing healthcare or public health services. Application of the problem-solving method; extensive use of cases.

HSML 6204. Quality&PerformanceImprovement. 2 Credits.
Theory of quality and performance improvement in health services organizations and systems. Emphasis on the Deming method of continuous quality improvement (CQI); Six Sigma; International Organization for Standardization (ISO) standards; Baldrige criteria; accreditation programs. Prerequisites: HSML 6203.

HSML 6206. QuanMethds&Epid/HealthServices. 3 Credits.
Application of epidemiology and analytical methods to improve population health, enhance decision-making, and introduce operations management. The concepts and procedures complement HSML courses for information management and finance. Prerequisites: 2 or 3 semester hours in introductory statistics.

HSML 6207. HealthServicesInfoApplications. 2 Credits.
Organization and management of information technology in modern healthcare organizations with an emphasis on the acute care hospital. Use of information technology in hospital clinical, support, and administrative departments.

HSML 6208. Medical Informatics. 2 Credits.
Comprehensive study of the role and impact of IT in health services organizations. Specific emphasis on the role IT plays from managerial and clinical perspectives. Topics include ROI, privacy, error reduction, change management, and decision support systems. Prerequisite: HSML 6207.

HSML 6209. Health Services Finance. 2 Credits.
Application of health finance theory to health services organizations and systems. Budgeting process, understanding profit and loss, managing resources including accounts receivable, labor and supplies. The budget as a tool for analyzing operational changes. Prerequisites: HSML 6209.

HSML 6210. Hlth Serv Financl Applications. 2 Credits.
Application of health finance theory to health services organizations and systems. Budgeting process, understanding profit and loss, managing resources including accounts receivable, labor and supplies. The budget as a tool for analyzing operational changes. Prerequisites: HSML 6209.

HSML 6211. Health Economics. 2 Credits.
Economics of the health care sector. An economic analysis of public policy alternatives in the health industry. Roles of the physician, hospital, insurance, and other health care markets are examined.

HSML 6212. CommunityHealth Mgt & Advocacy. 2 Credits.
Concepts and techniques to planning, managing, and advocating for community health programs and services. Focus on social contract, the Precede-Proceed Model and principles of community-oriented primary care. Students will study or conduct a community health promotion project. Prerequisites: HSML 6202 and 6203.

HSML 6213. Health Services, Marketing & Planning. 2 Credits.
Concepts of strategic planning and marketing as they apply to health services organizations. Particular emphasis on uses of planning and marketing techniques in managing departments and individual health services programs. Prerequisites: HSML 6202 and 6203.

HSML 6215. Health Law for Managers. 2 Credits.
Sources of law and legal processes affecting health services. Administrative law and agency processes. Legal aspects of torts and contracts for physicians, staff, patients, and health services organizations and systems. Trends in health services law. Prerequisites: HSML 6202 and 6203.

HSML 6216. HumanResourcesMgt&OrgBehavior. 2 Credits.
Theory and application of human behavior, human resource management, and labor relations policies, concepts and practices as they affect health services organizations. Primary focus is on managing people at work and developing management skills. Prerequisites: HSML 6202 and 6203.

HSML 6218. Sem-HlthServicesMgt&Leadership. 2 Credits.
Intensive qualitative and quantitative analyses of major problem areas in health system administration and planning using the case study method. Cases cover the broad spectrum of health policy, planning and management of the health services system. Serves as the capstone course for health services students. Taken in the last semester on campus.

HSML 6221. TransLdrshp/HealthServDelivery. 2 Credits.
Current leadership thought and competencies focusing on leadership styles, motivation, change management, innovation, creativity, emotional intelligence, organizational learning, and corporate culture. Prerequisite: HSML 6203.

HSML 6222. GroupLdrship&TeamFacilitation. 2 Credits.
Applies management and leadership theory to small groups, e.g. committees, patient care teams, process improvement groups, task forces, etc. Methods to establish, organize, develop, and manage teams for problem-solving. Students are assigned to interdisciplinary teams as facilitators and receive feedback on their performance. Part of medical Center's service learning program—ISCOPES (Interdisciplinary Student Community-Oriented Prevention Enhancement Service). Prerequisites: HSML 6204, 6212 or equivalent.

HSML 6231. Management-Acute Care Hospital. 2 Credits.
Organizing and managing acute care hospitals. Relationships and procedures of clinical, support, and administrative departments. Process analyses and applications of the Deming method of continuous quality improvement. Requirements of the Joint Commission on Accreditation of Healthcare Organizations. Prerequisite: HSML 6202, 6204, and 6209 or instructor's permission.

HSML 6232. Institution & Systems Mgt Apps. 2 Credits.
Readings and guest speakers. Focus on management theory applied in freestanding and multi-institutional health services units. Lessons learned by health services executives are shown through vignettes and presentation of experiences. Seminar Format. Prerequisites: HSML 6202 and 6203, or instructor's permission.

HSML 6233. Delivery-Behav Health Services. 2 Credits.
Study of the organizations and systems to deliver behavioral health services; emphasis on organizing, managing, and financing treatment and rehabilitation facilities. Prerequisites: HSML 6202, 6204, and 6209.

HSML 6234. Physician Practice Management. 2 Credits.
Theory and principles of practice management. Emphasis on the fundamentals of organizing, staffing, and controlling a physician practice. Financial applications and resource consumption. Prerequisites: HSML 6202, 6204, and 6209.

HSML 6236. Aging&Disability:Needs&Srvcs. 3 Credits.
Problems of aging and disabilities including social, psychological, biological, economic, and health services needs. Theory and research explore attitudes and behaviors based on contact with older and/or disabled persons. Delivery of informal and social services to aged and disabled persons.

HSML 6237. Managing/SkilledNursngFacility. 3 Credits.
Organizing, financing, and managing the skilled nursing facility. Determining residents' needs and developing appropriate services. Accreditation Standards. Government regulations and licensing requirements. Prerequisites: HSML 6202, 6204, 6209, and 6236.

HSML 6238. Ambulatory Care Management. 2 Credits.
Organizing and managing ambulatory care. Models, financing, institutional affiliations, estimating and planning for ambulatory care, and using medical group practice as part of comprehensive services delivery. Prerequisites: HSML 6202, 6204, and 6209.

HSML 6239. Managed Care. 2 Credits.
Health maintenance organizations (HMOs), preferred provider organizations (PPOs), and utilization management (UM) in fee-for-service plans. Formation, organization, contractual arrangements, and medical management of managed care regarding costs, utilization, quality, and access are analyzed from the perspectives of managed care organizations, employers, providers, and public policy. Role of government in managed care, competition and marketing of managed care plans, and relationships between plans and providers. Efficacy of managed care in public and private sectors is explored. Prerequisites: HSML 6202, 6204, and 6209.

HSML 6241. Cmpl&RiskMgt/HlthSrvcsDelivery. 2 Credits.
Application of concepts and techniques for organizing and implementing compliance, risk management, and patient safety programs within the context of quality and performance improvement. Emphasis on organizational values as a condition to success. Recent compliance requirements will be addressed (e.g., HIPAA). Prerequisites: HSML 6202 and 6203, or equivalent.

HSML 6244. SupplyChainMgt/HealthServices. 2 Credits.
Theory and application of distribution management of materials, services, and information in health services organizations. Suppliers, inventory control, negotiating and managing contracts, joint and shared purchasing. Prerequisites: HSML 6204 and 6206.

HSML 6245. Disaster Management for Healthcare Organizations. 2 Credits.
The role and importance of healthcare organizations in all four phases of the disaster management life cycle (i.e, preparedness, mitigations, response, and recovery).

HSML 6246. Service Line & Project Mgt. 2 Credits.
Theory and application of management science techniques to manage and improve effectiveness of service lines, programs, and projects in health services. Business case development, planning, project management tools, and program evaluation. Prerequisite: HSML 6204.

HSML 6247. Consulting in Health Care. 2 Credits.
Theory and practice of healthcare consulting – what it is, how it is practiced, how it operates as a business, and concepts of "best practices." Prerequisites: HSML 6202 and 6203, or permission of the instructor.

HSML 6254. Sem:Ethics-Health Services Mgt. 5 Credits.
Managerial implications of ethical issues in health services delivery: administrative and institutional ethics; professional codes; conflicts of interest, impaired professionals, end-of-life decisions, experimentation, and new technology; resource allocation.

HSML 6255. Leadership and Ethics I. 1.5 Credit.
Using the Myers-Briggs Type Indicator (MBTI), students determine their leadership style and practice the skills of effective leadership. Consideration of ethical principles and practices and how those practices are used by leaders. Restricted to Executive Master of Health Administration degree candidates.

HSML 6256. Leadership and Ethics II. 3 Credits.
Using the Emotional Quotient Inventory (EQI), students continue to uncover their leadership style and practice the skills of highly effective leaders. Examination of ethical principles and practices, change management, and coping mechanisms used and managed by leaders. Restricted to Executive Master of Health Administration degree candidates. Prerequisites: HSML 6255.

HSML 6258. Health System Analysis. 3 Credits.
For MHA@GW students, a concentrated on-site study of either an exemplary health system in the United States or the national health system of another country. The objective is to use critical analysis to examine and assess the structure, function, and operations of the system. Restricted to For students in the Executive Master of Health Administration degree program. Prerequisites: HSML 6255.

HSML 6263. Health Services Financial Mgt. 2 Credits.
Economic concepts and the role of government and public health programs. Areas of focus include health services financing, reimbursement, and current issues related to changes in the health care system.

HSML 6264. Healthcare Mgmt & Strategy. 5 Credits.
This course provides a detailed examination of the core principles of management and strategy that are required by persons holding management and leadership roles in healthcare delivery organizations.

HSML 6265. Medical Informatics and Decision Management. 5 Credits.
Fundamental principles and concepts of healthcare informatics and decision management, with a primary focus on clinical applications within the framework of improving quality, productivity, and satisfaction. Taught online. Restricted to Students in the Executive MHA Cohort only. Prerequisites: HSML 6264.

HSML 6266. Healthcare Financial Management. 5 Credits.
The financial operations of health care organizations, including financial reporting, cost management, sources of revenue, and budgeting. Restricted to Executive Master of Health Administration candidates.

HSML 6267. Community Engagement. 5 Credits.
Examination of how healthcare organizations engage with, affect, and are affected by their surrounding communities; complex relationships of community health, public health, and population health. Application of analytical frameworks to research and performance of practical tasks. Restricted to Restricted to Degree 149, Major 1243.

HSML 6268. Health Economics & Quantitative Methods. 5 Credits.
A multidisciplinary course designed around two important and closely related components: quantitative methods; and the key health economics concepts, applications, and tools relevant to health care managers who are seeking to better understand, respond to, and influence a constantly evolving health care marketplace. Restricted to For students in the executive MHA program. Prerequisites: HSML 6264, HSML 6265, HSML 6266, HSML 6267.

HSML 6269. Quality and Performance Improvement. 5 Credits.
Theory of quality and performance improvement in health services organizations and systems. Emphasis on the Deming method of continuous quality improvement (CQI). Lean; Six Sigma; IHI quality improvement program; Baldrige criteria; patient safety; and quality tools Restricted to Limited to Master of Health Administration degree students. Prerequisites: HSML 6268.

HSML 6270. Research-Health Services Admin. 2,3 Credits.
Field research. Primarily for advanced students; open to others with consent of instructor. May be repeated for credit.

HSML 6271. Field Problem Studies. 3 Credits.
Work experience guided by a qualified preceptor on selected management and planning issues and problems occurring in health services facilities, programs, and agencies. Primarily for advanced master's and doctoral students; open to other students by arrangement. May be repeated for credit.

HSML 6273. Residency. 3 Credits.
Work experience guided by a qualified preceptor; periodic written progress reports and a written major report or selected field projects as required.

HSML 6274. Residency. 3 Credits.
Work experience guided by a qualified preceptor; periodic written progress reports and a written major report or selected field projects as required.

HSML 6275. Residency. 3 Credits.
Work experience guided by a qualified preceptor; periodic written progress reports and a written major report or selected field projects as required.

HSML 6280. Health Law and Policy. 5 Credits.
The relationship between the federal legal system and healthcare system in the United States; the roles of federal, state, and private stakeholders. Restricted to students in the MHA@GW program. Prerequisites: HSML 6264, HSML 6265, HSML 6266, HSML 6267, HSML 6268 and HSML 6269.

HSML 6281. Systems Thinking and Learning. 4 Credits.
The concepts of systems thinking and learning and their application to the management of health care organizations; general systems theory, hard and soft systems, complexity and complex adaptive systems, change management, idealized redesign, design innovation, organizational resilience, high reliability organizations, and learning organizations. Restricted to students in the MHA@GW degree program. Prerequisites: HSML 6264, HSML 6265, HSML 6266, HSML 6267, HSML 6268, HSML 6269 and HSML 6280.

HSML 6282. Organizational Research Project 1. 1 Credit.
The first of a two-course sequence required of all MHA@GW program students. Students prepare to undertake the organizational research project that is one of two program deliverables. Restricted to students in the MHA@GW degree program.

HSML 6283. Organization Research Project 2. 1 Credit.
The second of a two-course sequence required of all MHA@GW program students. Students prepare to undertake the organizational research project that is one of two program deliverables. Students enroll concurrently in HSML 6280. Restricted to students in the MHA@GW degree program. Prerequisites: HSML 6282.

HSML 6285. Readings-Health Services Mgt. 3 Credits.
Supervised readings in special areas of health services management. Primarily for advanced students; open to others by arrangement. May be repeated for credit.

HSML 6286. Readings-Health Services Mgt. 3 Credits.
Supervised readings in special areas of health services management. Primarily for advanced students; open to others by arrangement. May be repeated for credit.

HSML 6299. Topics in HSML. 1-3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated for credit.

HEALTH AND WELLNESS (HLWL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HLWL 1101. Special Topics. 1-3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

HLWL 1102. Stress Management. 3 Credits.
A holistic view of stress management, including mind, body, spirit, and emotions. The dominant stressors and how they affect health and wellness.

HLWL 1103. Issues in Men's Health. 3 Credits.
Issues in men's health ranging from the physical and emotional to the spiritual and occupational.

HLWL 1104. Outdoor and Environmental Education. 3 Credits.
A conceptual and experiential introduction to outdoor education, environmental education, wilderness travel, and outdoor leadership. Materials fee.

HLWL 1105. Yoga & the Meaning of Life. 3 Credits.
The historical teachings that have contributed to the physical, psychological, and spiritual practices of yoga.

HLWL 1106. Drug Awareness. 3 Credits.
Analysis of the complex role that drugs play in contemporary society and the ethical, legal, socioeconomic, and health issues that surround their therapeutic and recreational use.

HLWL 1108. Weight and Society. 3 Credits.
Background and concepts of body dissatisfaction, disordered eating, food preoccupation, and exercise obsession.

HLWL 1108W. Weight and Society. 3 Credits.
Background and concepts of body dissatisfaction, disordered eating, food preoccupation, and exercise obsession.

HLWL 1109. Human Sexuality. 3 Credits.
Biological and developmental aspects of human sexuality; psychological and emotional aspects of sexual behavior; sexual identity; social forces affecting sexual issues; and research trends in the area of human sexuality.

HLWL 1110. Issues in Alternative Medicine. 3 Credits.
Various modalities of alternative/complementary/integrative therapy. Critical analysis and evaluation of the many dimensions of these approaches.

HLWL 1112. Issues in Women's Health. 3 Credits.
An introduction to health promotion and disease prevention pertaining especially to diseases, disorders, and conditions that are more prevalent among or unique to women or for which risk factors or interventions may differ for women and men. Topics are covered from epidemiological, sociocultural, historical, and behavioral perspectives.

HLWL 1114. Personal Health and Wellness. 3 Credits.
A survey of the various components involved in personal health and wellness, such as personal fitness, sexuality, mental health, and environmental health. Emphasis is on application of knowledge through the use of decision-making and behavior modification skills.

HLWL 1116. Lifestyle Nutrition. 3 Credits.
An introduction to nutrition that enables the student to make healthful food choices to enhance quality of life and prevention of chronic disease. Topics may include label reading, vegetarian diets, eating for exercise, and interpreting nutrient recommendations.

HLWL 1117. Functional Fitness. 3 Credits.
Core elements of personal fitness as applied to daily life. Emphasis on the development of functional fitness skills that can be practiced both in and out of the classroom.

HEBREW (HEBR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HEBR 1001. Beginning Hebrew I. 4 Credits.
An active presentation of Hebrew as it is spoken and written today. Comprehension, speaking, reading, and writing skills are stressed. Laboratory fee.

HEBR 1002. Beginning Hebrew II. 4 Credits.
Continuation of HEBR 1001. An active presentation of Hebrew as it is spoken and written today. Comprehension, speaking, reading, and writing skills are stressed. Laboratory fee.

HEBR 2001. Intermediate Hebrew I. 4 Credits.
Further development of skills in speaking, reading, writing, and comprehension of modern Hebrew. Texts range from Israeli newspaper items to selections from classical materials. Prerequisite: HEBR 1001– HEBR 1002 . Laboratory fee.

HEBR 2002. Intermediate Hebrew II. 4 Credits.
Continuation of HEBR 2001. Further development of skills in speaking, reading, writing, and comprehension of modern Hebrew. Texts range from Israeli newspaper items to selections from classical materials. Prerequisite: HEBR 1001– HEBR 1002 . Laboratory fee.

HEBR 3001. Hebrew Conversation and Writing. 3 Credits.
Reading and writing at the intermediate to mid-high level, with stress on conversation and oral comprehension. Contemporary cultural and social aspects presented through selections from nonfiction and short fiction, films, and TV programs. Prerequisite: HEBR 2002 or permission of instructor.

HEBR 3101. Modern Hebrew Literary Classics. 3 Credits.
Prose and poetry of a century of writing from the beginning of the Hebrew literary renaissance to contemporary Israeli literature, including works of Bialik, Agnon, Hazaz, Amichai, Oz, and Yehoshua. Discussions stress historical development and authors' treatments of tradition and modernity.

HEBR 3102. Israeli Society and Culture: Literary Perspectives. 3 Credits.
A study of literature reflecting such contemporary issues as the conflict between the "builders' generation" and their children; the cultural contacts of Ashkenazim and Sefardim; image of the Arab; impact of the Holocaust; Zionist ideals and current realities.

HEBR 3103. Israeli Cinema (in English). 3 Credits.
Film considered as both an artistic and a historical medium that reflects and comments on the history, politics, and culture of Israel. The kinds of issues that Israeli films raise and the cinematic style that distinguishes them.

HEBR 3105. Special Topics. 3 Credits.

HEBR 3301. Modern Hebrew Fiction. 3 Credits.
Study of selected modern Israeli short stories and poems. Prerequisite: HEBR 3001 or permission of instructor.

HEBR 3301W. Modern Hebrew Fiction. 3 Credits.
Study of selected modern Israeli short stories and poems. Prerequisite: HEBR 3001 or permission of instructor.

HEBR 3302. The Israeli Media. 3 Credits.
Explores the Israeli press, television and radio news broadcasts in Hebrew; focuses on developing increasing proficiency in reading and aural comprehension through class discussions and written assignments in Hebrew. Prerequisite: HEBR 3001 or permission of instructor.

HEBR 3302W. The Israeli Media. 3 Credits.
Explores the Israeli press, television and radio news broadcasts in Hebrew; focuses on developing increasing proficiency in reading and aural comprehension through class discussions and written assignments in Hebrew. Prerequisite: HEBR 3001 or permission of instructor.

HEBR 3901. Directed Project. 1-3 Credits.
Individual advanced reading or research, to be arranged with a member of the faculty. May be repeated for credit. Enrollment by permission of the instructor and department.

HEBR 4001. Advanced Hebrew Literature I. 3 Credits.
Selections from Hebrew literature throughout the ages: Bible, Rabbinics, medieval Hebrew literature; classical motifs in modern Israeli literature. Literary analysis (writing and discussion) in Hebrew. Prerequisite: HEBR 3301 or permission of instructor.

HEBR 4001W. Advanced Hebrew Literature I. 3 Credits.
Selections from Hebrew literature throughout the ages: Bible, Rabbinics, medieval Hebrew literature; classical motifs in modern Israeli literature. Literary analysis (writing and discussion) in Hebrew. Prerequisite: HEBR 3301 or permission of instructor.

HEBR 4002. Advanced Hebrew Literature II. 3 Credits.
Continuation of HEBR 4001. Selections from Hebrew literature throughout the ages: Bible, Rabbinics, medieval Hebrew literature; classical motifs in modern Israeli literature. Literary analysis (writing and discussion) in Hebrew. Prerequisite: HEBR 3301 or permission of instructor.

HISTORY (HIST)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HIST 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

HIST 1011. World History, 1500-Present. 3 Credits.
An introduction to world history over the past half millennium, stressing themes of exchange and integration, tracing the ways various peoples of the world became bound together in a common system.

HIST 1020. Approaches to Women's History. 3 Credits.
Exploration of critical periods of intellectual and cultural change in Western societies as influenced by and affecting women. Examination of images of women and of changing ideal types of femininity and masculinity. Aspects of law, religion, art, culture, work, and politics in relation to these topics. Same as WSTU 1020.

HIST 1110. European Civilization in Its World Context. 3 Credits.
Introduction to the history of Europe, emphasizing primary sources and their interpretation. From the beginning of written culture through 1715.

HIST 1120. European Civilization in Its World Context. 3 Credits.
Continuation of HIST 1110. Introduction to the history of Europe, emphasizing primary sources and their interpretation. From 1715 to the present.

HIST 1120W. European Civilization in its World Context. 3 Credits.
European history from the early eighteenth century to the present; mutual influence and impact between Europe and the rest of the world. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 1121. The War of Ideas in European and International History, 1750–Present. 0-3 Credits.
The ideas that made people fight, from the French Revolution to the worldwide uprisings of the 1960s and beyond. Key texts whose ideas of freedom and slavery, tradition and progress, state authority and revolutionary violence changed the world. The political, economic, and social contexts and effects of these texts.

HIST 1310. Introduction to American History. 3 Credits.
The political, social, economic, and cultural history of the United States. From the earliest settlements to 1876.

HIST 1311. Introduction to American History. 3 Credits.
Continuation of HIST 1310. The political, social, economic, and cultural history of the United States. From 1876 to present.

HIST 2001. Special Topics. 0-4 Credits.
Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

HIST 2005. Majors' Introductory Seminar. 3 Credits.
Introduction to the analytical and writing expectations of the history major. Topics vary by semester. Consult the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

HIST 2005W. Majors' Introductory Seminar. 3 Credits.
Introduction to the analytical and writing expectations of the history major. Topics vary by semester. Consult the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

HIST 2010. Early American Cultural History. 3 Credits.
How culture was important in the creation of the United States —in its origins as a colonial outpost and its expansion across the continent; in its hierarchies and expressions of power, especially as organized by race, class, ethnicity, or gender; in the creation of democracy and the valuing of free expression; and in the development of cities and the varied uses of the countryside. Same as AMST 2010.

HIST 2011. Modern American Cultural History. 3 Credits.
The effects of culture in the shaping of the United States since 1876. The role of the mass media; effects of cultural conceptions on the physical landscape; changing ideas of race, ethnicity, gender, and sexuality; and the political meanings of cultural conflict. Transnational influences on U.S. culture and effects of U.S. culture abroad. Same as AMST 2011.

HIST 2020. Washington, D.C.: History, Culture, and Politics. 0-3 Credits.
Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Same as AMST 2020.

HIST 2020W. Washington, D.C.: History, Culture, and Politics. 0-3 Credits.
Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Same as AMST 2020.

HIST 2050. History of Jewish Civilization: From the Bible to Modernity. 3 Credits.
Introduction to the richness and diversity of Jewish civilization from antiquity to the present. Examination of evolving notions of "who" or "what" is Jewish. Key concepts including "chosenness," community, peoplehood, diaspora, redemption, and Torah. How the boundaries of Jewishness have been formed, contested, and revised over time; how Jews managed to retain their identity throughout their millennial history of migration, dispersion, and persecution; what unites Jewish civilization; and whether a unified Jewish history over centuries and continents can be traced, as distinct from multiple "histories" of the Jews in the myriad times and places in which they lived. Emphasis on analysis of primary texts and cultural objects along with contextual understanding of Jews and Judaism.

HIST 2105. Majors' Introductory Seminar: Europe. 0-3 Credits.

HIST 2105W. Majors' Introductory Seminar: Europe. 0-3 Credits.

HIST 2112. History of Ancient Greece. 3 Credits.
A political and social survey of Bronze Age Minoan and Mycenaean civilizations, the Iron Age, Archaic Period, Classical Greece through Alexander the Great. (Same as CLAS 2112).

HIST 2113. The Roman World to 337 A.D.. 3 Credits.
Prehistoric Italy; rise and decline of the Roman Empire and Latin civilization; cultural, social, and political developments in the Greek world under Roman rule. Same as CLAS 2113.

HIST 2124. 19th-Century Europe. 3 Credits.
Exploration of primary source documents and works of professional historians to introduce important issues of 19th-century European history.

HIST 2125. 20th-Century Europe. 3 Credits.
Diplomatic, political, and cultural developments from the turn of the century to the present.

HIST 2131. History of England Since 1689. 3 Credits.
Development of English civilization and its impact on Western culture.

HIST 2141. History of France Since 1814. 3 Credits.
Breaks and continuities in the succession of regimes; the interplay between revolution and tradition; the weakened international position of France; Gaullism and the survival of France; European Unity.

HIST 2160. History of Germany. 3 Credits.
Political, social, and cultural development.

HIST 2180. Russia to 1801. 3 Credits.
Survey of Russian history from the rise of the Kievan confederation in the ninth century to the establishment of Imperial Russia as a European great power; political, socioeconomic, and cultural history of the East Slavs, especially the Russians.

HIST 2181. Russia Since 1801. 3 Credits.
Survey of Russian and Soviet history from the reign of Alexander I to the Stalin era; contending forces of revolution, reform, and conservatism; diplomatic relations; economic development; and social change.

HIST 2305. Majors' Introductory Seminar: United States. 0-3 Credits.

HIST 2305W. Majors' Introductory Seminar: United States. 0-3 Credits.

HIST 2311. The Jacksonian Era and the Rise of Mass Politics. 3 Credits.
The period 1824-1950 as a crucial era in American history; popular impact of social and political changes caused by the growth of the market economy; emergence of two national political parties; and new reforms focused increasingly on slavery as the country's greatest problem.

HIST 2312. The American Civil War and Reconstruction, 1850-1877. 3 Credits.
Examination of the political crises of the1850s to determine how and why the issue of slavery led to the American Civil War; the war's important battles, including how generals and common soldiers shaped outcomes; Reconstruction and the aftermath of the war, including how it shapes politics and race relations to the present day.

HIST 2313. History of the American West. 3 Credits.
A history of the trans-Mississippi West from first settlement by American Indians to the present; the pre-contact West, the coming of the Spanish, American settlement, the Indian Wars, women in the West, labor and racial conflict, and the West in the twentieth century.

HIST 2320. U.S. Media and Cultural History. 3 Credits.
History and analysis of 20th-century U.S. media and culture, including the rise of consumer culture, film, and television. Racial, gendered, and national identities in the context of modernism, mass culture, and globalization. Same as AMST 2320.

HIST 2321. U.S. History, 1890-1945. 3 Credits.
A survey of modern U.S. history from the late nineteenth century to the end of WWII. Emphasis on politics, public policy, and culture. Basic readings include biography, autobiography, and contemporary novels.

HIST 2322. U.S. History since 1945. 3 Credits.
Political, social, diplomatic, and intellectual developments, with particular emphasis on the Cold War, "silent" '50s, and disrupted '60s.

HIST 2340. US Diplomatic History. 3 Credits.
American foreign relations in the 20th century.

HIST 2340W. US Diplomatic History. 3 Credits.
American foreign relations in the 20th century.

HIST 2341. History of FBI Counterintelligence. 3 Credits.
The issues, controversies, and personalities that have played critical roles in the history of FBI foreign counterintelligence development. Prerequisites: None.

HIST 2350. U.S. Religion and Politics. 3 Credits.
How religion and politics have influenced each other in the United States and how Americans have understood those influences. Religious violence; conflicts between faith and science; religious factors in racial and gender politics; and the separation of church and state. Same as AMST 2350.

HIST 2380. Sexuality in US Cultural Hist. 3 Credits.
Examination of the changing social organization and meaning of sexual practices and desires in American culture, with particular attention to the relationship between sexuality and gendered racial and class identities and politics. Same as AMST 2380/ WSTU 2380.

HIST 2410. 20th-Century U.S. Immigration. 3 Credits.
Survey of immigration policy and immigrants' lives. How immigrants have changed the United States and how the United States has changed immigrants. Same as AMST 2410.

HIST 2440. The American City. 3 Credits.
An interdisciplinary introduction to the ethnic, cultural, political, and architectural landscape of the American city. Urban theory, race and ethnicity, urban history, planning and architecture, city politics, and cultural representations of the city. Same as AMST 2440.

HIST 2490. Themes in U.S. Cultural History. 3 Credits.
Topical examination of the ideas, values, and modes of expression that have made American life distinctive, as revealed through a cross-cultural or global perspective. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Same as AMST 2490.

HIST 2490W. Themes in U.S. Cultural History. 3 Credits.
Topical examination of the ideas, values, and modes of expression that have made American life distinctive, as revealed through a cross-cultural or global perspective. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. (Same as AMST 2490W, AMST 2490W).

HIST 2505. Majors' Introductory Seminar: Africa. 0-3 Credits.

HIST 2601. Topics: Asian History. 3 Credits.
Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

HIST 2605. Majors' Introductory Seminar: Asia. 0-3 Credits.

HIST 2605W. Majors' Introductory Seminar: Asia. 0-3 Credits.

HIST 2705. Majors² Introductory Seminar: Latin America. 0-3 Credits.

HIST 2705W. Majors' Introductory Seminar: Latin America. 0-3 Credits.

HIST 2710. The United States in Global Context, 1898–Present. 0-3 Credits.
How the 20th- and 21st-century U.S. has been engaged globally, both politically and culturally, with attention to global culture, transnational ideas and social movements, foreign policy, and economic transformations. Same as AMST 2710.

HIST 2730. World War II in History and Memory. 0-3 Credits.
Examination of Americans' histories and memories of World War II. Same as AMST 2730.

HIST 2730W. World War II History & Memory. 0-3 Credits.
Examination of Americans' histories and memories of World War II. Same as AMST 2730.

HIST 2803. The Ancient Near East and Egypt to 322 B.C.. 3 Credits.
Survey of Egyptian, Mesopotamian, Anatolian, West Semitic, and Iranian civilizations from the Neolithic period to Alexander's conquest. Same as Clas 2803.

HIST 2804. History of Ancient Israel. 3 Credits.
The history of ancient Israel from the Patriarchs through the Romans. Topics include historical, archeological, political, social, cultural, religious, diplomatic, military, economic, and intellectual events, movements, and relationships. Same as CLAS 2804.

HIST 2805. Majors' Introductory Seminar: Middle East. 0-3 Credits.

HIST 2805W. Majors' Introductory Seminar: Middle East. 3 Credits.

HIST 3001. Special Topics. 0-4 Credits.
May be repeated for credit provided the topic differs.

HIST 3001W. Special Topics. 0-4 Credits.
May be repeated for credit provided the topic differs.

HIST 3030. Military History to 1860. 3 Credits.
The causes, conduct, and consequences of conflict in the ancient, medieval, renaissance, and early modern world. Examination of the Anglo-Dutch and Anglo-French wars leading to the Seven Years' War, American Revolution (including a "virtual staff ride" of the Saratoga Campaign), French Revolution, and Napoleonic Wars.

HIST 3031. Military History since 1860. 3 Credits.
Causes, conduct, and consequences of conflict from the American Civil War through the Austro- and Franco-Prussian Wars, Spanish-American War, Sino- and Russo-Japanese Wars, World Wars I and II (including a "virtual staff ride" of the Normandy Campaign), Korea, Vietnam, and modern "small wars".

HIST 3033. War and the Military in American Society from the Revolution to the Gulf War. 3 Credits.
Social and psychological dimensions of war and military service.

HIST 3035. The United States and the Wars in Indochina, 1945–1975. 3 Credits.
The American role in the Indochina Wars, emphasizing the period 1961–1975, and from the perspectives of the Vietnamese, French, and Americans in Vietnam. Related intellectual and political developments in the United States; Cold War relationships with China and the Soviet Union.

HIST 3038. Naval History to 1815. 3 Credits.
Causes, conduct, and consequences of war at sea from the Age of Reconnaissance and Conquest through the War of 1812 (including a "virtual staff ride" of the Battle of Trafalgar). Consideration of issues including technology, the impact of the environment, and theories of warfare associated with each period.

HIST 3039. Naval History since 1815. 3 Credits.
Causes, conduct, and consequences of war at sea in the Civil War, counterinsurgency operations of so-called small wars, World Wars I and II, and the post-Cold War period. The transition from sail to steam, asymmetric warfare, and the role of sea power in modern geopolitics. Students participate in a virtual staff ride of the Battle of Leyte Gulf.

HIST 3044W. The Price of Freedom: Normandy 1944. 4 Credits.
The causes, conduct, and consequences of warfare, considered through examination of the campaign in Normandy that began with the allied landings on D-Day. Assignments include researching and writing a biography of a member of the military who died in the campaign and presenting a eulogy at the soldier's graveside during a "staff ride" exploration of the battlefield conducted over spring break. The biography paper is to be submitted to and retained in the archives of the American Cemetery in Normandy. Restricted to Students must be approved by the Study Abroad Office and interviewed by the instructor.

HIST 3045. International History of the Cold War. 3 Credits.
Key events and themes of the Cold War, drawing on new evidence from U.S., Soviet, Chinese, German, East European, Vietnamese, Cuban, and other sources. Related historiographical controversies from multiple national perspectives. Why the Cold War began, why it lasted for 45 years, and why it ended.

HIST 3046. The Cold War in the Third World. 3 Credits.
The evolution of the Cold War in Asia, Africa, and Latin America. Decolonization and the response of the Great Powers, the political economy of the Third World, and American and Soviet interventions.

HIST 3047. Writing Cold War History. 3 Credits.
Seminar. Students prepare a research paper on selected topics in the history of the Cold War.

HIST 3047W. Writing Cold War History. 3 Credits.
Seminar. Students prepare a research paper on selected topics in the history of the Cold War.

HIST 3060. Modern Jewish History. 3 Credits.
Survey of Jewish history from the 17th century to the present, focusing on Europe, America, and the Middle East. The myriad political, economic, and intellectual challenges of modernity to Jewish life and how Jews responded to these challenges through various religious and secular movements and with new concepts of identity and community.

HIST 3061. The Holocaust. 3 Credits.
The origins, causes, and significance of the Nazi attempt to destroy European Jewry, within the context of European and Jewish history. Related themes include the behavior of perpetrators, victims, and bystanders; literary responses; contemporary implications of the Holocaust for religion and politics.

HIST 3062. War Crimes Trials. 3 Credits.
The Nuremberg trial and its legacy in subsequent international and hybrid tribunals. The need for judicial accountability for genocide, crimes against humanity, and war crimes.

HIST 3095. Internship. 1-3 Credits.
Study of history through internships in museums, libraries, Congress, or other appropriate institutions and agencies. Prerequisite: approval of a departmental faculty member.

HIST 3097. Independent Study. 1-3 Credits.
Permission of instructor required.

HIST 3101. Topics: Europe. 0-3 Credits.

HIST 3101W. Topics: Europe. 3 Credits.

HIST 3103. European Intellectual History I. 3 Credits.
The "Century of Genius" and the Enlightenment; God, nature, man, and society, from Descartes to the French Revolution.

HIST 3104. European Intellectual History II. 3 Credits.
Continuation of HIST 3103. Responses to the French Revolution and the Enlightenment; historicism, evolution; nihilism, psychoanalysis; communism; fascism; existentialism, structuralism, postmodernism, and neo-orthodoxy.

HIST 3104W. European Intellectual History II. 3 Credits.
Continuation of HIST 3103. Responses to the French Revolution and the Enlightenment; historicism, evolution; nihilism, psychoanalysis; communism; fascism; existentialism, structuralism, postmodernism, and neo-orthodoxy.

HIST 3111. Topics in Ancient History. 3 Credits.
May be repeated for credit provided the topic differs. Same as CLAS 3111.

HIST 3118. The Middle Ages: 500–1500. 3 Credits.
The evolution of European society from the end of the Roman Empire to the Renaissance. The nature of political power, role of religion, place of gender, cultural production, and changing social structures.

HIST 3126. European Integration: A History. 3 Credits.
An examination of the origins and development of the European Union.

HIST 3130. History of England I. 3 Credits.
Development of English civilization and its impact on Western culture. To 1689.

HIST 3132. Tudor England. 3 Credits.
Aspects of the constitutional, social, intellectual, economic, and religious development of England, 1485-1603.

HIST 3132W. Tudor England. 3 Credits.
Aspects of the constitutional, social, intellectual, economic, and religious development of England, 1485–1603.

HIST 3134. Stuart England. 3 Credits.
The civil wars, Restoration, and Glorious Revolution. Political, religious, socioeconomic, and intellectual developments in England, 1603-1714.

HIST 3135. Victorian Britain. 3 Credits.
Major themes in 19th-century British history: industrialism, democratization, urbanization, imperial expansion, class and gender schisms.

HIST 3137. The British Empire. 3 Credits.
The British Empire from its rise in the 17th century to its demise in the 20th century.

HIST 3139. Twentieth Century Britain. 3 Credits.
Major themes of 20th-century British history: industrial decline, imperialism and decolonization, the making of a welfare state, the cataclysm of global war, integration with Europe.

HIST 3139W. 20th-Century Britain. 3 Credits.
Major themes of 20th-century British history: industrial decline, imperialism and decolonization, the making of a welfare state, the cataclysm of global war, integration with Europe.

HIST 3140. History of France I. 3 Credits.
Old Regime: monarchy and social classes; the Church; the Enlightenment; the 1789 revolution; Napoleon.

HIST 3140W. History of France to 1814. 3 Credits.
Old Regime: monarchy and social classes; the Church; the Enlightenment; the 1789 revolution; Napoleon.

HIST 3145. The French Revolution. 3 Credits.
Social, political, economic, and cultural history of the decade of revolution, 1789-1799. Attention to its structural consequences in France and in Europe at large.

HIST 3145W. The French Revolution. 3 Credits.
Social, political, economic, and cultural history of the decade of revolution, 1789–1799. Attention to its structural consequences in France and in Europe at large.

HIST 3148. El Camino de Santiago. 3 Credits.
Walking the Camino de Santiago is a cultural phenomenon that has lasted over a thousand years. An important part of Spain's cultural and political history, the Camino has affected the structures that form Spain's political and institutional systems, society, economy, and ideology as well as artistic forms of expression. Students may earn their Pilgrim´s passport by walking the last 100 kilometers of the Camino after the formal classes have ended. Offered at GW Madrid Study Center.

HIST 3150. Spain and Its Empire, 1492–1700. 3 Credits.
Major transformations of the period: from cultural pluralism to ethnic homogeneity, from medieval fragmentation to imperial expansion in Europe and America; from religious reform to Catholic Reformation, from global dominance to decline.

HIST 3168. Divided and United Germany Since 1945. 3 Credits.
Why was Germany divided after World War II? Why did it stay divided for 45 years? How was it reunited in 1990? This course examines developments in East and West Germany, relations between the two Germanys during the Cold War, their foreign policies, and how other countries treated them.

HIST 3173. The Habsburgs in East Central Europe. 3 Credits.
History of the Habsburg monarchy in its East Central European context. Reformation and Counter-Reformation; conflict with the Ottoman Empire; great-power competition in Europe; response to the Enlightenment and the French Revolution; the rise of nationalism; and final dissolution in World War I.

HIST 3173W. The Habsburgs in East Central Europe. 3 Credits.
History of the Habsburg monarchy in its East Central European context. Reformation and Counter-Reformation; conflict with the Ottoman Empire; great-power competition in Europe; response to the Enlightenment and the French Revolution; the rise of nationalism; and final dissolution in World War I.

HIST 3178. The Making of the Modern Balkans. 3 Credits.
States of the Balkan peninsula—Slovenia, Croatia, Serbia and Montenegro, Bosnia, Albania, Macedonia, Greece, Bulgaria, and Romania—including developments since the decline of the Ottoman Empire and the emergence of Balkan nationalist movements, and continuing through the collapse of the Soviet bloc.

HIST 3180. Russia to 1801. 3 Credits.
Survey of Russian history from the rise of the Kievan confederation in the ninth century to the establishment of Imperial Russia as a European great power. Attention will be given to the political, socioeconomic, and cultural history of the East Slavs, especially the Russians.

HIST 3181. Russia Since 1801. 3 Credits.
Survey of Russian and Soviet history from the reign of Alexander I to the Stalin era. Attention will be given to the contending forces of revolution, reform, and conservatism; diplomatic relations; economic development; and social change.

HIST 3301. Topics: U.S. History. 0-3 Credits.

HIST 3301W. Topics: U.S. History. 3 Credits.

HIST 3302. America before 1764. 3 Credits.
An examination of prehistory, colonization, and the shifting dynamics among European Americans, African Americans, and Native Americans before 1764.

HIST 3303. Revolutionary America. 3 Credits.
The American revolutionary era from the movement for independence through the establishment of the new federal government under the Constitution. Emphasis on changes to the inhabitants of North America, including Native Americans, African Americans, and European Americans, as well as to the broader Atlantic world.

HIST 3304. George Washington and His World. 3 Credits.
George Washington's life as soldier, politician, entrepreneur, slave holder, and national icon. Emphasis on the interpretation of original sources, including historical documents and the material culture of Washington's Mount Vernon estate, with tours and lectures by curators and historians. Departmental permission is required for registration.

HIST 3311. The Jacksonian Era and the Rise of Mass Politics. 3 Credits.
Focus on 1824–1950 as a crucial era in American history. Popular impact of social and political changes caused by the growth of the market economy; emergence of two national political parties; and new reforms focused increasingly on slavery as the country's greatest problem.

HIST 3311W. The Jacksonian Era and the Rise of Mass Politics. 3 Credits.
Study of 1824-1850 as an era in American history marked by widespread change. Impact of social and political reforms caused by the growth of the market economy; emergence of two national political parties; and new reforms increasingly focused on slavery as America's greatest problem.

HIST 3322. The Modern American Presidency. 3 Credits.
Development of the modern American presidency from Theodore Roosevelt to Barack Obama. Examination of the lives of the presidents, revealing the intersection of personal and impersonal forces in the creation of modern politics and modern America.

HIST 3324. US Urban History. 3 Credits.
History of American urban life and culture from the colonial era to the present, focusing on transitions from pre-industrial to industrial and post-industrial forms. The social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as AMST 3324.

HIST 3332. History of American Foreign Policy Since World War II. 3 Credits.
Emphasis on American and Soviet strategy and foreign policy in the era of the Cold War. World War II to the Vietnam .

HIST 3333. History of American Foreign Policy Since World War II. 3 Credits.
Continuation of HIST 3332. Emphasis on American and Soviet strategy and foreign policy in the era of the Cold War. Vietnam to the "New World Order.".

HIST 3334. The Nuclear Arms Race. 3 Credits.
Political, military, diplomatic, scientific, and cultural consequences of the advent of nuclear weapons. The development and uses of the atomic bomb during World War II and the course and legacy of the U.S.-Soviet nuclear arms race during the Cold War.

HIST 3351. U.S. Social History. 3 Credits.
Survey of American society and social change from the Civil War to the present. Gender, sexuality, race, ethnicity, and class perspectives. (Same as AMST 3351).

HIST 3352. Women in the United States to 1865. 3 Credits.
Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. (Same as AMST 3352, WSTU 3352).

HIST 3352W. Women in the United States I. 3 Credits.
Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. Same as AMST 3352/ WSTU 3352.

HIST 3353. Women in the United States II. 3 Credits.
Continuation of HIST 3352. Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. (Same as AMST 3353, WSTU 3353).

HIST 3356. Epidemics in American History. 3 Credits.
Epidemics in American history.

HIST 3360. African American History to 1865. 3 Credits.
Major themes and concepts emerging from the early history of the African presence in the Americas and black experiences in the new nation of the United States. Focus on the emergence and evolution of the concept of race, the ways race evolved in concert with Atlantic slavery, and how race intersected with gender, economics, religion, and nationality. (Same as AMST 3360).

HIST 3361. African American History Since 1865. 3 Credits.
African American efforts to realize full freedom after emancipation from slavery. Gender politics, cultural expression, labor organizing, and radicalisms; dynamics of racism within major eras of African American activity from Reconstruction through the Great Migration; and the history of civil rights, Black Power, and black feminism. (Same as AMST 3361).

HIST 3362. African American Women's History. 3 Credits.
Addresses the history of African American women's labor, cultural expression, institution-building, activism and strategies to combat oppression from the antebellum period through the late 20th century. Investigates the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement and African American women's experiences. (Same as AMST 3362, WSTU 3362).

HIST 3362W. African American Women's History. 3 Credits.
Addresses the history of African American women's labor, cultural expression, institution-building, activism and strategies to combat oppression from the antebellum period through the late 20th century. Investigates the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement and African American women's experiences. (Same as WSTU 3362W, AMST 3362W).

HIST 3363. Race, Medicine & Public Health. 3 Credits.
Issues of race, medicine, and public health.

HIST 3366. Immigration, Ethnicity, and the American Experience. 3 Credits.
Immigrant life in America from 1607 to the present. Focus on the urban immigrant experience from 1840 to 1924, the ironic persistence of nativism in a "nation of immigrants," the origins of modern immigration law, and the similarities between today's immigrants and those from the past. Students write research papers on an immigrant found in their family tree.

HIST 3366W. Immigration, Ethnicity, and the American Experience. 3 Credits.
Immigrant life in America from 1607 to the present, focusing on the urban immigrant experience from 1840 to 1924, the ironic persistence of nativism in a "nation of immigrants," the origins of modern immigration law, and the similarities between today's immigrants and those from the past. Students write research papers on an immigrant found in their family tree.

HIST 3367. The American Jewish Experience. 3 Credits.
The study of the Jewish minority in America from colonial times to the present. Emphasis on the interaction between a powerful majority culture and that of protean minority people.

HIST 3370. US Constitutional History. 3 Credits.
Examination of the text and interpretation of the document that is the foundation of the American government, with special attention to the changing character of race and gender as constitutional classes.

HIST 3501. Topics: Africa. 0-3 Credits.
A survey of African history from 1880 to the present.

HIST 3510. African History to 1880. 3 Credits.
Survey of the history of the African continent with emphasis on the history of sub-Sahara Africa.

HIST 3520. Africans in the Making of the Atlantic World. 3 Credits.
The role of Africa and Africans in the Atlantic world with emphasis on links between Africa, Europe, and the Americas.

HIST 3530. Women in Africa. 3 Credits.
African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. Same as WSTU 3530.

HIST 3530W. Women in Africa. 3 Credits.
African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. Same as WSTU 3530.

HIST 3540. West Africa to Independence. 3 Credits.
A thematic survey of West African history, focusing on the diversity of African culture, West African kingdoms and empires, Islam, the trans-Saharan trade, African contact with Europe, slavery and the slave trade, and the colonization of Africa.

HIST 3601. Topics: Asian History. 0-3 Credits.

HIST 3610. China to 1800. 3 Credits.
Survey of Chinese civilization from its ancient beginnings to the last imperial dynasty.

HIST 3611. History of Modern China. 3 Credits.
China since 1840, with particular attention to political developments.

HIST 3614. Writing Modern Chinese History. 3 Credits.
Seminar. Students prepare a research paper on selected topics in the history of modern China.

HIST 3614W. Writing Modern Chinese History. 3 Credits.
Seminar. Students prepare a research paper on selected topics in the history of modern China.

HIST 3615. History of Chinese Communism. 3 Credits.
Survey of the leadership, ideology, structure, and foreign and domestic policies of the Chinese Communist Party from its inception to the present.

HIST 3621. History of Modern Japan. 3 Credits.
Japan's dramatic transformation from an isolated island country to Asia's only modern colonial empire, from unprecedented defeat to postwar "economic miracle." Emphasis on historical, political, economic, and cultural trends.

HIST 3630. History of Korea. 3 Credits.
An introduction to the history and culture of Korea from antiquity to the present.

HIST 3631. History of Modern Korea. 3 Credits.
Modern Korean history from 1876 to contemporary society. Emphasis on colonialism, nationalism, the division of peninsula, the Cold War, and globalization.

HIST 3640. History of Southeast Asia. 3 Credits.
An examination of Vietnam and its neighbors from the pre-colonial period to the present.

HIST 3650. Modern South Asia, 1750Present. 3 Credits.
The South Asian subcontinent, including Afghanistan, Pakistan, India, and Bangladesh, since the mid-18th century. The period of British rule, from the late 18th to the mid-20th century. The different trajectories of the independent nation-states of South Asia following decolonization.

HIST 3701. Topics in Latin American History. 0-3 Credits.

HIST 3710. History of Latin America I. 3 Credits.
Analysis of Spanish and Portuguese imperialism in the New World, 1492–1820.

HIST 3711. History of Latin America II. 3 Credits.
Continuation of HIST 3710. A problems approach to Latin America, 1820 to the present; thematic emphasis on neocolonialism, corporatism, liberalism, caudillismo, modernization, populism, and revolution.

HIST 3801. Topics in Middle Eastern History. 0-3 Credits.

HIST 3810. History of the Middle East to 1800. 3 Credits.
Byzantine, Arab, Persian, and Islamic backgrounds; rise and decline of the Ottoman Empire; action of European powers in the area; Ottoman breakup into the Turkish Republic and other states.

HIST 3811. The Middle East in the 20th Century. 0-3 Credits.
The state system established after World War I. Effects of colonialism, the rise of nationalism, the Cold War, and the oil industry. The modes of identification that accompanied these processes, including pan-Arabism and Islamism.

HIST 3811W. Middle East in 20th Century. 0-3 Credits.
The state system established after World War I. Effects of colonialism, the rise of nationalism, the Cold War, and the oil industry. The modes of identification that accompanied these processes, including pan-Arabism and Islamism.

HIST 3820. The History of Israel. 3 Credits.
Survey of the history of Israel from the origins of Zionism to the present. Topics include Zionism as an ideology and movement in the pre-state period; the relationship between state and religion; the impact of 1948 and 1967; immigration, colonization, and Israeli society; the Arab-Israeli conflict; and Israel's national identity as a Jewish and democratic state.

HIST 3820W. The History of Israel. 3 Credits.
Survey of the history of Israel from the origins of Zionism to the present. Topics include Zionism as an ideology and movement in the pre-state period; the relationship between state and religion; the impact of 1948 and 1967; immigration, colonization, and Israeli society; the Arab-Israeli conflict; and Israel's national identity as a Jewish and democratic state.

HIST 3830. History of Iraq. 3 Credits.
Modern Iraq's Ottoman background; its incorporation into a world market dominated by Europe, British influence and preconceptions in the creation of Iraq, and the emergence and survival of the Ba'ath dictatorship. Reforms in economic, political, and educational spheres.

HIST 3840. History of Central Asia. 3 Credits.
Introduction to the political, cultural, religious, and social history of the region, including Afghanistan, Kazakhstan, Tajikistan, Turkmenistan, and Uzbekistan.

HIST 3850. Modern Iran. 3 Credits.
Political, diplomatic, religious, and other developments in Iran from about 1800 to 1989.

HIST 4098. Thesis Seminar. 3 Credits.
For history majors only. Preparation of a research paper using primary sources.

HIST 4098W. Thesis Seminar. 3 Credits.
History majors identify an original research topic in an area of their interest and complete a major research paper based largely on primary sources.

HIST 4099. Senior Honors Thesis Tutorial. 3 Credits.
Required of and open only to undergraduate honors candidates in history. Restricted to Instructor approval required. Prerequisites: HIST 4098W.

HIST 4099W. Senior Honors Thesis Tutorial. 3 Credits.
Required of and open only to undergraduate honors candidates in history. Restricted to Open only to undergraduate honors candidates in history. Prerequisites: HIST 4098 or HIST 4098W.

HIST 4135. Folger Seminar. 3 Credits.
The history of books and early modern culture. Use of the archive at the Folger Shakespeare Library. Students must obtain departmental approval in the preceding semester. Same as ENGL 4135/ FREN 4135.

HIST 6001. Special Topics. 3-9 Credits.
Open to doctoral and master's candidates and qualified undergraduates. May be repeated for credit provided the topic differs.

HIST 6005. History and Historians. 3 Credits.
Historiography and historical method for graduate students. Readings and discussions on major trends in history; selections from classics of historical literature.

HIST 6006. Teaching History. 3 Credits.
Pedagogic techniques and strategies particular to the discipline. Admission by permission of instructor.

HIST 6011. Reading and Research in History and Public Policy. 3 Credits.
The use of historical insights and methods in policymaking, with emphasis on domestic issues.

HIST 6012. Internship in History and Public Policy. 3,6 Credits.
Supervised participation in an office or agency concerned with the formulation of public policy; terms of the internship are arranged with the director of the history and public policy program. Enrollment restricted to students in the history and public policy program.

HIST 6030. History and Its Uses in International Affairs. 3 Credits.
The multiple interconnections among history, politics, and international affairs, including how policymakers use or misuse "lessons" of history and how countries attempt to deal with difficult aspects of their past. Specific cases may vary.

HIST 6031. History of International Economic Systems. 3 Credits.
Development of arrangements and institutions designed to manage the international economy since the 19th century, with a focus on the period since World War II.

HIST 6032. Rdg/Rsch Sem:Strategy & Policy. 3 Credits.
A study of the historical development of strategy and the relationship of military thought to national policy.

HIST 6040. Topics in Modern Military and Naval History. 3 Credits.
Discussion, readings, and research in 20th-century European and American military and naval history.

HIST 6041. The Age of the Battleship: An Introduction to Modern Naval History. 3 Credits.
The rich and varied literature of naval history, with emphasis on interactions among technology, nationalism, and domestic political/social developments in the late 19th and early 20th century. The social history of navies is included.

HIST 6042. Seminar: World War II. 3 Credits.
Examination of statecraft and the management of force before, during, and after World War II. Special attention to broad aspects of military policy and strategy and their interaction with international politics and diplomacy.

HIST 6050. Modernization, Imperialism, Globalization. 3 Credits.
Readings seminar in classic and recent theories of modernization, imperialism, and globalization.

HIST 6051. Re-thinking Cold War History. 3 Credits.
A reading and research course that relies heavily on documents from formerly closed communist archives and recently declassified Western materials. Various issues and events of the Cold War; old and new historiographical controversies. Students write a primary-source research paper to elucidate one of the many aspects of the Cold War about which new evidence is available.

HIST 6097. Independent Readings/Research. 3 Credits.
Written permission of instructor required. May be repeated for credit with permission.

HIST 6101. Topics: Europe. 3 Credits.

HIST 6105. Sem:European Intellectual Hist. 3 Credits.
Topics in 18th- and 19th-century European thought, with an emphasis on France. Specific topic announced in the Schedule of Classes.

HIST 6120. Sem:Early Modern European Hist. 3 Credits.
Topics selected from Western European history of the 14th through 17th centuries.

HIST 6121. Rdg/Rsch Sem:Mod European Hist. 3 Credits.

HIST 6122. Rdg/Rsrch Sem:20th C History. 3 Credits.
Research or readings on selected topics.

HIST 6128. Europe and the World, 1500–Present. 3 Credits.
An introduction to some of the key debates and scholarship concerning European imperialism.

HIST 6130. Early Modern Britain. 3 Credits.
Analysis of some current issues in early modern historiography; contextualization of recent works in the field; consideration of different methodologies and the types of evidence on which they rely or that they illuminate.

HIST 6133. English People and Institutions. 3 Credits.
Selected topics in the political, social, intellectual, and economic history of England. Focus upon one time period and special area of interest. May be taken for research credit with instructor's approval.

HIST 6135. British Imperialism. 3 Credits.
Research seminar. Major debates and schools of thought on the history of British imperialism.

HIST 6138. Folger Institute Seminars I. 3 Credits.
Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the chair of the department before registration.

HIST 6139. Folger Institute Seminars II. 3 Credits.
Continuation of HIST 6138. Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the chair of the department before registration.

HIST 6170. Eastern European History I. 3 Credits.
1772–1918.

HIST 6171. Eastern European History II. 3 Credits.
Continuation of HIST 6170. 1919–1945.

HIST 6180. History of Modern Russia and the Soviet Union. 3 Credits.
Selected topics in the domestic history of modern Russia and Soviet Union. May be taken as a readings seminar or, with instructor's approval, as a research seminar.

HIST 6181. Research Seminar: Russian and Soviet Empires. 3 Credits.

HIST 6185. Sem: Russian & Soviet Thought. 3 Credits.
Selected topics in the intellectual and cultural history of 18th- to 20th-century Russia and Soviet Union. May be taken as a readings seminar or, with instructor's approval, as a research seminar. Admission by permission of instructor.

HIST 6188. The Soviet Union and the World, 1917–1991. 3 Credits.
Concepts and perceptions guiding Soviet relations with the outside world. From the blockade and intervention, through years of isolation, World War II, the Cold War, to "peaceful coexistence.".

HIST 6301. Topics: U.S. History. 3 Credits.

HIST 6302. Colonial North America. 3 Credits.
The complex and turbulent world of colonial North America from the late 16th to the late 18th century. Inter-cultural negotiations, Atlantic world connections, imperial conflict, gender construction, and race consciousness.

HIST 6303. Revolutionary America. 3 Credits.
The political and social conditions of the revolutionary era: the spiral of events that led to the American independence movement, the various meanings of the war to its participants, and the consequences of victory for the nation, its various subgroups, and other peoples of the colonial Atlantic world.

HIST 6304. American Indian History to 1890. 3 Credits.
North American Indian history from indigenous societies on the eve of first contact with Europeans until the conclusion of the Great Plains Wars of the late 19th century.

HIST 6310. Readings in 19th-Century American History. 3 Credits.
Important trends in historical writing about 19th-century America.

HIST 6311. The Era of the Civil War, 1850–1877. 3 Credits.
Consideration of how and why the issue of slavery led to the American Civil War. Conflict on the battlefield and the political and social impact of the war in both the North and the South. Examination of the Reconstruction period as a means of understanding how the conflict and its aftermath continue to shape American politics and race relations to the present.

HIST 6312. The Law of Race and Slavery. 3 Credits.
The role of legal norms and processes in developing patterns of slavery and race relations in the United States and other societies. Admission by permission of instructor. Same as SOC 6286 and LAW 6596.

HIST 6320. Readings/Research Seminar: Recent U.S. History. 3 Credits.
Prerequisite: 6 credit hours of upper-level undergraduate American history courses. Research or readings, depending on students' interests and curricular needs.

HIST 6321. Readings/Research Seminar: Recent U.S. History. 3 Credits.
Continuation of HIST 6320. Prerequisite: 6 credit hours of upper-level undergraduate American history courses. Research or readings, depending on students' interests and curricular needs.

HIST 6322. American Business History. 3 Credits.
The history of American business institutions in manufacturing, distribution, transportation, and finance. Particular attention will be given to the period since industrialization, with consideration of business institutions in their economic, legal, governmental, and social contexts. Same as SMPP 6293.

HIST 6330. Modern U.S. Foreign Policy. 3 Credits.
Readings, lectures, discussion on major developments in the conduct of American diplomacy from 1898 to 9/11.

HIST 6350. American Social Thought Since World War II. 3 Credits.
Consideration of C. Wright Mills, Daniel Bell, Abraham Maslow, Christopher Lasch, Paul Goodman, Martin Luther King, Jr., Barbara Ehrenreich, and other major social critics.

HIST 6360. Immigration and Ethnicity in the United States. 3 Credits.
The history of immigrant life in the United States; focus on the mass migration from Europe that began with the Irish Potato Famine of the 1840s and ended with the immigration restrictions of the 1920s that created the concept of the illegal immigrant.

HIST 6370. US Legal History. 3 Credits.
The legal history of the United States from the 17th century to the present. The course examines legal change within the broader context of political, social, and economic change. Admission by permission of instructor. Same as LAW 6591.

HIST 6410. Readings in American Cultural History. 3 Credits.
Studies in the cultural history of the United States, focusing on major historiographic debates and interventions. Examples of possible topics include cultural contact, the public sphere, and systems of religious and political belief. Same as AmSt 6410.

HIST 6420. Religion & American Culture. 3 Credits.
Interdisciplinary analysis of religious beliefs, practices, and representations in the United States, as well as intersections of the religious and the secular. Relationships of religion to race, gender, capitalism, science, mass media, and material culture. Same as AMST 6420.

HIST 6430. Gender, Sexuality, and American Culture. 3 Credits.
The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. Pre-Columbian settlement to 1876. Same as AMST 6430/ WSTU 6430.

HIST 6431. Gender, Sexuality, and American Culture. 3 Credits.
Continuation of HIST 6430. The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. 1877 to present. Same as AMST 6431/WSTU 6431.

HIST 6435. Readings on Women in American History. 3 Credits.
Important works in American women's history; evolution of the field in historiographical context. Same as AMST 6435/WSTU 6435.

HIST 6450. Race in America. 3 Credits.
Interdisciplinary analysis of the history of race and its changing political, social, and cultural meanings in the United States. Transnational racial formations, struggles for and against civil rights, multiracialism, and interracialism. Same as AMST 6450.

HIST 6455. American Social Movements. 3 Credits.
The history of social movements in the United States, with emphasis on civil rights, feminism, conservatism, and labor in local, national, and transnational contexts; the historical rise and fall of these movements and their larger impact on American life. Same as AMST 6455.

HIST 6470. Cityscapes. 3 Credits.
Interdisciplinary examination of the American city, including urban theory, history, planning, architecture, urban politics, and cultural representations of the city. Same as AMST 6470.

HIST 6475. US Urban History. 3 Credits.
History of American urban life and culture from the Colonial era to the present, focusing on the transitions from pre-industrial to industrial and post-industrial forms, the social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as AMST 6475.

HIST 6480. Theory and Practice of Public History. 3 Credits.
Theoretical and practical dimensions of public history, as illustrated by recent controversies surrounding public exhibitions and debates on revisionist history as well as more traditional means of presenting the past in public forums. Same as AMST 6480.

HIST 6495. Historic Preservation: Principles and Methods. 3 Credits.
The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as AMST 6495.

HIST 6496. Historic Preservation: Principles and Methods. 3 Credits.
Continuation of HIST 6495. The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as AMST 6496.

HIST 6501. Topics: Africa. 3 Credits.

HIST 6502. Western Representations of Africa. 3 Credits.
Representations of Africa by non-Africans from the earliest contact to more recent encounters.

HIST 6601. Topics: Asian History. 3 Credits.

HIST 6602. Asia: History, Memory, and Violence. 3 Credits.
Violence has been a defining experience for many of the populations and polities of Asia over the past century and a half. Focusing on the themes of violence and historical memory, the course takes a comparative approach, looking at how these issues have played out in different arenas throughout East, Southeast, and South Asia.

HIST 6610. Readings Seminar: Late Imperial China. 3 Credits.
Selected topics in the history of modern China in the late imperial period, with a particular focus on the internal and external challenges to the last Chinese dynasty in the 19th century.

HIST 6611. Readings Seminar: 20th-Century China. 3 Credits.
Selected topics in the history of modern China from the 1911 Revolution to the Cultural Revolution.

HIST 6621. Readings Seminar: Modern Japanese History. 3 Credits.
Selected topics in modern Japanese history from the Meiji Restoration of 1868 to the present. Research or readings depending on students' interests. Emphasis on how interpretations of the past are shaped by the present.

HIST 6625. Japan's Empire and Its Legacies. 3 Credits.
History of modern Japan's overseas expansion and empire building. Focus on issues including colonial modernity, resistance and collaboration, and postwar legacies such as politics of memory and prospects of reconciliation.

HIST 6630. Spec Topics in Korean History. 3 Credits.
Intensive exploration of the history of Korea in modern times (1850–present). Korean identity and the challenges of foreign imperialism, industrialization, modernization, and globalization.

HIST 6641. Modern Southeast Asia. 3 Credits.
The modern history of Southeast Asia from the 1800s to 1975. Colonialism, rise of postcolonial states, revolutions and persistence of the past.

HIST 6701. Topics in Latin American History. 3 Credits.

HIST 6801. Topics in Middle Eastern History. 3 Credits.

HIST 6811. Rsearch Sem:Modern Middle East. 3 Credits.
Readings, discussion, and research in selected political, economic, social, cultural, and intellectual trends.

HIST 6821. Islam and Social Movements. 3 Credits.
An examination of the relationship of religion and religious symbols to social and political movements in the Islamic world.

HIST 6822. Nationalism in the Middle East. 3 Credits.
Different interpretations of nationalism and their applicability to nationalism in the Middle East.

HIST 6823. Imperialism in the Middle East. 3 Credits.
An exploration of the process of European and American expansion in the Middle East.

HIST 6824. Rdg/RsrchSem: Modern Iran. 3 Credits.

HIST 6998. Thesis Research. 3 Credits.

HIST 6999. Thesis Research. 3 Credits.

HIST 8998. Advanced Reading & Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

HIST 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

HOMINID PALEOBIOLOGY (HOMP)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HOMP 6201. Hominid Paleobiology. 3 Credits.
Study of human evolution through investigation of the fossil record; current research in reconstructing paleobiology. Adaptation, phylogeny and behavior reconstruction, site formation, and the taxonomy, site context, anatomy, behavior, and major issues surrounding each hominin taxon.

HOMP 6202. Lab Techniques: Paleoanthro. 1-3 Credits.

HOMP 6203. Ethics & Professnl Practice I. 1 Credit.

HOMP 6204. Ethics & Professnl Practice II. 1 Credit.

HOMP 6995. Research. 1-9 Credits.
Research on problems approved by the director of the program. Open to qualified students with advanced training. May be repeated for credit.

HOMP 6998. Thesis Research. 3 Credits.

HOMP 6999. Thesis Research. 3 Credits.

HOMP 8301. Problem-Based Learning Seminar. 1-3 Credits.
Problem-based tutorial in hominid paleobiology. Development of research skills through problem-solving tasks in a small group. May be repeated for credit.

HOMP 8302. Public Undrstand Of Scie Intrn. 3 Credits.
Supervised participation in an institution that presents science to the public. Opportunity to participate in procedures and gain practical experience in disseminating scientific information to non-scientists.

HOMP 8303. Paleobiology Lab Rotation. 2-3 Credits.
Supervised participation in a relevant laboratory. Students learn analytical techniques, handle diverse types of data, and encounter a range of disciplines as preparation for later participation in interdisciplinary research projects. Admission by permission of the program chair. May be repeated for credit.

HOMP 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

HOMP 8999. Dissertation Research. 3-24 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

HONORS (HONR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HONR 1015. Honors Proseminar: UW 1020: Origins and Evolution of Modern Thought. 4 Credits.
Exploration of significant exemplars, milestones, and developments of human thought; foundational and representative thinkers and texts from Western and Eastern traditions provide an indication of the diversity and complexity of attempts to articulate responses to universal questions, problems, and aspirations.

HONR 1016. Honors Proseminar: Origins and Evolution of Modern Thought. 3 Credits.
Continuation of HONR 1015. Key developments and trajectories in human thought and inquiry into modern times.

HONR 1033. Honors Proseminar: Scientific Reasoning and Discovery. 4 Credits.
Using an inquiry-based approach, students learn to identify hidden regularities and patterns in nature that may indicate fundamental unifying principles and laws. The scientific method; evaluation of scientific information; limitations of the scientific process; development of a scientific hypothesis. Tools and methodologies of geology, chemistry, physics, biology, anthropology, and other disciplines.

HONR 1034. Honors Proseminar: Scientific Reasoning and Discovery. 4 Credits.
Continuation of HONR 1033. Using an inquiry-based approach, students learn to identify hidden regularities and patterns in nature that may indicate fundamental unifying principles and laws. The scientific method; evaluation of scientific information; limitations of the scientific process; development of a scientific hypothesis. Tools and methodologies of geology, chemistry, physics, biology, anthropology, and other disciplines.

HONR 2016. Enlightenment East & West. 4 Credits.
This course replaces HONR 1016 for students who enter the Honors Program as sophomores.

HONR 2043. Honors Microeconomics. 3 Credits.
An introductory microeconomics course that considers both the philosophical basis of economics as well as its methods and applications. Same as ECON 1011.

HONR 2044. Honors Macroeconomics. 3 Credits.
An accelerated introductory macroeconomics course that includes the study of special topics.

HONR 2047. Honors Proseminar: Social and Behavioral Sciences. 3 Credits.
Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

HONR 2047W. Honors Proseminar: Social and Behavioral Science. 3 Credits.
Understanding significant social and political phenomena by using the tools and modes of inquiry of the social and behavioral sciences; relationships among individuals, collectivities, families, and communities; interactions of psychological, social, political, economic, and historical forces at work in a given culture. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HONR 2048. Honors Proseminar: Social and Behavioral Sciences. 3 Credits.
Understanding significant social and political phenomena through the use of social and behavioral sciences tools and modes of inquiry; relationships between individuals and among collectivities, families, and communities; interactions of psychological, social, political, economic, and historical forces at work in a given culture.

HONR 2048W. Honors Proseminar: Social and Behavioral Science. 3 Credits.
Understanding significant social and political phenomena by using the tools and modes of inquiry of the social and behavioral sciences; relationships among individuals, collectivities, families, and communities; interactions of psychological, social, political, economic, and historical forces at work in a given culture. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HONR 2053. Honors Proseminar: Arts and Humanities. 3 Credits.
Exploration of the ways in which cultures are defined and understood through artistic expression; how particular cultures value and critique these forms of personal and social expression. Topics vary by semester. May be repeated for credits provided the topic differs. Consult the Schedule of Classes for more details.

HONR 2053W. Honors Proseminar: Arts and World Cultures. 3 Credits.
Using an array of artistic forms, including poetry, prose literature, drama, film, painting, sculpture, architecture, dance, and music, students explore the ways in which cultures are defined and understood through artistic expression and how particular cultures value and critique these forms of personal and social expression.

HONR 2054. Honors Proseminar: Arts and Humanities. 3 Credits.
How cultures are defined and understood through various forms of artistic expression, including poetry, prose literature, drama, film, painting, sculpture, architecture, dance, and music; how particular cultures value and critique these forms of personal and social expression.

HONR 2054W. Honors Proseminar: Arts and World Cultures. 3 Credits.
Using an array of artistic forms, including poetry, prose literature, drama, film, painting, sculpture, architecture, dance, and music, students explore the ways in which cultures are defined and understood through artistic expression and how particular cultures value and critique these forms of personal and social expression.

HONR 2182. Honors Internship. 0-4 Credits.
The Honors Program allows credit to Honors students for academic work that puts an internship in a broader scholastic context. Each student must have a GW faculty member oversee his or her project. The Honors internship faculty member determines the student's grade.

HONR 2184. Honors Undergraduate Research. 0-4 Credits.
Independent or faculty-mentored research resulting in a significant written or other product.

HONR 2185. Honors Research Assistantship. 0-4 Credits.
Students provide substantive assistance to a faculty member engaged in scholarly or scientific research.

HONR 4198. Honors Senior Thesis. 3-4 Credits.
One- or two-semester thesis under faculty guidance. May be repeated for credit.

HONR 4199. Honors Capstone Experience. 1 Credit.
Students re-engage with core questions and issues related to the Honors Program curriculum, reflecting on their learning in relation to enduring questions and challenges of our world.

HUMAN DEVELOPMENT (HDEV)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HDEV 6108. Life Span Human Development. 3 Credits.
Continuity and change in developmental attributes. The developing person in relation to social norms, roles, and stage-graded expectations from birth to death. Interaction between biogenetics and environment.

HDEV 6109. Child Development. 3 Credits.
Typical development and the familial and social antecedents of developmental risk. Environments that foster competent children and developmental sequelae of childhood vulnerability and trauma. For graduate students in counseling, psychology, and related disciplines.

HDEV 6110. Adolescent Development. 3 Credits.
Key attributes and problems in adolescent development. Typical adolescent development and contemporary social problems in relation to stress, risk, and resilience. For graduate students in counseling, psychology, and related areas.

HDEV 6129. Cultural Effects on Human Development. 3 Credits.
Effects of culture on the experience and expression of self, others, space, time, faith systems, norms, and other attributes. Egocentric and sociocentric effects, primitive and technological effects. Group immersion as the basis for prejudice. Developmental consequences as a consequence of cultural context.

HDEV 6161. Practicum in Human Development. 3 Credits.
Admission by permission of instructor.

HDEV 6162. Internship in Human Development. 3 Credits.
Admission by permission of instructor.

HDEV 6701. Adult Learning. 3 Credits.
Same as HOL 6701.

HDEV 8100. Issues and Special Topics in Human Development. 3-6 Credits.
Issues and special contemporary topics related to child, adolescent, and adult development. Applications for professional roles.

HDEV 8241. Emotional and Cognitive Dev. 3 Credits.
Emotional and cognitive development as related to self-esteem, social cognition, and interpersonal skills. Relationships among cognitive development, intellectual reasoning, insight, and social development.

HDEV 8244. Adult and Aging Development. 3 Credits.
Theories and research on personality and intelligence in adulthood. Research designs and methods. Implications of developmental data for counseling and selected professional roles.

HDEV 8253. Work, Identity, and Adult Development. 3 Credits.
The influence of work on identity, intellectual and personality development, and other developmental attributes. Same as CNSL 8253/ HOL 8742.

HUMAN ORGANIZATIONAL LEARNING (HOL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HOL 0920. Continuing Research - Master's. 1 Credit.

HOL 0940. Cont. Res. - Doctoral. 1 Credit.

HOL 6100. Special Workshop. 1-12 Credits.
Topics to be announced in the Schedule of Classes. May be repeated for credit.

HOL 6101. Research and Independent Study. 1-3 Credits.
Preparation of an in-depth project under the guidance of a faculty member. The course is arranged individually with the program advisor.

HOL 6700. Human Behavior and Learning in Organizations. 3 Credits.
How individuals and groups learn and interact within organizations and how organizations function and learn. Motivation, group dynamics, leadership, systems theory, organizational culture, and change.

HOL 6701. Adult Learning. 3 Credits.
Premises and theories used to meet learning needs of adults. Overview of various learning theories and the impact of various stages of adult development on learners. Topics including self-directed learning, accommodating individual learning needs, and creation of effective learning techniques. Same as HDEV 6701.

HOL 6702. Organizational Change I. 3 Credits.
The assessment of organizational conditions, including collection and interpretation of information, operations, and problems (human, structural, and systemic). Course participants collect and analyze data to provide solutions to enhance organizational effectiveness.

HOL 6703. Organizational Change II. 3 Credits.
Introduction to the concepts, methods, and skills required for effective consultation in organizations, as either an internal or an external consultant. Meeting the human needs in organizations, while improving performance and productivity. Students undertake a consulting project in an organization.

HOL 6704. Leadership in Organizations. 3 Credits.
Developments in theory and research centered on organizational leadership. Emphasis on various types of leadership including transformational, responsible, authentic, and ethical.

HOL 6705. Strategic Change. 3 Credits.
Overview of best practices for organizing and managing people and organizations to compete successfully. Leading an organization through a process of self-examination, redesign, and change that results in sustained effectiveness, learning, and high performance.

HOL 6706. Current Issues in Organizational Leadership. 3 Credits.
Current issues and future trends in organizational leadership. Students gather data and analyze key topics associated with areas such as talent management, leading through demographic shifts, leadership in a globalized world, leading global change, and developing new forms of leadership, ethics, and sustainability.

HOL 6707. Organizational Learning. 3 Credits.
Learning in an organizational context. Processes through which the organization as a system learns, unlearns, changes, and disseminates information. Organizational learning theories address the processes and barriers of gathering, using, developing, and retaining knowledge in organizations.

HOL 6708. Global Leadership. 3 Credits.
The changes taking place in organizations due to the process of globalization and the requirements for leadership. The changing global environment, how those changes influence operational and strategic issues within global organizations, and how a leader can better understand the global environment to help organizations meet these new challenges.

HOL 6709. Leadership Development. 3 Credits.
The processes employed to develop leaders/leadership and how individuals change as a result of the process. Examination of the context within which leadership is developed. Prerequisites: HOL 6704.

HOL 6710. Globalization, Change, and Learning. 3 Credits.
With learning as the coping strategy, focus on how policymakers and global leaders can be helped to take advantage of the opportunities and address the challenges that globalization presents.

HOL 6720. Advanced Strategies for Adult Learning. 3 Credits.
Theoretical and practical strategies of adult learning in various settings, including corporate environments. Learning strategies, such as creative thinking and self-directed learning. Critical adult learning issues.

HOL 6721. Assessing the Impact of Organizational Change. 3 Credits.
Knowledge and skills needed to evaluate the impact and return on investment of change efforts. Focus on how to plan and conduct systematic evaluations of change efforts, including the choice, development, and use of various tools for measuring individual, group, and organizational change. Assessing the success of the planned change.

HOL 6724. Increasing the Capacity to Learn. 3 Credits.
Identification of actions that can help increase the capacity to learn. Emphasis on experimental learning and critical reflection.

HOL 6725. Internship in Human Resource Development. 3-6 Credits.
Supervised experience in selected areas of human resource development and adult education. Admission by permission of the program advisor.

HOL 6742. Design of Adult Learning Interventions. 3 Credits.
Designing and implementing adult learning programs. Topics include instructional design techniques, designing effective programs, program planning and marketing techniques, and conducting needs assessments and evaluations of adult learning programs.

HOL 6743. Action Learning. 3 Credits.
Processes, principles, and skills necessary to participate in and lead both single- and multiple-problem action learning sets. The six dimensions of action learning; educational psychological, political, sociological, and management theories underlying action learning.

HOL 6744. Meaningful Workplaces. 3 Credits.
Characteristics of the humane organization and of meaningful work. Intrinsic motivation, work–life balance, and the workplace community.

HOL 6745. Technology and Human Resource Development. 3 Credits.
How technology can best be utilized in the HRD environment. Discussion of CBT, use of the Internet for instruction, and distance learning techniques.

HOL 6746. Work Groups and Teams in Organizations. 3 Credits.
Exploration of the nature of work groups and teams as they are utilized in organizational settings. Group and team dynamics, facilitating and leading skills, and group roles and culture.

HOL 6747. International and Multicultural Issues in Organizations. 3 Credits.
The impact of culture and globalization on U.S. and international human and organizational learning programs and practices. Adult learning and organizational change approaches that develop and utilize the synergy of a global workforce.

HOL 6998. Thesis Research. 3 Credits.
Thesis research.

HOL 6999. Thesis Research. 3 Credits.
Thesis research.

HOL 8100. Special Topics in Human and Organizational Learning - Doctoral Studies. 3 Credits.
Topics to be announced in the Schedule of Classes. May be repeated for credit.

HOL 8101. Research and Independent Study. 1-3 Credits.

HOL 8700. Foundations of Human and Organizational Learning. 3 Credits.
The study of individuals and their interactions within an organizational context. Overview of key theories in leadership, systems theory, group dynamics, learning, organizational culture, and motivational theory. The use of research in human and organizational learning.

HOL 8701. Theory, Research, and Practice in Adult Learning and Development. 3 Credits.
Learning theories as applied to adults in individual and group learning transactions; effect of age on learning; psychological, physical, and social environments in adult education situations.

HOL 8702. Theory and Design of Organizational Diagnosis and Development. 3 Credits.
Focus on various paradigms through which organizations and their functions may be viewed; a variety of analytical models of organizations; techniques for assessing systems; application of analysis techniques.

HOL 8703. Human Systems Change. 3 Credits.
The classical and contemporary ideas related to social systems change; the relation of these ideas to current issues in organizations.

HOL 8704. Leadership Theory, Research, and Practice. 3 Credits.
Leadership in organizations with a focus on transformational leadership. Historical review of leadership theory and research; current developments in understanding leadership. Students examine their own leadership style and plan for continued development as a leader.

HOL 8705. Organizational Culture. 3 Credits.
Theory and research on organizational culture, from the multidisciplinary seminal works in anthropology, psychology, sociology, and management to current day theorizing and empirical research on culture. The rituals, values, and behaviors that differentiate cultural groups and the way cultural identities manifest themselves in organizational practices; and how organizational culture evolves and its relationship to other organizational phenomena such as innovation, strategy, sensemaking, and performance. Current trends in organizational culture theorizing.

HOL 8706. Interdisciplinary Readings in Human and Organizational Learning. 3 Credits.
Seminal works from various disciplines related to current research and practice.

HOL 8707. Advanced Organizational Learning. 3 Credits.
The psychological and sociological paradigms associated with the learning of a collective whole.

HOL 8708. Introduction to Doctoral Research. 3 Credits.
An introduction to scholarly inquiry for doctoral students. The role of the scholar-practitioner; types of scholarly inquiry and their components; diverse paradigms used to frame scholarly inquiry; and critical thinking skills for evaluating research in human and organizational learning.

HOL 8720. Seminar: Applied Research in Human and Organizational Learning. 3 Credits.
Identification of initial constructs and theories that support the identified research interest, with a problem statement and critical analysis of research reports and review of research literature.

HOL 8721. Practicum in Human and Organizational Learning. 3-6 Credits.

HOL 8722. Seminar: Advanced Issues in Human and Organizational Learning. 1-12 Credits.
Forum in which candidates critically examine relevant classic and contemporary literature, with analysis and synthesis to defend their research questions and conceptual frameworks.

HOL 8723. Organizations and Strategy in Human Resource Systems. 3 Credits.
Overview of paradigms, theories, models, and constructs of organizations and strategy to understand organizations and their environments.

HOL 8724. Creating and Planning Doctoral Research. 3 Credits.
This course helps to ensure that your research is translational, i.e that it leads to practical applications that enhance the wellbeing and productivity of humans and organizations. It helps you ensure that all of the components of your research study are aligned, e.g., your chosen paradigm and related theories and constructs, research question(s), and design elements such as data collection and analysis techniques. Finally, it will help you ensure that you complete your dissertation. You will develop a project plan that specifies your goals, deliverables, schedule and budget. In sum, this course makes certain that your research is applicable, properly designed, and well planned. Prerequisite: none. Recommended background: Students learn to develop an evidence-based problem statement, design a conceptual framework, craft a research question, and conduct a literature review. Fundamental principles of both qualitative and quantitative research and various research strategies and designs.

HOL 8741. Managerial and Organizational Cognition. 3 Credits.
The emerging field of collective cognition in organizations, including theoretical foundations and seminal and current literature on knowledge structures and their role in strategy formation, organizational change, and sensemaking.

HOL 8742. Work, Identity, and Adult Development. 3 Credits.
The influence of work on identity, intellectual and personality development, and other developmental attributes. Same as CNSL 8253/HDEV 8253.

HOL 8746. Work Groups and Teams in Organizations. 3 Credits.
Theoretical understanding and practical considerations of working with groups and teams. Group dynamics, facilitating and leading groups, and member roles. Group facilitation techniques across different group settings and environments.

HOL 8997. Preparation and Delivery of Doctoral Research. 3 Credits.
Students develop and present a mock dissertation proposal, receiving feedback from faculty and colleagues in order to refine their proposal. Prerequisites: none. Recommended background: Students are expected to have developed a literature review, conceptual framework, and research question for their dissertation research prior to enrolling in this class.

HOL 8998. Predissertation Seminar. 3-6 Credits.
Platform for further development of the dissertation proposal.

HOL 8999. Dissertation Research. 3,6 Credits.
Prerequisite: HOL 8998.

HUMAN SERVICES & SOCIAL JUSTICE (HSSJ)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HSSJ 1100. Introduction to Human Services and Social Justice. 3 Credits.
Human services and social justice theory, research, and practice; historical and intellectual development, community-based scholarship, and the context of Washington, D.C.

HSSJ 1150. NonProfit Management. 3 Credits.
Since the 1950s, there has been enormous expansion of non-profit organizations around the world that shows no signs of slowing down any time soon. Currently, around 12 billion USD are given globally to non-profits from international entities (such as the United Nations and the European Union), national and local governments, foundations, and private donors. NGOs, large and small, are becoming premiere providers for the delivery of social services, health care, education, and other service-oriented endeavors, especially in hard to reach communities. Thus understanding how NGOs are formed and managed is crucial for anyone planning on working in the field, or even in government where services are contracted out to NGOs. We will begin the class by reviewing the structure of NGOs and their organizational culture before delving into how NGOs are managed by focusing on case studies and on-site field experiences with NGOs.

HSSJ 1177. Organizing for Social Justice in Human Services. 3 Credits.
Theory in community organizing and social justice is connected with an opportunity to explore how it is applied directly in the field. Methods used by non-profit organizations and campaigns to address issues in human services.

HSSJ 2160. Role of NGOs in International Humanitarian Assistance. 3 Credits.
The increasing role of nongovernmental organizations (NGOs) as providers of service and care for vulnerable individuals and communities in need; development of NGOs, the place they hold in international interventions, and the types of services they provide.

HSSJ 2170. Interpersonal Relationships in Human Services. 3 Credits.
Exploration of the theories, principles, and practices of ethically sound professional interpersonal relationships in the context of human services. Topics include forming, bounding, maintaining, and ending relationships; basic helping skills; working in, through, and with difference; working with groups or teams; and self care. May involve fieldwork. Restricted to majors and minors in the field or with permission of the instructor.

HSSJ 2171. Human Interactions: Child and Adolescent Development. 3 Credits.
Human development from infancy to young adulthood. Dominant psychosocial, cognitive, and physical competencies; motivational changes; coping styles; and normative and non-normative behaviors. Three hours per week of service learning in an appropriate agency setting are required in addition to lectures.

HSSJ 2172. Human Interactions: Adult Development. 3 Credits.
Human development from young adulthood to old age. Dominant psychosocial, cognitive, and physical competencies; motivational changes; coping styles; and normative and non-normative behaviors. Three hours per week of service learning in an appropriate agency setting are required in addition to lectures.

HSSJ 2200. Principles of Ethical Leadership. 3 Credits.
The practices and commitments of ethical leaders to enhance organizational effectiveness, engage diverse perspectives, clarify values and mission, and promote commitment to shared purposes.

HSSJ 3100W. Program Planning & Evaluation. 3 Credits.
Program planning and development as essential aspects of human services agencies. Analysis through case studies and on-site field experience of processes by which agency needs are assessed and programs planned. Community-based research. Restricted to HMSR or HSSJ majors or minors or permission of the instructor. Prerequisites: PSC 2101 OR PSYC 2101 OR SOC 2101. Same as HSSJ 3100.

HSSJ 3110W. Nonprofit and Organizational Management. 3 Credits.
Organizational theory and program administration in community agencies; staff recruitment and development; fiscal operations including funding; facilities; and effective community relations. Community-based research. Restricted to human services majors or minors. Recommended background: SOC 2101.

HSSJ 3152. Fact/Field/Fiction: Intersections in HSSJ. 1-6 Credits.
Integration of theoretical, empirical, and practical knowledge with real-world issues in human services through socially just practices. Students conduct community-based research and complete a significant service-learning experience at an approved not-for-profit organization (approximately 16 hours per week).

HSSJ 4133. Supervised Experience in HSSJ. 3-6 Credits.
Supervised independent work on an issue within the field of human services for approximately 100 hours. Research paper. Limited to majors and minors who have taken at least one HSSJ course beyond HSSJ 1100. Admission by permission of program director and supervising instructor.

HSSJ 4193. Research and Independent Study. 1-6 Credits.
Students explore a topic relevant to human services in depth by designing, conducting, evaluating, and presenting original research.

HSSJ 4195. Capstone Seminar in Human Services and Social Justice. 3 Credits.
Culminating experience synthesizing the knowledge, skills, abilities, and attitudes needed to address complex real-world issues in socially just ways; integration and reflection on the key theories, research, practices, issues, and policies addressed throughout the program. Restricted to program majors in their final spring semester.

HSSJ 4198. Special Topics. 1-3 Credits.
Topics to be announced in the Schedule of Classes. May be repeated for credit provided topic differs.

INFORMATION SYSTEMS TECHNOLOGY MANAGEMENT (ISTM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ISTM 3119. Introduction to Programming. 3 Credits.
For students already familiar with basic computer concepts, who will learn a programming language, such as Visual Basic, useful for business applications. Emphasis on computer applications in accounting and management information systems through hands-on programming. Prerequisite: BADM 2301.

ISTM 4120. Business Systems Development. 3 Credits.
Analysis, design, and implementation of management information systems (MIS). Structured methodologies and techniques for various stages of the MIS development process. Computer-aided software engineering tools. May be taken for graduate credit with permission of program director and instructor. Prerequisites: CS 1111 or ISTM 3119 or permission of instructor.

ISTM 4121. Database Principles and Applications. 3 Credits.
Theory, architecture, and implementation of database management systems in corporate and organization information systems; fundamental concepts of database management and processing; hands-on experience with database management packages. Prerequisites: CS 1111 or ISTM 3119 or permission of instructor.

ISTM 4123. Business Data Communications. 3 Credits.
A technical overview of data communication concepts that are useful in the design and management of local and wide area networks. Internet technologies and their business applications are emphasized. Prerequisite: BADM 2301.

ISTM 4123W. Business Data Communications. 3 Credits.
A technical overview of data communication concepts that are useful in the design and management of local and wide area networks. Internet technologies and their business applications are emphasized. Prerequisite: BADM 2301.

ISTM 4130W. Writing On The Ethics of Technology. 3 Credits.
Complex ethical dilemmas inherent in the introduction of new technologies and the influence human behavior asserts on these problems. Students write stories to explore and evaluate specific ethical problems relative to technology from various perspectives.

ISTM 4215. Human-Computer Interaction. 3 Credits.
An introduction to and overview of the field of human-computer interaction (HCI), an interdisciplinary field that integrates theories and methodologies from computer science, cognitive psychology, design, and other areas. Readings cover current theory and practice in interface specification, design, and evaluation, and include current and classic research papers in the field.

ISTM 4900. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated once for credit.

ISTM 4900W. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated once for credit.

ISTM 4995. Independent Study. 3 Credits.
Assigned topics. Admission by prior permission of advisor. May be repeated once for credit.

ISTM 6201. Information Systems Development and Applications. 3 Credits.
The information systems life cycle evaluated in terms of technologies, impact, and management. Structured and object-oriented analysis, prototyping, software reuse, testing, life-cycle costs, software development environments, and organizational and behavioral aspects of development projects. Prerequisite: ISTM 4120 and M.S.I.S.T. candidacy or departmental approval.

ISTM 6202. Relational Databases. 3 Credits.
Introduces the theory of relational databases and commences an in-depth discussion of Relational database theory and design at the conceptual, logical, and physical levels. Structured query language (SQL) is covered in depth. Prerequisite: ISTM 4121 and M.S.I.S.T. candidacy or departmental approval.

ISTM 6203. Telecommunications and Enterprise Networks. 3 Credits.
The technologies and applications of telecommunication systems in the commercial and public sectors with emphasis on wireless, mobile, and Internet communication protocols. Systems technology and configurations to support business application requirements are evaluated. Functional characteristics of network technologies. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6204. Information Technology Project Management. 3 Credits.
Project and program management practices with an emphasis on information technology projects. The basic tools of project management: work breakdown structure, cost, schedule and performance goal setting, and risk analysis. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6205. Internet Computing. 3 Credits.
Concepts, architectures, frameworks, and technology of web application development. The Internet as hardware and software architecture for creating business applications. Web and web application servers, system development methods and techniques, client-side and server-side scripting. Prerequisite: ISTM 3119 and M.S.I.S.T. candidacy or departmental approval.

ISTM 6206. Information Systems Security. 3 Credits.
Comprehensive examination of computer security issues from the design, management, and business information system ownership perspectives. System security concepts, methods, and policies from the design and planning stages to multi-level system implementation. Design of risk assessment strategies to achieve security goals. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6207. Information Resources Management. 3 Credits.
Information resources management strategically assesses and exploits information technology assets for competitive advantage. The CIO role in information resources management, planning, security, information integration, enterprise model development, and data administration. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6209. Web and Social Analytics. 3 Credits.
Concepts, techniques, and tools of collecting, analyzing, and reporting digital data concerning how users interact with organizations through the Internet and social media; business intelligence; key performance indicators; new business models.

ISTM 6210. Integrated Information Systems Capstone. 3 Credits.
Capstone project course in which students apply conceptual and technical knowledge in analyzing, planning, and designing an on-line information system. Culminates with system proposal/design presentations. Restricted to eligible students in their final semester. Prerequisite: ISTM 6201– ISTM 6207 and M.S.I.S.T. candidacy or departmental approval.

ISTM 6211. Data Warehousing and Online Analytical Processing. 3 Credits.
Introduction to the theory of data warehousing, dimensional data modeling, and online analytical processing (OLAP) through case studies, technology, and a design project. Prerequisite: ISTM 6202 and M.S.I.S.T. candidacy or departmental approval.

ISTM 6212. Data Management for Analytics. 3 Credits.
Relational databases, data warehousing, and dimensional modeling. Practical experience with these and other traditional and contemporary methods for managing and analyzing data at scale, including Unix command line and Apache Spark.

ISTM 6213. Enterprise Web and Database Applications. 3 Credits.
Enterprise applications concepts, architecture, and technologies for emerging technologies and IT frameworks. The Internet as a major resource for globally distributed applications using grid and utility computing. Web servers, development methods and techniques, data stores for massively distributed applications, and client/server side scripting. Prerequisite: ISTM 6202, ISTM 6205 and M.S.I.S.T. candidacy or departmental approval.

ISTM 6214. Advanced Programming and Business Applications. 3 Credits.
Advanced programming design, development, and analysis topics with an emphasis on business applications. Problem modeling and development of algorithm solutions. Basic data structures and algorithms, such as linked list, stack and tree, graph theory, sorting and searching. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6215. Human-Computer Interaction. 3 Credits.
Human–computer interaction as an interdisciplinary endeavor integrating theories and methodologies from computer science, cognitive psychology, design, and many other areas. Theory and practice in interface specification design and evaluation, and research. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6221. Management Perspectives in Electronic Commerce. 3 Credits.
The tools, skills, and business concepts surrounding the emergence of E-commerce and its information technologies from operational and strategic perspectives. E-commerce security, privacy, content selection and rating, authentication, encryption, acceptable use policies, intellectual property rights, and legal liabilities. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6222. IS/IT Strategy and Implementation. 3 Credits.
The development and implementation of information systems and technology strategies designed to align with and maximize business strategy applications and approaches in a challenging and increasingly global business environment. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6223. Technology Entrepreneurship. 3 Credits.
Case studies on the innovation–entrepreneurship processes used to launch and build new ventures based on information technology and on technology more broadly. Organizing for innovation, raising venture capital, managing the small technology-based venture, marketing technology products and services, intellectual property considerations, and new venture proposal development. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6224. Management of Technology and Innovation. 3 Credits.
Business, technological, economic, and political factors that influence the development and deployment of new technology products, processes, and services. Concepts and practices useful in managing technology and enhancing corporate innovation, corporate organizational alternatives, new approaches, and sources of competitive advantages. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6225. Enterprise Architecture. 3 Credits.
Concepts of enterprise architecture as a management tool for organizations to align their information technology assets, people, operations, and projects with operational characteristics. Service-oriented architectures, performance reference models, configuration management, system development life cycles, and tiered application architectures. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6226. Principles of Information Systems. 3 Credits.
Overview of all information systems, including integration of management, information, and systems concepts into a unified framework. Management information systems development, design, implementation, evaluation strategies.

ISTM 6232. ISTM6242201303. 3 Credits.
Technology transfer among advanced countries and LDCs. Comparative science and technology policies and capabilities of countries. Technology basis for international trade, licensing, patenting, and joint ventures. Global transfer of military technologies and export controls. Technology in economic development.

ISTM 6233. Emerging Technologies. 3 Credits.
Exploration of new developments in scientific and technological innovation, including automation, energy, medicine, bioengineering, social science, information technology, and space. Emphasis on forecasting these technological advances and assessing their economic and social effects. The role of advancing technology in driving social change.

ISTM 6234. New Venture Financing. 3 Credits.
Fundamentals and practice of due diligence and screening of early-stage investment opportunities. Same as FINA 6234.

ISTM 6239. Sem:Competitiveness/Technology. 3 Credits.
Capstone course integrating the field of management of science, technology, and innovation. Commercialization of technology in the private sector and the impact on competitiveness. Implementation of technology in the public sector. Technology development, from new product concept to utilization. Prerequisite: ISTM 6224 or MBAD 6253; ISTM 6232 or ISTM 6233 or permission of instructor.

ISTM 6243. Human Factors in Information Systems. 3 Credits.
The user–computer interaction, human factors of on-line dialogues, interfacing, and various approaches to user–system interaction. Emphasis on the development and evaluation of user–computer interfaces using software such as Visual BASIC and Windows.

ISTM 6251. Info Systems Applications. 1.5 Credit.

ISTM 6290. Special Topics. 1-3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated once for credit.

ISTM 6298. Directed Readings and Research. 1-3 Credits.

ISTM 8300. Thesis Seminar. 3 Credits.

ISTM 8333. Seminar: Management of Science, Technology, and Innovation. 3 Credits.

ISTM 8340. Philosophical Issues in Information Systems. 3 Credits.
Seminar for doctoral students interested in information systems. Various philosophical traditions and insights from those traditions applied to problems in information systems.

ISTM 8341. Advanced Topics in MIS Rsrch. 3 Credits.
For information systems doctoral students. Seminal papers and leading methods and instruments as applied to MIS research.

ISTM 8385. Special Topics in Research Methods. 3 Credits.
Research problems and issues related to student dissertations form topics for readings, group discussions, and assigned papers.

ISTM 8390. Philosophical Foundations of Administrative Research. 3 Credits.
Philosophy of science as applied to research in administration. Topics include the nature and current problems of epistemology, the development and role of theories, and the relationship between theory, methodology, and empirical data.

ISTM 8391. Advanced Problems in Research Methodology. 3 Credits.
Use of models and theoretical frameworks in research; formulation of research questions, hypotheses, operational definitions, research designs, sampling and data analysis approaches. For doctoral candidates who have completed the general examination and all courses and are preparing for their dissertation.

ISTM 8397. Doctoral Seminar. 1-3 Credits.
Current research and scholarly issues in management science.

ISTM 8398. Advanced Rdgs and Research. 1-12 Credits.
Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

ISTM 8399. Dissertation Research. 1-12 Credits.
Limited to doctoral candidates. May be repeated for credit.

INTERIOR ARCHITECTURE AND DESIGN (IAD)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

IAD 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

IAD 2200. Studio 1. 6 Credits.
Introduction to the design process through consideration of the theory and application of design principles and elements to specific studies of the built environment. Restricted to Major: 1206 - Interior Architecture and Design, Level: 01- Undergraduate. (Same as IAD 6200).

IAD 2210. Sketching Architecture and Interiors. 3 Credits.
Free-hand sketching developed and applied as a tool in all phases of the creative design process. Restricted to Major: 1206- Interior Architecture and Design, Level: 01- Undergraduate. Recommended background: FA 1021.

IAD 2987. Internship. 0 Credits.
Candidates for the B.F.A. in Interior Architecture and Design degree enroll in this course in order to complete the program's 120-hour internship requirement. The internship must be pre-approved by the departmental undergraduate advisor and must be completed while the student remains enrolled in the degree program.

IAD 3300. Studio 2. 6 Credits.
All phases of design, beginning with development of a concept through producing a complete presentation. How a project evolves from program requirements to a creative and functional interior. Prerequisites: IAD 2200. Restricted to majors only.

IAD 3304. Interior Materials. 3 Credits.
All phases of textile production, including standards, testing, and specifications. Properties, regulations, and installation of interior finish materials. Restricted to Major: 1206 - Interior Architecture and Design, Level: 01- Undergraduate. Prerequisites: IAD 2200. (Same as IAD 6304).

IAD 3304W. Interior Materials. 3 Credits.
All phases of textile production, including standards, testing, and specifications. Properties, regulations, and installation of interior finish materials. Restricted to Major: 1206- Interior Architecture and Design, Level: 01-Undergraduate. Prerequisites: IAD 2200. (Same as IAD 6304).

IAD 3305. Graphic Communications. 3 Credits.
Development of multimedia techniques in rendering. Advanced three-dimensional drawing using rapid visualization techniques, sketching, and constructed drawings. Prerequisites: IAD 2200. Restricted to Major: Interior Architecture and Design, Level: 01- Undergraduate.

IAD 3310. Digital Drafting & Modeling. 3 Credits.
Introduction to CAD technology, two-dimensional drawings, plotting and enhancement of presentations. Use of CAD for the production of construction drawings. Restricted to Major: Interior Architecture and Design, Level: 01-Undergraduate.

IAD 3400. Studio 3. 6 Credits.
Multifaceted and complex problems in commercial design, including codes and regulations pertaining to commercial interiors; development of collaborative learning. Prerequisites: IAD 3300. Restricted to majors only.

IAD 3405. History of Modern Architecture and Design. 3 Credits.
Overview of 20th and 21st century architecture, interiors, and furniture of significant and unique houses and smaller commercial buildings. Students may not earn credit for both IAD 3405 and IAD 1000 if similar material is covered. Restricted to Major: Interior Architecture and Design, Level: 01- undergraduate. Prerequisites: IAD 3300. (Same as IAD 6405).

IAD 3410. Sustainability and LEED for Architecture and Design. 3 Credits.
Consideration of the process by which structures and spaces can be awarded LEED (Leadership in Energy and Environmental Design) certification and the examination that enables individuals to become LEED-accredited professionals. Restricted to Major: Interior Architecture and Design, Level: 01-Undergraduate. Prerequisites: Studio 2 IAD 3300.

IAD 4500. Studio 4. 6 Credits.
Continuation and refinement of the design process to further advance conceptual thinking for development of larger-scaled and more complex design problems.Prerequisites: IAD 3400. Restricted to majors only.

IAD 4505. Lighting & Acoustics. 3 Credits.
Terminology, concepts, and principles of lighting design. Light and energy, incandescent and gaseous discharge lamps, luminaries, task requirements, measurement and calculations, human factors, and design applications. Acoustic principles as they relate to building design. Restricted to Major: Interior Architecture and Design, Level: 01-Undergraduate. Prerequisites: IAD 3400.

IAD 4510. Pre-Design for Studio 5. 3 Credits.
Application of advanced topics in design theory; research methodology applied to development of the senior project. Restricted to Major: Interior Architecture and Design, Level- 01: Undergraduate. Prerequisites: IAD 3400.

IAD 4600. Studio 5. 6 Credits.
Culmination of skills and knowledge accumulated through the program as demonstrated by development of an interior design project covering all aspects from conception through presentation. Restricted to Major: Interior Architecture and Design, Level: 01-Undergraduate. Prerequisites: IAD 4500.

IAD 4605. Professional Practice. 3 Credits.
A service-learning course that combines classroom instruction with practical learning. Students work with interior designers, architects, or industry-related professionals to provide a creative and realistic solution to the challenges of a pro-bono design project within the local community. Course concepts cover issues related to the practice of a professional interior designer, including business procedures, legal implications, ethics, trade relations, and designer-client-contractor relations. Restricted to Major: Interior Architecture and Design, Level: 01-Undergraduate. Prerequisites: IAD 4500.

IAD 4605W. Professional Practice. 3 Credits.
A service-learning course that combines classroom instruction with practical learning. Students work with interior designers, architects, or industry-related professionals to provide a creative and realistic solution to the challenges of a pro-bono design project within the local community. Course concepts cover issues related to the practice of a professional interior designer, including business procedures, legal implications, ethics, trade relations, and designer-client-contractor relations. Prerequisite: IAD 4500. Restricted to majors only.

IAD 4610. Structures & Building Systems. 3 Credits.
Organization and preparation of construction documents; methods and materials; and application of codes. Building systems (mechanical, electrical, plumbing) as related to function and design of interior spaces. Restricted to Major: Interior Architecture and Design, Level: 01-Undergraduate. Prerequisites: Studio IAD 4500.

IAD 6200. Studio I. 6 Credits.
Introduction to the theory and application of design principles and elements in the built environment while establishing a thorough understanding of the design process. Restricted to Graduate level Interior Architecture and Design majors.

IAD 6204. Graphic Communications. 3 Credits.
Development of multimedia and digital techniques to express design concepts and intent. Restricted to Major: 1206- Interior Architecture and Design, Level: 02 - Graduate.

IAD 6210. Sketching Architecture and Interiors. 3 Credits.
Free-hand sketching developed and applied as a tool in all phases of the creative design process. Materials fee. Restricted to interior architecture and design majors.

IAD 6300. Studio 2. 6 Credits.
Applying design fundamentals from Studio 1 to small-scale interior architectural spaces. Prerequisites: IAD 6200. Restricted to Major: 1206 - Interior Architecture and Design, Level: 02-Graduate.

IAD 6304. Interior Materials. 3 Credits.
Introduction to building materials with an emphasis on detailing and construction. Restricted to Major: 1206 - Interior Architecture and Design, Level: 02- Graduate. Prerequisites: IAD 6200.

IAD 6310. Digital Drafting & Modeling. 3 Credits.
Introduction to CAD technology, two-dimensional drawings, plotting and enhancement of presentations. Use of CAD for the production of construction drawings. Prerequisites: IAD 6200. Restricted to Major: 1206-Interior Architecture and Design, Level: 02- Graduate.

IAD 6400. Studio 3. 6 Credits.
Continued exploration of the design process as applied to medium scale projects. Prerequisites: IAD 6300. Restricted to Major: 1206 - Interior Architecture and Design, Level: 02-Graduate.

IAD 6405. History of Modern Architecture and Design. 3 Credits.
Overview of 20th and 21st Century architecture, interiors, and furniture. Prerequisites: IAD 6300. Restricted to Major: 1206-Interior Architecture and Design, Level: 02- Graduate.

IAD 6410. Sustainability/LEED: Arch&Des. 3 Credits.
Application of sustainable design as well as introduction to the United States Green Building Council's LEED Rating System. Prerequisites: IAD 6300. Restricted to Major: 1206-Interior Architecture and Design, Level: 02-Graduate.

IAD 6500. Studio 4. 6 Credits.
Continuation and refinement of the design process to further advance conceptual Thinking for development of larger-scaled and more complex design problems. Prerequisites: IAD 6400. Restricted to Major: 1206 - Interior Architecture and Design, Level: 02-Graduate.

IAD 6505. Lighting & Acoustics. 3 Credits.
Terminology, concepts, and principles of lighting design; acoustic principles as they relate to building design. Prerequisites: IAD 6400. Restricted to Major: 1206 - Interior Architecture and Design, Level: 02-Graduate.

IAD 6510. Pre-Design for Studio 5. 3 Credits.
Investigation and research of several topics to inform capstone project in Studio 5. Prerequisites: IAD 6400. Restricted to Major: 1206-Interior Architecture and Design, Level: 02-Graduate.

IAD 6600. Studio 5. 6 Credits.
Culmination of skills and knowledge from the program in the development of a capstone project specific to each student. Prerequisites: IAD 6500. Restricted to Major: 1206- Interior Architecture and Design, Level: 02- Graduate.

IAD 6605. Professional Practice. 3 Credits.
Students work with professional interior designers, architects, or related professionals as they participate in a project-based setting. Roles and responsibilities of the professional interior designer: business procedures, legal implications, ethics, trade relations, designer-client-contractor relations. Students select a pro-bono design project within the local community and work together to provide a creative and realistic solution. Prerequisites: IAD 6500. Restricted to majors only.

IAD 6610. Structures and Building Systems. 3 Credits.
Organization and preparation of construction documents; methods and materials; and application of codes. Mechanical, electrical, and plumbing building systems as related to function and design of interior spaces. Restricted to Major: 1206-Interior Architecture and Design, Level: 02-Graduate. Prerequisites: IAD 6500.

IAD 6987. Internship. 0 Credits.
Candidates for the MFA in Interior Architecture and Design degree enroll in this course in order to complete the program's 120-hour internship requirement. The internship must be pre-approved by the departmental graduate advisor and must be completed while the student remains enrolled in the degree program. Restricted to students in the MFA in IAD program.

INTERIOR DESIGN (INTD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

INTD 3141. Color Theory. 3 Credits.
Intensive exploration of the objective rationale and subjective experience of color in interiors through execution of problems in color contrast and color scales.

INTD 3150. Special Topics. 3 Credits.
A theoretical and practical in-depth exploration of a specific area of interior design. Topic to be announced in the Schedule of Classes.

INTD 3160. Individual Problems & Research. 1-6 Credits.
Independent research on selected topic. Research proposal must be approved by program advisor prior to registration. May be repeated for credit with permission.

INTD 3160W. Individual Problems & Research. 1-6 Credits.

INTD 4104. Studio III: Institutional. 3 Credits.
Application of theories of human behavior and design in large-scale institutional settings, including public and private facilities serving medical, educational, and extended-care needs. Prerequisite: IntD 4103, 4113, and 2121.

INTD 4123. Methods&Materials-Bldg Const.. 3 Credits.
Study of building systems as they relate to design and function of interior spaces: mechanical, electrical, HVAC systems. Environmental concerns: energy, daylighting, acoustics. Prerequisite: IntD 4103.

INTD 4133. Textiles & Finish Materials. 3 Credits.
Textiles and finish materials for commercial and residential interiors. Physical properties, application, testing, regulations, and specification.

INTD 4133W. Textiles & Finish Materials. 3 Credits.

INTD 4134. Internship. 3 Credits.
Application of knowledge and skills in project-based setting for a local firm. Appropriate placement and sponsor participation required prior to registration. Topics include business procedure and practice, legal and ethical issues, and designer-client-contractor relations. Prerequisite: IntD 4103 and permission of instructor.

INTD 4134W. Internship. 3 Credits.

INTD 4140. Adv. Computer-Aided Drafting. 3 Credits.
Application of advanced computer graphics using 3-D geometric modeling application programs to examine form and space in a practical in-depth exploration. Prerequisite: IntD 4113.

INTD 6104. Grad Studio III: Institutional. 3 Credits.
Multifaceted and complex problems in healthcare and institutional design. Further exploration of design theory, practical application and guidelines, and development of advanced studio work. Prerequisite: IntD 6103, 6113, and 6121.

INTD 6105. Graduate Project. 3 Credits.
Capstone studio. Application of design skills and knowledge, individual development of the design process, problem-solving skills, and evaluation and defense of the project. Admission by permission of instructor.

INTD 6112. Presentation Techniques. 3 Credits.
Development of multimedia techniques in rendering. Advanced three-dimensional drawing using rapid visualization techniques, sketching, and constructed drawings. Prerequisite: IntD 6101, 6111.

INTD 6124. Research Seminar. 1-3 Credits.
Application of advanced topics in design theory; research methodology applied to development of the graduate project. Prerequisite: IntD 6123.

INTD 6150. Special Topics. 3 Credits.
A theoretical and practical in-depth exploration of a specific area of interior design. Topic to be announced in the Schedule of Classes. Prerequisite: permission of instructor.

INTD 6160. Individual Problems & Research. 1-6 Credits.
Independent research on selected topic. Research proposal must be approved by faculty prior to registration. May be repeated for credit with permission. Admission by permission of instructor.

INTERNATIONAL AFFAIRS (IAFF)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

IAFF 1005. Introduction to International Affairs: A Washington Perspective. 4 Credits.
Open only to first-year students in the Elliott School. An introduction to the study of international affairs, integrating material designed to orient students to the Elliott School, the University, and the city of Washington. Students who have transferred into the Elliott School should take PSC 1003 instead of this course. Credit may not be earned for both IAFF 1005 and PSC 1003.

IAFF 2040. Basic Topics in International Affairs. 0-3 Credits.
Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Primarily for Elliott School freshmen and sophomores.

IAFF 2090. Latin America: Problems and Promise. 3 Credits.
An interdisciplinary course in Latin American studies designed to introduce undergraduates to the diverse, rich, and complex history, politics, economy, culture, and society of Latin America.

IAFF 2091. East Asia-Past and Present. 3 Credits.
An interdisciplinary course offering a comprehensive and integrated introduction to the civilizations and present problems of East Asia.

IAFF 2092. Russia and Eastern Europe: An Introduction. 3 Credits.
A multidisciplinary introduction to the lands and cultures of the former Soviet Union and Central and Eastern Europe. The main emphasis is on history and politics, with attention also given to economics, trade, geography, military matters, literature, and the media.

IAFF 2093. Africa: Problems and Prospects. 3 Credits.
Aspects of the environment, culture, and politics as they affect the present and anticipated future of Africa.

IAFF 2094. Europe: International and Domestic Interactions. 3 Credits.
A multidisciplinary view of contemporary Europe, including the E.U. states, other states of Eastern Europe, and Turkey. The widening processes of political, judicial, economic, cultural, and security integration. Prerequisite: IAFF 1005, PSC 1001.

IAFF 2190. Special Topics. 3 Credits.

IAFF 2190W. Special Topics. 3 Credits.

IAFF 3155. Spain in the Modern World. 3 Credits.

IAFF 3171. U.S. Foreign Policy Summer Program. 3-4 Credits.
The institutions and ideas that shape U.S. foreign policy, including the U.S. Congress and administration, foreign embassies, international organizations, think tanks, interest groups, and media outlets. A separate section of the course covers issues of reporting on foreign policy issues. The program has special admission criteria.

IAFF 3179. Special Topics in Science and Technology Policy. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3180. Special Topics in Security Policy. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3180W. Spec Topics in Security Policy. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3181. Special Topics in Conflict Resolution. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3182. Special Topics in Foreign Policy. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3183. Special Topics in Development Policy. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3184. Special Topics in Trade and International Economic Policy. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3185. Special Topics in European and Eurasian Studies. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3186. Special Topics in Asian Studies. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3186W. SpecialTopics in Asian Studies. 0-3 Credits.

IAFF 3187. Special Topics in Latin American and Hemispheric Studies. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3188. Special Topics in Middle East Studies. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3189. Special Topics in African Studies. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3190. Special Topics in International Affairs. 0-3 Credits.
The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3190W. Special Topics. 0-3 Credits.

IAFF 3192. ESIA Undergraduate Scholars Workshop. 1 Credit.
For Elliott School juniors and seniors who have applied to and been accepted into the ESIA Undergraduate Scholars Program. Students fine-tune their research questions, conduct the bulk of their research, draft abstracts, and outline their papers. See http://elliott.gwu.edu/academics/ugrad/scholars/index.cfm for more information.

IAFF 3193W. ESIA UG Scholars Course. 3 Credits.

IAFF 3195. Internship. 0-3 Credits.
Internships in public, private, and nonprofit organizations concerned with international affairs. Students must meet selection criteria, find a sponsoring faculty member, and receive approval from the Elliott School Office of Academic Advising and Student Services. May be repeated for up to 6 credits with permission.

IAFF 3198. Independent Study and Research. 1-3 Credits.
For juniors and seniors with a minimum grade-point average of 3.0. Students must find a sponsoring faculty member and receive approval from the Elliott School Office of Academic Advising and Student Services. May be repeated for credit with permission of the dean.

IAFF 4191. Research Seminar. 3 Credits.
Intensive readings, discussion, research, and writing. Students must meet selection criteria and receive advisor approval. For Elliott School juniors and seniors only. Restricted to For Elliott School juniors and seniors only.

IAFF 4191W. Research Seminar. 3 Credits.
Intensive readings, discussion, research, and writing. Students must meet selection criteria and receive advisor approval. For Elliott School juniors and seniors only.

IAFF 4199. Senior Thesis. 3 Credits.
For Elliott School seniors only. Students must meet selection criteria, find a sponsoring faculty member, and receive approval from the Elliott School Office of Academic Advising and Student Services.

IAFF 5700. Special Topics. 3 Credits.

IAFF 6101. IA Cornerstone. 3 Credits.
Political, economic, and social theories of international relations and their applications to practice.

IAFF 6102. Global Gender Policy. 3 Credits.
An interdisciplinary and comparative approach to examination of policies targeted at achieving gender equality and of the costs of policies that are not gender-specific. Topics include poverty reduction, environmental sustainability, social justice, global and personal security, and prevention of and responses to extreme calamities and crises. How global gender policies are rationalized, adopted, implemented, and assessed. Focus on "what works" and why it works; gaps that remain in achieving global gender equality.

IAFF 6106. Nuclear Weapons. 3 Credits.
The technology and politics associated with nuclear weapons. Strategy and deterrence, force planning and operations, and the prospect of nuclear terrorism.

IAFF 6118. Special Topics in International Affairs. 3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6121. International Development Studies Cornerstone. 3 Credits.
Introduction to the concepts and methods of international development. Open only to M.A. candidates in international development studies.

IAFF 6122. Development Policy and Practice. 3 Credits.
An overview of economic development in developing countries; key challenges of economic growth, poverty alleviation, and development.

IAFF 6136. Gender and Development. 3 Credits.
Theoretical approaches to gender and development and debates over how to promote gender equity and rights across the gender spectrum. Key issues in gender and development and the range of actors who are involved in promoting gender equality. General patterns, lessons with broader applications, and challenges and differences within and between societies.

IAFF 6137. Development Studies Pre-Capstone Workshop. 1 Credit.
Students work in teams to find a suitable client and negotiate a project, with detailed terms of reference and a work plan to be carried out in the spring semester. Open only to M.A. candidates in international development studies.

IAFF 6138. Special Topics in International Development Studies. 0-3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6139. International Development Studies Capstone. 3 Credits.
A project-oriented development course abroad, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Open only to M.A. candidates in international development studies.

IAFF 6141. International Science and Technology Policy Cornerstone. 3 Credits.
Introduction to the study of international science and technology policy; focus on policy issues that arise from interactions between scientific and technological developments and government activity.

IAFF 6142. Technology Creation/Diffusion. 3 Credits.
Examination of the relationship between invention (inception), innovation (first application), and dissemination (diffusion) of technological knowledge; focus on the technological environment prevailing in the major developed market economies.

IAFF 6145. U.S. Space Policy. 3 Credits.
Origins, evolution, current status, and future prospects of U.S. space policies and programs. U.S. civilian, military, and national security space programs and space activities of the U.S. private sector.

IAFF 6146. Space Law. 3 Credits.
The underlying principles of international space law, with emphasis on issues of particular concern as the uses of space increase for exploration, commerce, and security.

IAFF 6148. Special Topics in Space Policy. 3 Credits.
Topic announced in the Schedule of Classes.

IAFF 6151. Environmental Policy. 3 Credits.
Examination of public policies designed to protect the human and physical environment; focus on the ways science and technology can simultaneously create new environmental problems and contribute to their mitigation and prevention.

IAFF 6153. Science, Technology, and National Security. 3 Credits.
The contributions of science and technology to U.S. security in military, intelligence, and homeland security activities.

IAFF 6158. Special Topics in International Science and Technology Policy. 0-3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6159. ISTP Capstone Project. 3 Credits.
A seminar designed to synthesize the skills and knowledge that students have acquired in their graduate study. Open only to M.A. candidates in science and technology policy.

IAFF 6160. Defense Policy and Program Analysis. 3 Credits.
Examination of how national security policy is formulated and translated into a defense budget, program priorities, and force structure. Focus on nuclear forces.

IAFF 6163. Transnational Security. 3 Credits.
Overview of security concerns that transcend state borders, including terrorism, drug trafficking, organized crime, weapons proliferation, migration, and environmental degradation.

IAFF 6165. Fundamentals of Intelligence. 3 Credits.
The institutional structure of the intelligence community; the intelligence production cycle, including tasking, collection, analysis, covert action, and counterintelligence; and relations between the intelligence and policy communities.

IAFF 6167. DefensePolicy&ProgAnalysis II. 3 Credits.
Analysis of the development of national security policy and analytic techniques to derive a defense program and force structure from it. Special attention to general-purpose forces.

IAFF 6169. Homeland Security. 3 Credits.
The central missions of a homeland security agency: domestic security, emergency preparedness, technology policy, timely intelligence, counterintelligence, and preemptive actions. How the U.S. has dealt historically with internal security matters; contemporary approaches to security problems.

IAFF 6171. Introduction to Conflict Resolution. 3 Credits.
Interstate disputes, contemporary civil wars, complex political emergencies, and other forms of organized violence.

IAFF 6173. Security and Development. 3 Credits.
Consideration of the relationship between security and development reflecting the growing interest from the security field in issues that have traditionally been the purview of development, and vice versa.

IAFF 6186. Special Topics in Security Policy Studies. 3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6189. Security Policy Studies Capstone. 3 Credits.
A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Open only to M.A. candidates in security policy studies.

IAFF 6198. Special Topics in International Trade and Investment Policy. 0-3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6199. International Trade and Investment Policy Capstone. 1 Credit.
A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Open only to M.A. candidates in international trade and investment policy.

IAFF 6208. Special Topics in Global Communication. 0-3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6209. Global Communication Capstone. 3 Credits.
A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Open only to M.A. candidates in global communication.

IAFF 6211. MIPP Practicum. 3 Credits.
For Master of International Policy and Practice degree candidates only.

IAFF 6302. Taiwan: Internal Development and Foreign Policy. 3 Credits.
The social, political, and economic development in Taiwan since World War II; Taiwan's foreign affairs.

IAFF 6305. U.S.-South Asia Relations. 3 Credits.
The nature of challenges and opportunities facing the South Asia region and the U.S. policy response. The rise of India as a global actor; relations between India and Pakistan; political transformation in the countries of the region, including Nepal and Sri Lanka.

IAFF 6308. Intl Relations of South Asia. 3 Credits.

IAFF 6318. Special Topics in Asian Studies. 0-3 Credits.
Topics announced in Schedule of Classes.

IAFF 6321. European and Eurasian Studies Cornerstone. 3 Credits.
Survey of current research on Europe and Eurasia. Research paper required. Required of M.A. candidates in European and Eurasian studies; open to others with permission of the instructor.

IAFF 6338. Special Topics in European and Eurasian Studies. 0-3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6339. European and Eurasian Studies Capstone. 3 Credits.
Survey of current research on Europe and Eurasia. Research paper required. Required of M.A. candidates in European and Eurasian studies; open to others with permission of the instructor.

IAFF 6341. Latin American and Hemispheric Studies Cornerstone. 3 Credits.
Multidisciplinary foundation course for the Latin American and hemispheric studies program.

IAFF 6342. Drug Trafficking in the Americas. 3 Credits.
A historical, comparative, and contemporary picture of drug trafficking in the Americas and the anti-narcotics policies to combat this trade.

IAFF 6343. Indigenous Social Movements. 3 Credits.

IAFF 6357. Pre-Capstone Workshop. 1 Credit.

IAFF 6358. Special Topics in Latin American and Hemispheric Studies. 0-3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6359. Latin American and Hemispheric Studies Capstone. 3 Credits.
A project-oriented course, designed to apply the skills and synthesize the knowledge that students have acquired in their graduate study. Open only to M.A. candidates in Latin American and hemispheric studies.

IAFF 6361. Middle East Studies Cornerstone. 1 Credit.
Multidisciplinary foundation course for the Middle East studies program. Introduction to key issues.

IAFF 6362. RegionalSecurity in MiddleEast. 3 Credits.
The nature, elements, and future of security in the Middle East region. Various analytical frameworks are examined to consider the interplay of national interests, ideology, and regionalism. Issues in regional security.

IAFF 6363. PoliticalEconomy/Middle East. 3 Credits.
Current political economy of the Middle East, including an overview of Islamic economic concepts and political organizations.

IAFF 6364. Religion and Society in the Modern Middle East. 3 Credits.
Comparative overview, both historical and current, of religious and social trends in the Middle East.

IAFF 6378. Special Topics in Middle East Studies. 0-3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6379. Middle East Studies Capstone. 3 Credits.
A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Open only to M.A. candidates in Middle East studies.

IAFF 6501. Quant Analysis Int'l Aff Prac. 3 Credits.
Overview of quantitative measurement, data summary, statistical inference, and elementary modeling such as linear regression.

IAFF 6502. Professional Skills I. 1 Credit.
Short courses that focus on developing specialized skills for international affairs professionals. Topics announced in the Schedule of Classes.

IAFF 6503. Professional Skills II. 1 Credit.
Continuation of IAFF 6502. Short courses that focus on developing specialized skills for international affairs professionals. Topics announced in the Schedule of Classes.

IAFF 6504. Intermediate Conversation. 1 Credit.
Short courses designed to develop professional language skills for international affairs students. Specific languages announced in the Schedule of Classes.

IAFF 6505. Elliott School Seminars. 0-3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6515. Graduate Internship in International Affairs. 0 Credits.
Limited to Elliott School M.A. degree candidates. Internship and research paper involving experience at an international organization or with international issues.

IAFF 6516. Independent Study and Research. 1-3 Credits.
Limited to Elliott School M.A. degree candidates. Written permission of instructor required.

IAFF 6517. Independent Study and Research. 1-3 Credits.

IAFF 6521. U.S. Foreign Policy Summer Program. 3-4 Credits.
The institutions and ideas that shape U.S. foreign policy, including the U.S. Congress and administration, foreign embassies, international organizations, think tanks, interest groups, and media outlets. A separate section of the course covers issues of reporting on foreign policy issues.

IAFF 6898. Capstone Workshop. 1 Credit.
The first part of a two-semester project that addresses a concrete policy problem or issue in international affairs. In small teams, students refine the policy question of the capstone project, develop a research strategy, select appropriate research methods, and begin research.

IAFF 6899. Capstone Course. 3 Credits.
Completion of the capstone sequence by conduct of the group's research, completion of the capstone report, and oral presentation of research findings and recommendations. Prerequisites: IAFF 6898.

IAFF 6998. Thesis. 3 Credits.
Open to Elliott School M.A. candidates who have selected the thesis option.

IAFF 6999. Thesis. 3 Credits.
Open to Elliott School M.A. candidates who have selected the thesis option.

INTERNATIONAL BUSINESS (IBUS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

IBUS 3001. Introduction to International Business. 3 Credits.
The international business environment, including social, cultural, political, technological, and institutional domains; multinational corporation strategic imperatives and organizational challenges, including financial, marketing, human resources, and other aspects of management. Prerequisites: ECON 1011 or HONR 2043 and ECON 1012 or HONR 2044.

IBUS 3001W. Introduction to International Business. 3 Credits.
The international business environment, including social, cultural, political, technological, and institutional domains; multinational corporation strategic imperatives and organizational challenges, including financial, marketing, human resources, and other aspects of management. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: ECON 1011 or HONR 2043 and ECON 1012 or HONR 2044.

IBUS 3101. Global Financial Environment. 3 Credits.
The international economic, trade, and financial environment in which global business operates and how developments in these areas affect business activity. Prerequisites: ECON 1011 or HONR 2043 and ECON 1012 or HONR 2044.

IBUS 3201. International Marketing Management. 3 Credits.
Introduction to international marketing analysis and strategy, and the dynamic nature of international markets. Analysis of different types of international markets and formulation of strategies at the entry and global stages. Prerequisites: IBUS 3001.

IBUS 3301. International Business Finance. 3 Credits.
Analysis of the international economic environment and its influence on corporate financial management of international operations. Prerequisites: IBUS 3001, IBUS 3101and BADM 3501.

IBUS 4202. Regional Strategy for Multinationals. 3 Credits.
The business, economic, investment, and market environments in different regions of the world; regional strategy framework for responding to business opportunities in regional markets. Prerequisites: IBUS 3001.

IBUS 4203. Foreign Market Analysis. 3 Credits.
Project course involving market research for target market selection, market entry strategy, in-country marketing plan, and recommendations for strategy implementation in the target country. Focus on consulting process as ancillary component. Prerequisite: IBUS 3001, except by permission of instructor, and IBUS 3201.

IBUS 4302. International Banking. 3 Credits.
Theory and practice of international banking; analysis of international commercial and investment banking from a management perspective; subjects include current international monetary and financial environment, money and capital markets, and topical problems of international banking from a management perspective. Prerequisite: IBUS 3001, except by permission of instructor, and IBUS 3301.

IBUS 4303. International Monetary and Financial Issues. 3 Credits.
How authorities deal with financial problems; macro-economic framework that underpins the financial sector and the role of financial oversight institutions; Role of central banks and the risks facing the international monetary and financial system. Prerequisites: IBUS 3001 or IBUS 3101 and IBUS 3301.

IBUS 4401. Managing the Multinational Enterprise. 3 Credits.
The changing nature of the international environment and the resulting effects on strategy of U.S. and foreign multinational corporations. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 4402. Managing in Developing Countries. 3 Credits.
Challenges of operating in developing countries; cross-country experience and case studies exploring issues of institutions, corruption, infrastructure, private–public partnerships, competition, regulation, and global standards. Prerequisites: IBUS 3001 or IBUS 3101.

IBUS 4402W. Managing-Developing Countries. 3 Credits.
Challenges of operating in developing countries. Cross-country experience and case studies exploring issues of institutions, corruption, infrastructure, private–public partnerships, competition, regulation, and global standards. Prerequisites: IBUS 3001 or IBUS 3002, or permission of instructor.

IBUS 4900. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 4900W. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 4995. Independent Study. 1-12 Credits.
Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 6201. International Marketing. 3 Credits.
International marketing strategy formulation, including market entry, local market development, and global market integration; strategic challenge of global marketing formulation and local market adaptation, with attention to market conditions in mature, new growth, and emerging market environments; emerging trends.

IBUS 6202. Regional Strategy for Multinationals. 0-3 Credits.
Development of a framework to understand dynamic business, cultural, and economic environments in Asia and Latin America. Regional business strategies of multinational companies from outside and within Asia and Latin America that respond to business opportunities and challenges in these regions.

IBUS 6290. Special Topics. 0-3 Credits.
Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

IBUS 6297. International Management Experience. 1-6 Credits.
May be repeated for credit.

IBUS 6301. International Business Finance. 3 Credits.
Analysis of major issues and developments in the international financial environment and their impact on multinational corporations and financial institutions.

IBUS 6302. Seminar: International Banking. 3 Credits.
Evolution in international banking and other international financial institutions. Functioning of international banking operations, public policy issues and regulatory issues in international banking, and the effect of international banks on national monetary policies.

IBUS 6303. External Development Financing. 3 Credits.
Institutions, instruments, and theory of external development financing; financial flows to developing countries; development finance and the role of international and regional development banks; policies, methods, and practices of the World Bank, the IMF, and others; technical assistance, training, capacity building, and role of institutions in sustained development. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6304. Financial Crises and the Global Economy. 3 Credits.
The causes of a financial crisis and how various countries have responded to their specific crises; the relationship between financial crises and other economic developments, particularly in emerging market and developing economies; how global financial arrangements have evolved to help manage the risks of contagion. Recommended background: graduate-level study in macroeconomics.

IBUS 6305. Global Investment Banking. 3 Credits.
Examination of investment banking as practiced in a global context from a strategic perspective using case studies and readings. Topics covered include securities underwriting and derivatives instruments, risk management, and business development strategies. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6306. Seminar: International Financial Markets. 3 Credits.
Survey of international financial markets, focusing on structure, operations, and pricing. Primary emphasis on markets for foreign exchange, Eurocurrency, international bonds, and commodities. Derivatives markets, especially swaps and options embedded in international securities issues. Prerequisite: IBUS 6301 and MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6307. International Portfolio Management. 3 Credits.
Theory and practice of international investment. Portfolio construction and optimization. Effects of exchange rate changes on portfolio risk and return. International asset pricing models and trading institutions. Prerequisite: MBAD 6234; either MBAD 6243 or ECON 6284.

IBUS 6308. Intl Reporting and Contrl. 1.5 Credit.

IBUS 6309. International Accounting. 1.5 Credit.

IBUS 6310. Intl Fin. Reporting Standards. 1.5 Credit.

IBUS 6400. Oil: Industry, Economy, and Society. 3 Credits.
Multidisciplinary approach to the study of oil and its effects on business, nation-states, and the world economy, based primarily on political economy and management perspectives. Topics include the oil industry, the global oil environment, and the potential effects of oil on a society. (Same as IAFF 6378).

IBUS 6401. International Business Strategy. 3 Credits.
Discussion of the changing nature of the international environment and the resulting impact on strategy of both U.S. and foreign multinational corporations. Various aspects of strategy are considered, including marketing, production, and financial strategy. The focus of discussion is at the company level.

IBUS 6402. Managing in Developing Countries. 3 Credits.
Challenges of operating in developing countries. Cross-country experience and case studies exploring issues of institutions, corruption, infrastructure, private–public partnerships, competition, regulation, and global standards.

IBUS 6403. International Business Negotiations. 3 Credits.
Theories and application in International Business Negotiations (IBN). Formulation of concepts and frameworks; development of systematic approaches to planning for and conducting IBN. Integration of functional, environmental, and institutional contexts facing negotiators internationally. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6404. New Global Competitive Framewk. 3 Credits.
How industries develop sustained competitive advantages within the global framework. The European Union's "single market" and the Economic–Monetary Union; the transformation of formerly centrally planned economies; the changing Japanese economy and emerging Pacific Basin, with implications for the U.S. economy, industries, and firms. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6405. Legal Aspects of International and Multinational Business. 3 Credits.
Legal environment of international and multinational business including legal systems, antitrust laws, regulation of direct investment, international arbitration and expropriation; topics of current interest. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6500. Global Currency and Stock Trading. 1.5 Credit.
Linkages of global events and risks and their impact on financial markets; foreign exchange market trading philosophies, techniques, strategies, and rules. Real-time practical training in trading major currencies, stocks, and managing an emerging markets portfolio in the GWSB Capital Markets Trading Room. Restricted to students in the World Executive MBA program.

IBUS 6501. International Finance. 1.5 Credit.
The international financial environment; balance of payments and exchange rate regimes; exchange rate determination; interest rate parity and the foreign exchange market; purchasing power parity and other international parity conditions; fundamental hedging techniques to manage foreign exchange exposure in international transactions. Restricted to students in the World Executive MBA program.

IBUS 6995. Directed Readings and Research. 3 Credits.
Supervised readings or research in selected fields within business administration. Admission by prior permission of instructor. May be repeated once for credit.

IBUS 6999. Thesis Seminar. 3 Credits.
No fixed content.

IBUS 8311. Seminar: Public–Private Sector Institutions and Relationships. 3 Credits.
An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Same as SMPP 8311.

IBUS 8361. Colloquium on International Business. 3 Credits.
Examination of selected topics in international business, with emphasis on major new theoretical and empirical developments. Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details.

IBUS 8397. Doctoral Seminar. 1-3 Credits.
No fixed content.

IBUS 8900. Thesis Research. 3 Credits.
No fixed content.

IBUS 8998. Advanced Readings and Research. 1-12 Credits.
Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

IBUS 8999. Dissertation Research. 1-12 Credits.
Limited to doctoral candidates. May be repeated for credit.

ITALIAN (ITAL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ITAL 1001. Basic Italian I. 4 Credits.
Handling the immediate context of daily experience in spoken and written Italian: identifying, describing, and characterizing people, objects, places, and events; giving information and instructions; issuing simple commands and requests. Laboratory fee.

ITAL 1002. Basic Italian 2. 4 Credits.
Speaking and writing in Italian about past and future events: telling a story (narrating and describing in the past), promising, predicting, and proposing simple hypotheses and conjectures. Prerequisite: ITAL 1001 . Laboratory fee.

ITAL 1003. Intermediate Italian I. 4 Credits.
Third-semester course designed for students with a basic overall knowledge of the Italian language; strengthens proficiency in listening, speaking, reading, and writing; enhances critical understanding of Italian culture. Course conducted in Italian. Prerequisite: ITAL 1002.

ITAL 1004. Intermediate Italian II. 3 Credits.
Consolidation and further expansion of the ability to understand as well as produce a more complex level of oral and written discourse emphasizing subjective expression: issuing indirect commands and requests; giving opinions; making proposals, building arguments; defending and criticizing ideas. Prerequisite: ITAL 1003 . Laboratory fee.

ITAL 2005. Language, Culture & Society I. 3 Credits.
Development of strong conversational skills and the rudiments of expository writing. The vocabulary and structures necessary to move from handling everyday experience and subjective expression to the exposition of more abstract thought and ideas and discussion of political, social, and cultural issues. Prerequisite: ITAL 1004. Laboratory fee.

ITAL 2006. Language, Culture & Society II. 3 Credits.
Continued expansion of the range and complexity of conversational skills and further development of the writing of effective expository prose on a broad range of subjects. Short literary texts serve as the basis for oral discussion, analytical reading, and writing brief critical essays. Prerequisite: ITAL 2005. Laboratory fee.

ITAL 3010. Advanced Italian Grammar and Style. 3 Credits.
Compositions, drills, dictations. Translations into Italian. Study of vocabulary and syntax with emphasis on stylistic devices. Prerequisite: ITAL 2006.

ITAL 3100. Introduction to Italian Literature. 3 Credits.
Readings, textual analysis, and writing on a broad selection of texts from different genres and periods. Emphasis on study of Italian literature in its cultural context. Close reading approach and introduction to literary vocabulary. Prerequisite: ITAL 2006 .

ITAL 3100W. Introduction to Italian Literature. 3 Credits.

ITAL 3201. History of Italian Literature from the Middle Ages Through the 17th Century. 3 Credits.
Lecture and discussion in Italian. Development of genre and movements. Selected readings across these periods plus reading of complete texts of epics, essays, novels, and plays. Prerequisite: ITAL 2006 .

ITAL 3202. History of Italian Literature from the 18th Through the 20th Century. 3 Credits.
Lecture and discussion in Italian. Philosophical and literary movements of the modern period. Selected readings across the period plus the reading of complete texts of novels and drama. Prerequisite: ITAL 2006 .

ITAL 3202W. History of Italian Literature from the 18th Through the 20th Century. 3 Credits.

ITAL 3290. Textual Analysis. 3 Credits.
Close examination of critical methods and vocabulary used in literary study as applied to Italian Literature. Attention to linguistic and stylistic difficulties in textual analysis. Prerequisite: ITAL 3100 .

ITAL 3300. Italian Literature and Culture in Translation. 3 Credits.
Dynamics of Italian-speaking societies and their cultures studied through literature, art, or film. Topics vary. Readings and lectures in English. The course may be repeated for credit. A laboratory fee may be required.

ITAL 3600. Special Topics in Italian Literature and Culture. 3 Credits.
May be repeated for credit provided the topic differs.

ITAL 4100. The Italian American Experience. 3 Credits.
The dynamics of the Italian American experience from its origins to the present day; what it is to be American, how ethnic identity should be expressed, and who has the power to control a group's representation. Taught in English.

ITAL 4183. History of Italian Film. 3 Credits.
Study of Italian films, directors, and styles, with films examined as aesthetic objects in their own right and in relation to the wider social and cultural environment. The verbal and visual language necessary for decoding and describing film. The course is conducted in English.

ITAL 4184. Contemporary Italian Cinema. 3 Credits.
Contemporary Italian culture viewed through an examination of Italian cinema of the twenty-first century; diversity, immigration and integration; gender and sexuality; and the changes brought about by economic upheaval and the changing role of work. Taught in English.

ITAL 4380. Italian Journeys Medieval to Postmodern. 3 Credits.
Italy's dual role as the home of legendary travelers and the destination for an endless stream of tourists. The reality and metaphor of travel viewed through travel diaries, ship logs, letters to patrons, maps, travel guides, poetry, and film. The course is conducted in English.

ITAL 4500. Studies in Medieval and Early Renaissance Literature. 3 Credits.
Works by Dante, Petrarca, and Boccaccio. Emphasis on structure, rhetorical features, and problems of narrative organization. Specific attention to historical and ideological aspects of the works as well as to cultural influence. Prerequisite: ITAL 3290 .

ITAL 4560. Modern Italian Novel. 3 Credits.
A reading of the most important Italian novelists of the 19th and the 20th centuries: Manzoni, Verga, Bassani, Calvino, Eco, Sanguinetti. Study of the relations of each work to its social and cultural context and to the novel as a genre. Prerequisite: ITAL 3290 .

ITAL 4800. Independent Study. 1-4 Credits.
Admission by permission of department chair and instructor. May be repeated for credit.

JAPANESE (JAPN)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

JAPN 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details. Restricted to First-year students in CCAS.

JAPN 1001. Beginning Japanese I. 4 Credits.
Fundamentals of grammar and pronunciation, with graded reading and practice in writing. Laboratory fee.

JAPN 1002. Beginning Japanese II. 4 Credits.
Continuation of JAPN 1001. Fundamentals of grammar and pronunciation, with graded reading and practice in writing. Laboratory fee.

JAPN 1005. Intensive Beginning Japanese. 8 Credits.
Intensive beginning course equivalent to JAPN 1001– JAPN 1002. Laboratory fee.

JAPN 2003. Intermediate Japanese I. 4 Credits.
Continuation of grammar, with emphasis on speaking, reading, and writing. Prerequisite: JAPN 1002 or JAPN 1005, or approval of instructor. Laboratory fee.

JAPN 2004. Intermediate Japanese II. 4 Credits.
Continuation of JAPN 2003. Continuation of grammar, with emphasis on speaking, reading, and writing. Prerequisite: JAPN 2003, or approval of instructor. Laboratory fee.

JAPN 2006. Intensive Intermediate Japanese. 8 Credits.
Intensive intermediate course equivalent to JAPN 2003– JAPN 2004. Prerequisite: Japn 1002 or JAPN 1005. Laboratory fee.

JAPN 3105. Intermediate Japanese III. 3 Credits.
Continuation of reading of texts, writing of short pieces, conversation, systematic review of grammar. Prerequisite: JAPN 2004 or JAPN 2006; or approval of instructor. Laboratory fee.

JAPN 3106. Intermediate Japanese IV. 3 Credits.
Continuation of JAPN 3105. Continuation of reading of texts, writing of short pieces, conversation, systematic review of grammar. Prerequisite: Japn 3105; or approval of instructor. Laboratory fee.

JAPN 3111. Japanese Literature in Translation. 3 Credits.
An introductory survey of Japanese literature read in English translation, including fiction, poetry, drama, essays, diaries, testimonials. The pre-modern period.

JAPN 3112. Japanese Literature in Translation. 3 Credits.
Continuation of JAPN 3111. An introductory survey of Japanese literature read in English translation, including fiction, poetry, drama, essays, diaries, testimonials. The modern period.

JAPN 3123. Introduction to Japanese Linguistics I. 3 Credits.
The structure of the Japanese language with focus on modern Japanese phonology, grammar, and pragmatics. Course is conducted in English.

JAPN 3124. Introduction to Japanese Linguistics II. 3 Credits.
Continuation of JAPN 3123. Focus on grammatical analysis of modern Japanese, the history of the Japanese language, and linguistic universals. Course is conducted in English.

JAPN 3132. Tale of Genji: Love and Politics. 3 Credits.
Social and aesthetic topics in Japanese culture and literature revealed in the story The Tale of Genji and examined in selected secondary sources.

JAPN 3162. Japanese Culture Through Film. 3 Credits.
Survey of the Japanese cultural heritage presented through films. Topics include literature, philosophy, art, religion, and social history from premodern times to the modern era. Lectures and discussion in English. (Same as ANTH 3709).

JAPN 4107. Readings in Modern Japanese I. 3 Credits.
Readings in selected modern literary works, social science materials, and documentary materials. Prerequisite: JAPN 3106 or approval of instructor.

JAPN 4108. Readings in Modern Japanese II. 3 Credits.
Continuation of JAPN 4107. Readings in selected modern literary works, social science materials, and documentary materials. Prerequisite: JAPN 3106 or approval of instructor.

JAPN 4109. Introduction to Bungo, Literary Japanese. 3 Credits.
Introduction to Bungo, the literary Japanese used in official government documents up to World War II, newspapers and journals through the Meiji period, and literature from the prose of the Tales of Ise to the poetry of Tawara Machi. Prerequisite: JAPN 3106 or approval of instructor.

JAPN 4110. Readings in Classical Japanese. 3 Credits.
Readings in premodern texts in Japanese literature, history, and philosophy. Prerequisite: JAPN 4109 or approval of instructor.

JAPN 4121W. Advanced Conversation and Composition I. 3 Credits.
Productive skills at the advanced discourse level, topic-specific practice of commonly used speech patterns and writing formats. Prerequisite: JAPN 3106 to JAPN 4121.

JAPN 4122W. Advanced Conversation and Composition II. 3 Credits.
Continuation of JAPN 4121. Productive skills at the advanced discourse level, topic-specific practice of commonly used speech patterns and writing formats. Prerequisite: JAPN 4121.

JAPN 4185. Directed Reading I. 3 Credits.
Reading of material in the student's field of interest. Admission by permission of instructor.

JAPN 4186. Directed Reading II. 3 Credits.
Continuation of JAPN 4185. Reading of material in the student's field of interest. Admission by permission of instructor.

JAPN 4198. Proseminar: Readings for the Major in Japanese Language and Literature. 3 Credits.
Recommended for all majors. Preparation for advanced research in Japanese sources. Practice in consulting Japanese reference material and translating sources for writing in English. Seminars on advanced reading, translation, and critical methodology. Prerequisite: JAPN 3106.

JAPN 4199. Proseminar: Readings for the Major in Japanese Language and Literature. 3 Credits.
Continuation of JAPN 4198. Recommended for all majors. Preparation for advanced research in Japanese sources. Practice in consulting Japanese reference material and translating sources for writing in English. Seminars on advanced reading, translation, and critical methodology. Prerequisite: JAPN 4198.

JUDAIC STUDIES (JSTD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

JSTD 2001. Topics in Judaic Studies: Pre-modern. 3 Credits.
Focus on the pre-1650 period. Topics vary by semester. See the Schedule of Classes for details.

JSTD 2002. Topics in Judaic Studies: Modern. 3 Credits.
Focus on the post-1650 period. Topics vary by semester. See the Schedule of Classes for details.

JSTD 4018. Senior Thesis. 1 Credit.
For Judaic studies majors. Students choose a topic in any major subfield of Judaic studies, select a faculty advisor who specializes in the subfield, conduct research, and produce an annotated bibliography and a proposal that previews the main arguments of the thesis.

JSTD 4019. Senior Thesis. 3 Credits.
Continuation of JSTD 4018. For Judaic studies majors. Completion of the thesis and oral presentation before Judaic studies students and faculty.

JSTD 6001. Topics in Judaic Studies. 3 Credits.

JSTD 6097. Independent Readings/Research. 1-3 Credits.
Written permisison of instructor required. May be repeated for credit with permission.

JSTD 6154. Internship. 1-6 Credits.
Elective internship in areas related to Jewish cultural study.

JSTD 6201. Jewish Life in Contemporary America. 3 Credits.

JSTD 6211. Displaying Jewish Culture: Landmark Exhibitions on Judaism and the Jewish Experience. 3 Credits.

JSTD 6298. Capstone Seminar in Jewish Cultural Arts. 3 Credits.
The culminating experience for graduate students in the Jewish Cultural Arts program, the capstone synthesizes the skills and knowledge gained in the course of the degree program. Students conceptualize, develop, and execute a public cultural event of their own devising. Taken in the final spring semester of the student's program.

KOREAN (KOR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

KOR 1001. Beginning Korean I. 4 Credits.
Fundamentals of grammar and pronunciation, with graded speaking, reading, and writing practice. Laboratory fee.

KOR 1002. Beginning Korean II. 4 Credits.
Continuation of KOR 1001. Fundamentals of grammar and pronunciation, with graded speaking, reading, and writing practice. Laboratory fee.

KOR 2003. Intermediate Korean I. 4 Credits.
Continuation of grammar, with emphasis on speaking, reading, and writing. Laboratory fee.

KOR 2004. Intermediate Korean II. 4 Credits.
Continuation of KOR 2003. Continuation of grammar, with emphasis on speaking, reading, and writing. Laboratory fee.

KOR 3105. Intermediate Korean III. 3 Credits.
Continuation of reading of texts, writing of short pieces, conversation, and systematic review of grammar, focusing on business Korean. Prerequisite: KOR 2004. Laboratory fee.

KOR 3106. Intermediate Korean IV. 3 Credits.
Continuation of KOR 3105. Continuation of reading of texts, writing of short pieces, conversation, and systematic review of grammar, focusing on business Korean. Prerequisite: Kor 3105. Laboratory fee.

KOR 3111. Korean Literature in Translation. 3 Credits.
An introductory survey of Korean literature read in English translation, including fiction, poetry, drama, essays, diaries, testimonials. The pre-modern period.

KOR 3112. Korean Literature in Translation. 3 Credits.
Continuation of KOR 3111. An introductory survey of Korean literature read in English translation, including fiction, poetry, drama, essays, diaries, testimonials. The modern period.

KOR 3123. Introduction to Korean Linguistics. 3 Credits.
The structure of the Korean language, including such topics as the structure of sounds and words, sentence meaning and structure, the writing system, adaptation of foreign vocabulary, pragmatics, variation, and change. Course conducted in English.

KOR 3124. Introduction to Korean Linguistics. 3 Credits.
Continuation of KOR 3123. The structure of the Korean language, including such topics as the structure of sounds and words, sentence meaning and structure, the writing system, adaptation of foreign vocabulary, pragmatics, variation, and change. Course conducted in English.

KOR 3162. Korean Culture through Film. 3 Credits.
The intersection of gender, class, and nation in contemporary society through the lens of Korean film. English subtitles; lectures and discussion in English.

KOR 4107. Readings in Modern Korean I. 3 Credits.
Readings in selected modern literary works, social science materials, and documentary materials. Prerequisite: KOR 3106 .

KOR 4108. Readings in Modern Korean II. 3 Credits.
Continuation of KOR 4107. Readings in selected modern literary works, social science materials, and documentary materials. Prerequisite: KOR 3106 .

LATIN (LATN)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

LATN 1001. Beginning Latin I. 4 Credits.
Grammatical essentials of Latin, appropriate reading selections, development of English derivatives, introduction to Roman life and literature.

LATN 1002. Beginning Latin II. 4 Credits.
Continuation of LATN 1001. Grammatical essentials of Latin, appropriate reading selections, development of English derivatives, introduction to Roman life and literature.

LATN 2001. Intermediate Latin. 3 Credits.
Development of ability to read and understand Latin literature of moderate difficulty. Prerequisite: LATN 1001– LATN 1002 .

LATN 2002. Vergil's Aeneid. 3 Credits.
Significant passages of Vergil's famous epic in Latin; reading and discussion of the entire poem in translation. Prerequisite: LATN 2001 or permission of instructor.

LATN 2002W. Vergil's Aeneid. 3 Credits.
Significant passages of Vergil's famous epic in Latin; reading and discussion of the entire poem in translation. Prerequisite: LATN 2001 or permission of instructor.

LATN 3001. Major Latin Authors I. 3 Credits.
Selections from one or two major authors will be read each semester. May be repeated for credit. Prerequisite: LATN 2001, LATN 2002; or permission of instructor.

LATN 3001W. Major Latin Authors I. 3 Credits.
Selections from one or two major authors will be read each semester. May be repeated for credit. Prerequisite: LATN 2001, LATN 2002; or permission of instructor.

LATN 3002. Major Latin Authors II. 3 Credits.
Continuation of LATN 3001. Selections from one or two major authors will be read each semester. May be repeated for credit. Prerequisite: LATN 2001, LATN 2002; or permission of instructor.

LATN 3002W. Major Latin Authors II. 3 Credits.
Continuation of LATN 3001. Selections from one or two major authors will be read each semester. May be repeated for credit. Prerequisite: LATN 2001, LATN 2002; or permission of instructor.

LAW (LAW)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

LAW 6202. Contracts I. 3,4 Credits.
Legal remedies of contracting parties, including damages in contract and quasicontract, specific performance, reformation, rescission, remedies in tort; acts creating and terminating contractual rights, including offer and acceptance, mistake, problems of proof; function of consideration; conditions; assignments; third-party beneficiaries; effect of changed circumstances; protection of the client's interests upon breach or threat of breach by the other party. Emphasis on problems of analysis, draftsmanship, adversary method. (Examination).

LAW 6203. Contracts II. 2,3 Credits.
Legal remedies of contracting parties, including damages in contract and quasicontract, specific performance, reformation, rescission, remedies in tort; acts creating and terminating contractual rights, including offer and acceptance, mistake, problems of proof; function of consideration; conditions; assignments; third-party beneficiaries; effect of changed circumstances; protection of the client's interests upon breach or threat of breach by the other party. Emphasis on problems of analysis, draftsmanship, adversary method. (Examination).

LAW 6206. Torts. 2-4 Credits.
Liability for harm to person or property. Intentional torts, negligence, nuisance, products liability, defamation, and invasion of privacy; fault and other bases for shifting losses; causation; damages; effects of liability insurance; problems under Federal Tort Claims Act. (Examination).

LAW 6208. Property. 4 Credits.
Basic concepts of personal property. Real property: historical background of the law of estates and conveyancing, types of estates, dower and curtesy, landlord and tenant relationship, concurrent estates, future interest at common law and after the Statute of Uses; introduction to modern conveyancing—the real estate contract, the deed, the recording system, methods of title assurance. (Examination).

LAW 6210. Criminal Law. 3 Credits.
An overview of the criminal justice system; dimensions of the problem of crime and goals of penal sanctions. An examination of what conduct should be made criminal and what sanctions should be applied. The theoretical anatomy of a criminal offense (elements of mens rea and actus reus), the general principles of criminal liability, and the various defenses. Special problems, such as conspiracy, inchoate crimes, causation, insanity, and complicity, are subjected to detailed analysis. (Examination).

LAW 6212. Civil Procedure I. 3-4 Credits.
The theory and practice of civil litigation. Analysis of the goals, values, costs, and tensions of an evolving adversarial system of adjudication. Examination of the rules and statutes that govern the process by which substantive rights and duties are enforced in our federal and state courts. Topics include the relationship of procedure to substantive law, the proper reach of judicial authority, pleading, motions practice, joinder of parties and claims, class actions, pretrial discovery, trial by jury, remedies, post-trial procedure, appeals, claim and issue preclusion, and alternative dispute resolution. (Examination).

LAW 6213. Civil Procedure II. 2-3 Credits.
The theory and practice of civil litigation. Analysis of the goals, values, costs, and tensions of an evolving adversarial system of adjudication. Examination of the rules and statutes that govern the process by which substantive rights and duties are enforced in our federal and state courts. Topics include the relationship of procedure to substantive law, the proper reach of judicial authority, pleading, motions practice, joinder of parties and claims, class actions, pretrial discovery, trial by jury, remedies, post-trial procedure, appeals, claim and issue preclusion, and alternative dispute resolution. (Examination).

LAW 6214. Constitutional Law I. 3 Credits.
Basic principles of U.S. constitutional law, with a focus on governmental powers and the role of the Supreme Court in interpreting and enforcing constitutional norms. The nature and scope of judicial review. The case and controversy requirement and other limitations on constitutional adjudication. Powers of the president and Congress; the separation of powers doctrine. Relationship of the national government to state governments and principles of federalism. The state action doctrine. (Examination).

LAW 6216. Legal Research and Writing. 2 Credits.
Introduction to use of a law library; research experience in primary, secondary, and specialized sources of law; practice in proper legal citation form. Instruction and practice in legal writing and analysis, with primary emphasis on legal memoranda. This course is graded on a letter-grade basis. Failure to complete the work in this course may result in a grade of F.

LAW 6217. Introduction to Advocacy. 2 Credits.
Instruction and experience in the research and writing of pretrial motions and appellate briefs, with emphasis on preparing and presenting arguments persuasively. Also instruction and practice in preparing and presenting oral arguments. This course is graded on a letter-grade basis. Failure to complete the work for this course may result in a grade of F.

LAW 6218. Professional Responslbty/Ethic. 2,3 Credits.
Ethical problems involved in civil and criminal counseling and litigation. Rules of Professional Conduct and legal discipline; roles of bar associations and courts in regulating lawyer conduct. Credit may not be earned for both Law 6218 and Law 6343. (Examination).

LAW 6230. Evidence. 3,4 Credits.
Policies, principles, standards, and rules governing the trial of civil and criminal cases in federal and state courts. Topics may include relevancy, the hearsay rule, direct and cross examination of witnesses, opinion, scientific evidence, impeachment, privileges, writings, real and demonstrative evidence, judicial notice, confrontation and compulsory process, and burdens of proof and presumptions. (Examination; Pierce—skills).

LAW 6231. Advanced Evidence Seminar. 2 Credits.
Advanced issues of evidence law, including jury decision making, eyewitness identification, predictions of future dangerousness, polygraph evidence, hypnotically refreshed testimony, recovered memory, syndrome and profile evidence, and complex issues of evidentiary privilege. (Research paper).

LAW 6232. Federal Courts. 3-4 Credits.
The relationship of the federal courts to Congress and to the states. Topics may include judicial review; standing and justiciability; congressional power to regulate jurisdiction; legislative courts; federal question, diversity, removal, civil rights, and habeas corpus jurisdiction; state sovereign immunity; Supreme Court appellate jurisdiction; abstention; federalism doctrines; and federal common law. (Examination).

LAW 6234. Conflict of Laws. 3 Credits.
Legal problems arising from occurrences transcending state or national boundaries; jurisdiction; foreign judgments; constitutional influences; theoretical bases of choice of law principles and their application to specific fields, including torts, contracts, property, family law, administration of estates, business associations. (Examination).

LAW 6236. Complex Litigation. 3 Credits.
Analysis and critique of complex civil litigation in the state and federal courts. Examination of complex joinder, the management of factually related claims in multiple venues, modern class-action practice, and current developments in the law of claim and issue preclusion. Other topics covered in some years include judicial supervision of plaintiff and defendant class actions; discovery and judicial control of large cases; the role of juries, magistrates, and masters in complex cases; and problems attending complex remedies such as the use of structural injunctions to reform public schools, hospitals, and prisons. (Examination).

LAW 6237. Electronic Discovery and Evidence. 1 Credit.
This seminar provides students a solid grounding in an important civil litigation topic: the discovery and use at trial (or other evidentiary proceedings) of electronically-stored information (ESI). Students will learn how ESI has changed litigation and how practitioners and judges apply discovery and case management rules and practices to ESI issues. The course is graded on a CR/NC basis. There are no prerequisites for this course. (Student exercises and writing assignments).

LAW 6238. Remedies. 3 Credits.
The types and forms of relief that judges can award in civil litigation: decisional and statutory damages in contract, quasi contract, and tort, including tort reform and wrongful death; overcoming limitations of actions and releases; injunctions as provisional and final relief; equitable remedies, such as specific performance, recission, and reformation; relief from fiduciaries; and tracing, constructive trusts, and equitable liens. (Examination).

LAW 6240. Litigation w/ Fed Govt.. 2-3 Credits.
Major substantive aspects of litigation with the federal government. Topics include analysis of statutory schemes that permit and limit judicial remedies against federal agencies and officials; nonstatutory remedies; judicial review; monetary recoveries from the United States; special rules, including those pertaining to discovery and application of equitable principles; and consideration of the continued vitality of federal sovereign immunity. (Take-home examination).

LAW 6246. Appellate Practice. 2 Credits.
This course will: (1) examine the vital role of federal and state appellate courts in our legal system; (2) explore the substantive and procedural elements of appellate litigation; and (3) engage students in the study of appellate practice through assignments involving research, writing, analysis, advocacy, and advice. (Writing assignments and oral argument) (Skills).

LAW 6247. Selected Topics in Civil Procedure. 1-3 Credits.
Selected topics in civil procedure to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take-home examination, research paper, or writing assignments).

LAW 6248. Scientific Evidence Seminar. 2 Credits.
The use of scientific methods and the reliability of scientific principles in litigation. Topics include statistical proof, surveys, and epidemiological principles. Exploration of the admissibility and sufficiency of expert scientific testimony and evidence in light of recent Supreme Court cases, and application of these principles to lower court cases. Prerequisite: Law 6230. (Research paper).

LAW 6249. Civil Procedure Seminar. 2 Credits.
Selected topics in civil procedure to be announced at the time of registration. Enrollment is limited. (Research paper).

LAW 6250. Corporations. 4 Credits.
Corporate law, with emphasis on operations and financing of corporations. Control of corporations, action by corporate directors, officers, shareholders. Control devices. Directors' and shareholders' duties of care and loyalty, insiders' transactions in shares of the corporation. Derivative suits, kinds of shares, dividends, corporate distributions. (Examination).

LAW 6252. Securities Regulation. 3 Credits.
Survey of federal and state laws governing the offering, distribution, and trading of securities. Focus on federal laws and regulations, in particular the Securities Act of 1933, the Securities Exchange Act of 1934, and the enforcement of these laws by the SEC and private parties. Prerequisite: Law 6250. (Examination or take-home examination at the instructor's discretion) 6254 General introduction to finance theory; problems in the issuance and reacquisition of corporate securities; analysis of various types of securities; problems involved in the use of debt and payment of corporate dividends; and financial analysis of mergers, acquisitions, recapitalizations, dissolutions, and liquidations. Prerequisite: Law 6250. (Examination) 6256 Federal and state regulation of corporate takeover bids and tender offers, including theories of corporate acquisitions, the Williams Act, and regulation of takeover tactics and defenses. Prerequisite: Law 6250. (Examination) 6259 Theoretical and practical perspectives on the venture capital and buyout marketplace. Legal, business, economic, and financial issues that are part of the legal documentation supporting venture capital and buyout transactions. Dynamics of organizing a venture capital or buyout fund; organizing, structuring, financing, managing, and exiting venture capital–backed companies. (Class projects and take-home examination).

LAW 6254. Corporate Finance. 2,3 Credits.

LAW 6256. Takeovers and Tender Offers. 2 Credits.

LAW 6258. Reg-Securities Mkts/Professnls. 2 Credits.

LAW 6259. Venture Capital Law. 2 Credits.

LAW 6260. Reg-MutFunds&InvestAdvisers. 2 Credits.
Applicability of the Investment Company Act of 1940 to particular business activities that may bring an entity within the statutory definition of investment company; litigation as to fees; policy considerations relating to front-end loads; SEC regulations regarding advertising and promotion; restrictions on activities by affiliates; and current SEC disclosure requirements. Applicability of the Investment Advisers Act of 1940 to activities of individuals and entities; procedures for compliance; First Amendment issues raised by SEC enforcement actions; and civil liability under the antifraud provisions of the securities laws. Recommended: prior or concurrent enrollment in Law 6250 and 6252. (Examination or research paper with permission of the instructor).

LAW 6261. Regulation of Derivatives. 2 Credits.
Laws and regulations affecting derivatives trading, primarily financial futures and options markets. Jurisdiction of the Commodity Futures Trading Commission. Securities and commodities statutes and regulations; registration and regulation of commodity market participants; administrative and injunctive enforcement powers involving violations of the Commodity Exchange Act. Developments in self-regulation, and foreign market access. (Examination).

LAW 6262. Corporation Law Seminar. 2 Credits.
Analysis of the nature and role of the business corporation in the U.S. and transnational political economy; evolution of the corporation and the political economy; impact of technological change; reasons for and consequences of the growth of large corporate enterprises; role of entrepreneurs in the political economy; relationship of corporations to government and other centers of power. (Research paper).

LAW 6263. Selected Topics in Corporate Law. 1-3 Credits.
Selected topics in corporate law to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take home examination, research paper or writing assignments).

LAW 6264. Securities Law Seminar. 2 Credits.
Selected topics in corporate and securities law practice and theory to be announced at the time of registration. Enrollment is limited. Prerequisite: Law 6250. (Research paper).

LAW 6266. Labor Law. 2,3 Credits.
Law governing labor–management relations, organizations and representation of employees, regulation of economic weapons, enforcement of collective bargaining agreements, inter-union and intra-union relations. (Examination).

LAW 6267. Selected Topics in Securities Law. 1-3 Credits.
Selected topics in securities law to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take home examination, research paper or writing assignments).

LAW 6268. Employment Law. 2,3 Credits.
Individual rights and obligations in employment; survey of common law and statutory regulation of the individual employment relationship from its inception to its termination; emphasis on current developments such as wrongful discharge, medical screening, employer-provided health insurance and child care, occupational safety and health, workers' compensation, and retirement issues. (Examination or take-home examination).

LAW 6270. Labor & Emplmnt Abtrtn & Med. 2 Credits.

LAW 6272. Employee Benefit Plans. 2 Credits.
Pre-ERISA benefit plans, the federal labor law governing those plans, and the conditions which led to the passage of ERISA and its effect on Taft–Hartley plans. Practical realities of collectively bargained benefit plans; preemption of state law and interplay of various federal laws; roles played by union and employer both in the context of individual bargaining of employee benefits and in the context of the employer and the union as trustee of a benefit plan; rights of participants and beneficiaries under the plan and under the collective bargaining agreement; rights and obligations of contributing employers; and termination and withdrawal issues, including plant shutdowns and bankruptcies. (Take-home examination).

LAW 6274. Labor Standards. 2 Credits.

LAW 6276. Labor/Employment Law Seminar. 2 Credits.

LAW 6280. Secured Transactions. 2,3 Credits.
Introduction to arrangements that improve access to credit for individuals, businesses, and governments. Traditional credit transactions, including signature loans and sales on general credit, loans supported by collateral, secured credit sales and floor plan financing, leases, consignments, and credit card transactions. More complex transactions involving the securitization of mortgages, credit card receivables and automobile paper (structured finance), as well as loans supported by stock, bonds, and deposit accounts. The structure of transactions consistent with Article 8 and 9 of the Uniform Commercial Code and the benefits and risks inherent in these arrangements. (Examination).

LAW 6281. Sec Trans & Comm Paper. 4 Credits.

LAW 6282. Commercial Paper-Payment Systm. 2,3 Credits.
Classic view of negotiable instruments as codified by Article III of the Uniform Commercial Code. Check collection: the system in theory as expressed in Article IV of the Uniform Commercial Code and the system in practice; Federal Reserve regulations, Clearinghouse agreements, and automation systems. The dual banking system, work of the comptroller general and the Federal Reserve Board. Legal problems concerning interest and the checkless society. (Examination).

LAW 6283. E-Commerce. 2 Credits.
U.S. law affecting electronic commerce. Formation and terms of electronic contracts; voluntary compliance with regulations by e-merchants; mass marketing and consumer protection; payment on the Internet and cybercash; the jurisdiction of private parties to sue and of public authorities to regulate e-merchants; privacy; and intellectual property and taxation issues. (Examination).

LAW 6284. Creditor Rights/Debtor Protect. 3,4 Credits.
Creditors' remedies and debtors' protections under state law: writs of attachment, garnishment and execution, acquisition of liens and forced sales of property, self-help arrangements, and security agreements. Bankruptcy under federal law: who may file, the creation and administration of the bankruptcy estate, powers of the trustee, discharge of debt; rehabilitation plans for individuals under Chapter 13. (Examination).

LAW 6285. Business Bankruptcy & Reorg.. 3 Credits.
Legal and financial aspects of business reorganization under Chapter 11 of the Bankruptcy Code. Topics include, but are not limited to, the rights of secured and unsecured creditors, automatic stay, treatment of executory contracts, avoidance of pre-bankruptcy transactions (e.g., fraudulent conveyances and preferences), alternatives to reorganization, and the financial restructuring of businesses in Chapter 11. Prerequisite: Law 6250. (Examination or take-home examination and writing assignments).

LAW 6286. Consumer Protection Law. 3 Credits.
Common law doctrines and Federal Trade Commission case law and a variety of federal and state statutes and regulations thereunder. Statutes to be considered include Truth in Lending, Fair Credit Billing, Equal Credit Opportunity, Fair Debt Collection Practices, Magnuson–Moss Warranty Acts, Uniform Commercial Code provisions applicable to consumer sales and transactions, unfair trade practice laws, usury laws, and automobile "lemon" laws. Comparison of regulatory and remedial techniques available through case law, general statutory provisions, and specifically targeted technical statutes; public and private enforcement mechanisms, including litigation and alternative dispute resolution. (Examination or research paper with permission of the instructor).

LAW 6288. Commercial Law Seminar. 2 Credits.

LAW 6289. Selected Topics in Banking Law. 1-3 Credits.
Selected topics in banking law to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take home examination, research paper or writing assignments).

LAW 6290. Banking Law. 2,3 Credits.
Federal regulation of the financial services industry, especially commercial banks. Includes an analysis of the Federal Deposit Insurance Corporation as insurer of deposits, receiver, and liquidator of troubled banks; the role of the Comptroller of the Currency as the primary federal regulator of national banks, including the chartering function, bank examinations, analysis of classified loans, capital adequacy, and enforcement of substantive federal legislation; operation of the Federal Reserve System under the Bank Holding Company Act and the various substantive regulations such as Reg. B (equal credit opportunity), Reg. J (check collection), Reg. M (consumer leasing), Reg. Q (deposit rate regulation), Reg. O (insider loan limits), Reg. E (electronic funds transfer), and Reg. Z (truth in lending); geographic deregulation and the trend toward interstate banking; and an analysis of financial services product deregulation and unification of the industry along functional lines. (Examination; research paper or take-home examination, at the instructor's discretion).

LAW 6291. Money, Banking and Commerce. 2 Credits.

LAW 6292. Banking Law Seminar. 2 Credits.
Selected topics in banking law to be announced at the time of registration. Enrollment is limited. (Research paper).

LAW 6293. Admiralty. 2-3 Credits.
The maritime law applied in federal and state courts; admiralty jurisdiction and practice; litigation and arbitration; making uniform law by international convention. The U.S. law of seamen, shoreside workers, and personal injury and death in navigable waters; maritime liens and ship mortgages; carriage of goods by water; collisions at sea; salvage, general average, and limiting liability for private damage and environmental harms. (Examination).

LAW 6294. Uninc. Bus. Orgs. & Agency Law. 2-3 Credits.
Nature, formation, financing, operation, and termination of general partnerships, limited partnerships, limited liability partnerships (LLPs) , and limited liability companies (LLCs). Major agency law issues, including the nature of an agency relation, fiduciary rights and duties, and the potential contractual and tort liability of principals to third parties for the actions and inactions of their agents and independent contractors. (Examination).

LAW 6295. Sports and the Law. 2,3 Credits.
Survey of sports regulation as it affects amateur and professional athletes. Topics include the NCAA regulatory structure; agent regulation; and legal representation of professional athletes in contract negotiation with sports franchises and in other contexts. (Research paper and class projects or examination).

LAW 6296. Business Planning. 2,3 Credits.
Integrated study of corporate, tax, accounting, and securities law aspects of the following: choice and formation of a closely-held business entity; structure of equity and control of a corporate entity; providing for changes in stock ownership; providing for the mid-life of a corporation, including buy-outs and recapitalizations; and analysis formulation of planning for a corporate acquisition. Analysis of hypothetical problems and practical solutions and insights into the practice of the business lawyer. Prerequisite: Law 6250 and 6300. Law 6302 or equivalent is recommended. Enrollment is limited. (Problem assignments) (Skills).

LAW 6298. Insurance. 2-3 Credits.
General liability, product liability, property, business interruption, fidelity, and coverage of directors and officers. The duty of insurance companies to defend their insureds and to settle cases brought against them. Mass tort liabilities and other severe liability exposure. General principles of law applicable to property–casualty insurance, insurance regulation, insurance bad faith, and reinsurance. (Examination).

LAW 6300. Federal Income Taxation. 3,4 Credits.
Survey of substantive provisions of federal income tax law, including concept of gross income, provisions affecting taxation of family and individual transactions, limitations on allowable deductions, sales and dispositions of property, problems of capital gains taxation, nontaxable exchanges. (Examination).

LAW 6302. Corporate Taxation. 3 Credits.
Continuation of Law 6300. Primary emphasis on corporate–shareholder relationships. Corporate dividends, redemptions of stock, stock dividends, bailouts, and dividends-inkind. Federal income tax concerns involved in the formation of corporations, the sale of corporate businesses, mergers and acquisitions, and corporate divisions. Prerequisite: Law 6300. (Examination).

LAW 6303. Advanced Corporate Taxation. 2-3 Credits.

LAW 6304. Partnership Taxation. 2,3 Credits.
Federal income tax consequences of operating businesses taxed as flow-through entities, including partnerships, limited liability companies, and S corporations. Allocation of partnership income and deductions among partners. Issues related to contributions to partnerships, distributions from partnerships, and acquisitions and dispositions of partnership interests. Overview of the taxation of S corporations. Prerequisite: Law 6300. Law 6302 is recommended. (Examination).

LAW 6306. Wealth Transfer Taxation. 2-3 Credits.
Survey of substantive provisions of wealth transfer taxation reflecting the changing climate of federal taxation in the area of estate, gift, and income taxation, including transfers to trusts; individual, joint, and entity ownership of property; the consequences of powers of appointment or retained interest in gifted property; inter-spousal and intrafamily transfers; and the application of credits and deductions to the tax picture. Prerequisite or concurrent registration: Law 6300. (Drafting assignments).

LAW 6307. Pension Law and Taxation. 2 Credits.

LAW 6308. Real Estate & Income Taxation. 2 Credits.

LAW 6310. Natural Resources Taxation. 2 Credits.

LAW 6312. International Taxation I. 2,3 Credits.
Federal income tax law and policy regarding foreign persons with business and investment activities in the United States ("inbound foreign investment"). Topics include jurisdiction to tax, status as foreign or U.S. taxpayer, source of income and deduction apportionment rules, withholding taxes, tax treaties and anti-treaty-shopping rules, disposition of U.S. real property by foreign taxpayers, branch profits tax, and an introduction to foreign tax credit issues. This course may also cover foreign tax credit issues, anti-income deferral rules, tax havens, and special foreign earned income rules. Prerequisite: Law 6300 or permission of the instructor. (Examination).

LAW 6313. International Taxation II. 2 Credits.

LAW 6314. Nonprofit Org: Law & Taxation. 2 Credits.

LAW 6316. State and Local Taxation. 2-3 Credits.
Taxation by state and local governments with particular emphasis on constitutional limitations, political and economic influences on policy, and the effects of globalization and technology. Legal and policy issues of sales and use, corporate income, property, and excise taxes. (Take-home examination or research paper with permission of the instructor).

LAW 6317. Selected Topics in Tax Policy. 1-3 Credits.
Selected topics in tax policy to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take home examination, research paper or writing assignments).

LAW 6318. Tax Policy Seminar. 2 Credits.
Intensive study of selected aspects of the tax structure with primary attention given to the federal income tax. Problem areas are reviewed primarily from the standpoint of tax policy, including legal, economic, social, and practical considerations. Alternative solutions, including current legislative proposals, are examined. Enrollment is limited. Prerequisite: Law 6300. Recommended: Law 6302. (Research paper).

LAW 6330. Modern Real Estate Transaction. 2-3 Credits.
Basic course in conveyancing. Current problems in purchase and sale of residential real estate; legal and equitable rights, responsibilities, liabilities, and remedies of buyer, seller, broker, escrow agent, conveyancing attorney, title examiner, abstractor, and lender; interim and permanent mortgage finance, discounts, points, "subject-to" and "assumptions," remedies on default, including foreclosure processes; process of examination and assurance of title and other interests in realty, including recording and title insurance systems; settlements and closings, warranties of title, encumbrances on title, and clearing of title; emerging problems related to cooperatives, condominiums, and property owners associations. (Examination).

LAW 6332. Land Use Law. 2 Credits.
Problems, solutions, emerging concepts, and constitutionality of land use regulations, including zoning, subdivisions, historic preservation, exactions, vested rights, transfer of development rights, growth management, and urban and regional planning. (Writing assignments and take-home examination).

LAW 6334. Law of Real Estate Financing. 2 Credits.
Types of lenders, choice of entity, construction loans, permanent financing; lenders' obligations, remedies, and liabilities; title insurance, survey, and liens; ground lease and commercial lease/leasehold mortgage; joint ventures; alternate capital formation; opinion letters. (Examination).

LAW 6336. Land Development Law. 4 Credits.

LAW 6338. Housing Law and Policy. 2 Credits.
Federal, state, and local laws that in effect constitute housing policy in the United States. Judicial interpretation of such laws. The roles the various levels of government play in the housing industry. Political and policy implications of various housing programs and how they affect communities across the country. (Research paper and writing assignments).

LAW 6339. Housing & Commun Develop Law. 2 Credits.

LAW 6340. Property & Real Estate Seminar. 2 Credits.
Selected topics in property and real estate law to be announced at the time of registration. Enrollment is limited. (Research paper).

LAW 6341. Selected Topics in Property and Real Estate Law. 1-3 Credits.
Selected topics in property and real estate law to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take home examination, research paper or writing assignments).

LAW 6342. Trusts and Estates. 3,4 Credits.
Noncommercial transfers of wealth at death or during life; essential elements and formalities for creation of trusts and execution of wills, revocation and alteration, grounds for contest, limits on property owner's power to control, intestate succession. Credit may not be earned for both Law 6342 and 6343. (Examination and problem assignments or drafting projects).

LAW 6343. Trusts, Estates & Prof. Resp.. 4 Credits.

LAW 6346. Estate Planning. 2,3 Credits.
Effective acquisition, management, and disposition of wealth by lifetime transactions and testamentary transfer. Emphasis on federal income, estate, gift, and generationskipping transfer taxation. Problem assignments address probate avoidance, interspousal transfers, jointly owned assets, transfers to minors, irrevocable trusts, closely held family and business interests, post-mortem estate planning, retirement planning, and charitablegiving. Enrollment is limited. Prerequisite: Law 6342. (Drafting assignments) (Skills).

LAW 6347. Selected Topics in Family Law. 1-3 Credits.
Selected topics in family law to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take home examination, research paper or writing assignments).

LAW 6348. Family Law. 3-4 Credits.
Survey of family law, including statutory law of domestic relations and constitutional restraint on state regulation of the family. Topics include marriage, divorce (including child custody, property division, alimony, and child support), domestic violence, reproductive rights, and family privacy. The course draws on historical and interdisciplinary materials and involves discussion of public policy issues as well as current law. (Examination).

LAW 6349. Child, Family, State. 2,3 Credits.
The allocation of power and responsibility among parent, child, and state. Freedoms under the First Amendment, education, health care including procreation, child abuse and neglect, custody, adoption, and juvenile delinquency. Sociological/ psychological perspectives on the parent–child relationship. Enrollment is limited. (Take-home examination).

LAW 6350. Domestic Violence Law. 2,3 Credits.
Historical perspective on legal and public policy approaches to domestic violence; contemporary civil and criminal justice systems approaches to domestic violence; and analysis of relevant federal and state laws. (Research paper).

LAW 6351. Reading Group. 1 Credit.

LAW 6352. Family Law Seminar. 2 Credits.
Historical and contemporary problems in the theory and practice of family law. Specific topics to be announced. Enrollment is limited. Prerequisite: Law 6348 or 6349. (Examination or research paper with permission of the instructor).

LAW 6353. Elder Law. 2-3 Credits.
Topics may include Medicare and Medicaid, financing health care, and related policy issues; health care decision making, including informed consent and advance health care directives; issues related to the right to die, including euthanasia and doctor-assisted suicide; long-term health care issues, including nursing homes and other alternatives, insurance, monitoring, and quality of services; guardianships and other procedures in the event of age-related disabilities; Social Security and Supplemental Security Income; housing issues, including tax incentives, retirement communities, and continuing care facilities. (Examination).

LAW 6354. Products Liability. 2,3 Credits.
Theory and practice of product liability litigation. Compensatory and punitive damages; competing strategies pursued by plaintiffs and defendants. Affirmative defenses and defense strategies. Failure-to-warn and defective design cases. Discovery techniques. Settlement strategy and mediation of product liability cases. Class actions and multidistrict litigation involving defective products. Differences between U.S. product liability litigation and other countries' systems. (Examination or research paper with permission of the instructor).

LAW 6358. Advanced Torts Seminar. 2 Credits.

LAW 6360. Criminal Procedure. 3,4 Credits.
Comprehensive presentation of major issues in criminal process, with emphasis on Supreme Court cases interpreting the Constitution. The course proceeds through the criminal justice system, from first police contact, search interrogation, and other investigation, through the prosecution, preliminary proceedings, and trial. Problems of federalism, the exclusionary rule, and sentencing. (Examination).

LAW 6362. Adjudicatory Criminl Procedure. 2,3 Credits.
Constitutional and statutory regulation of the criminal adjudication process. How the Constitution and the Federal Rules of Criminal Procedure govern various stages of the criminal process. Bail and detention pending trial; the prosecutor's decision to charge; grand jury procedures; right to a speedy trial, to a jury trial, other trial rights; discovery; plea bargaining; double jeopardy; sentencing; appeals; and collateral remedies. (Examination).

LAW 6363. Role of the Federal Prosecutor. 2 Credits.
Exploration of the responsibilities and powers of the federal prosecutor. The effect of legal, ethical, policy, and practical considerations on the prosecutor's decision making throughout various stages of the criminal justice system. The potentially competing interests of federal, state, and foreign jurisdictions in investigation and prosecution of criminal activity. Classes are held at the Department of Justice. Enrollment is limited and includes students from other area law schools. (Take-home examination).

LAW 6364. White Collar Crime. 2,3 Credits.
Definition, investigation, prosecution, defense, and punishment of federal white collar crime and the characteristics and issues that distinguish white collar crime from other kinds of criminal activity. Examination of the primary federal white collar offenses, including mail and wire fraud, conspiracy, bribery, perjury, obstruction of justice, money laundering, and RICO. Federal grand jury investigations, corporate criminal liability, plea bargaining and immunity, and sentencing under the federal sentencing guidelines. (Examination).

LAW 6365. Criminal Tax Litigation. 2-4 Credits.
Legal, evidentiary, and procedural challenges presented in the prosecution of criminal tax cases. U.S. Code Title 26, Bank Secrecy Act of 1986, Title III of the USA PATRIOT Act, and selected provisions of the Sarbanes–Oxley Corporate Fraud and Accountability Act of 2002. Practices and procedures of the Internal Revenue Service and the Tax Division of the Department of Justice; the protections of the Fourth and Fifth Amendments; grand jury investigations, motions practice; terrorism financing cases; trials and parallel proceedings; and Federal Sentencing Guidelines. (Examination).

LAW 6366. Law and Criminology. 2 Credits.

LAW 6368. Law of Criminal Corrections. 2 Credits.

LAW 6369. Computer Crimes. 0-3 Credits.
The legal issues that judges, legislators, and prosecutors confront in response to computer- related crime. How computer crimes challenge traditional approaches to the prohibition, investigation, and prosecution of criminal activity. Topics include computer hacking, computer viruses, Internet gambling, encryption, online undercover operations, the Fourth Amendment in cyberspace, the law of Internet surveillance, laws governing access to e-mail, and federal–state relations and international cooperation in the enforcement of computer crime laws. (Examination).

LAW 6370. Forensic Science. 2 Credits.
Designed to acquaint the student with the operations of a modern crime laboratory and the courtroom acceptability of testimony of forensic scientists and other evidence on laboratory test results. Identification of individuals (fingerprints, palmprints, footprints, voiceprints, anthropological reconstruction, hair identification, and serology), identification of objects (ballistics, handwriting, typewriting, fiber identification, paints, varnishes, glass, wood, and paper), toxicology, pathology, forensic use of the microscope and the camera, the coroner and the medical examiner systems, and drug law enforcement. Crime laboratory guest lecturers. (Examination or research paper with permission of the instructor).

LAW 6372. Drugs and the Law. 2 Credits.
A study of federal and state laws controlling illicit drugs, including the historical evolution of these laws, current offenses and penalties, constitutional limits on the criminal sanction, enforcement practices, and sentencing considerations. Alternative models for controlling drugs, including decriminalization and legalization will also be studied. Several class sessions will be devoted to mock criminal trials at which student conduct direct and cross-examination of guest expert witnesses in the field. Students are graded on the basis of their involvement as advocates in the mock hearings or on the basis of research papers submitted to the instructor on a topic involving drugs and the law. (Skills) or (Research paper).

LAW 6374. Federal Sentencing Seminar. 2 Credits.
Federal sentencing law and policy, with an emphasis on recent Supreme Court decisions. Purposes of punishment, guideline and non-guideline sentencing, judicial and prosecutorial discretion, plea bargaining, constitutional limitations, business crime, white collar versus violent crime, and alternative sanctions. (Research paper).

LAW 6376. Prisoners Project. 1-3 Credits.
Open to second- and third-year students. A clinical project concerned with the legal status of older prisoners (over 55 years of age). The project works for the release of high-cost, low-risk prisoners into stable environments. Students work on either individual cases or research. Case workers interview prisoners to evaluate and prepare cases for pardon, parole, or possible habeas appeals. Research projects will cover subjects ranging from overcrowding to health care to risk assessment. Some legislative work is also possible. Students may enroll concurrently in this course and Law 6633 only with permission of both instructors. This course is graded on a CR/NC basis. (Skills).

LAW 6378. Selected Topics in Criminal Law and Procedure. 1-3 Credits.
Selected topics in criminal law and procedure to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take home examination, research paper or writing assignments).

LAW 6379. Criminal Law/Procedure Seminar. 2 Credits.
Selected topics in criminal law and procedure to be announced at the time of registration. Enrollment is limited. (Research paper).

LAW 6380. Constitutional Law II. 3,4 Credits.
Individual rights and liberties in the U.S. constitutional scheme and the different judicial methods of reconciling majoritarian governance with individual freedom. Privileges and immunities of national citizenship, due process of law, equal protection guarantees, freedom of expression and of religion, rights of privacy and association. (Examination or take-home examination at the instructor's discretion).

LAW 6382. First Amendment: Speech and Press Clauses. 3 Credits.
The rights of expression, association, and religious freedom recognized by the First Amendment to the U.S. Constitution. Categories of unprotected expression (e.g., obscenity) and less-protected expression (e.g., commercial speech). Issues of time/place/manner regulation, speech in public for a, regulation of political campaigns. Constitutional burdens and benefits unique to religion. Material includes Supreme Court decisions and secondary literature on these subjects. (Examination).

LAW 6384. Law of Separation of Powers. 3 Credits.
An examination of the law that governs the interrelations of the three branches of the federal government. Topics include the constitutional history of our governmental structure, the immunities of members of Congress and of executive officers, impeachment, congressional power over federal jurisdiction, executive orders and the limits of presidential "lawmaking," presidential and legislative vetoes, executive privilege, executive and congressional oversight of policy through supervision of the bureaucracy, controls on spending including impoundment, limits on presidential discretion to enforce the laws (e.g., special prosecutors), Congress's and the president's roles in foreign affairs (executive agreements, claims settlements, treaty powers), and congressional and presidential war powers. Emphasis will be placed on the role of the lawyer as government adviser, a role performed by many attorneys at all levels of government. (Examination).

LAW 6387. Voting Rights Law. 2 Credits.
Cases and materials on the right to vote in the United States. Major decisions on apportionment, political participation, and race as an issue in representation. Emphasis on the Voting Rights Act of 1965, including minority vote dilution litigation under Section 2, federal review of voting procedures under Section 5, and recent constitutional challenges to voting rights remedies. Other topics include partisan gerrymandering, the initiative and referendum processes, alternative election systems, the changing law of redistricting, the impact of shifts in census policy, and the litigation over the 2000 presidential election. (Examination or take-home examination at the instructor's discretion).

LAW 6388. Civil Rights Legislation. 3 Credits.
Examination of federal legislation protecting individual rights and liberties as well as the administrative and judicial implementation of that legislation. Remedial provisions for the enforcement of federal constitutional and statutory rights (e.g., 42 U.S.C. §§1983, 1985) and federal statutes prohibiting discrimination in housing, contractual relations, voting, education, and federally funded programs. Prerequisite: Law 6380 or 6878. (Examination or take-home examination).

LAW 6389. Higher Education Law. 2 Credits.

LAW 6390. Employment Discrimination Law. 2,3 Credits.
Federal laws and executive orders relating to various types of discrimination in employment, including Title VII of the Civil Rights Act of 1964, the Civil Rights Act of 1991, the Equal Pay Act, the Age Discrimination in Employment Act, the Rehabilitation Act, the Americans with Disabilities Act, the Civil Rights Act of 1866, the Fourteenth Amendment, the National Labor Relations Act, and Executive Orders 11,246 and 11,375 relating to government contractors; substantive rights, exemptions, and burdens of proof under the various laws and regulations. (Examination).

LAW 6391. Asian Americans & the Law. 2 Credits.

LAW 6392. Gender Discrimination & Law. 2 Credits.
An examination of the treatment of women in all areas of the law and legal remedies for sex discrimination. Emphasis on constitutional law, family law, and discrimination in employment. Enrollment limited to 30 students. (Examination or research paper).

LAW 6393. First Amendment: Religion Clauses. 3 Credits.
Primary focus on the Religion Clauses of the First Amendment. Individual and institutional claims of religious liberty, including the constitutional status of legislative or judicial accommodations, exemptions for religiously motivated conduct, and the definition of particular acts and institutions as "religious." Government funding of religious institutions and activities, including current controversies about aid to faith-based social welfare providers, indirect funding of religious education, and extraterritorial funding of religious institutions (such as moderate Islamic schools). Government expression or endorsement of religious messages, including religious exercises and instruction in public schools, public displays of religious images, and private religious speech on public property. (Examination or take-home examination).

LAW 6394. Sexuality and the Law. 2,3 Credits.
Examination of the relationship between sexuality and the law, focusing primarily on the treatment of lesbians, gay men, bisexuals, and transgendered persons in the areas of constitutional law, criminal law, and employment law. Topics include how the legal system regulates and affects lesbian, gay, bisexual, and transgender relationships and sexual behaviors; open expressions of lesbian, gay, bisexual, and transgender identity; workplace effects; and issues in public school settings, such as Title IX discrimination, sexual harassment, and free speech. (Examination).

LAW 6395. Constitutional Law/Supreme Crt. 2 Credits.
Analysis of selected cases currently pending before the Supreme Court. Students read briefs and related materials (such as lower court decisions and controlling cases) in cases scheduled for oral argument, discuss the cases in class, vote on how they would decide the cases, and then draft opinions for class circulation and review. Each student will be required to draft two lengthy majority opinions, a concurrence, and a dissent. The course will also focus on how the Supreme Court works both as an institutional and practical matter. (Writing assignments).

LAW 6397. Federal Indian Law. 2 Credits.
Basic legal principles that govern the relationship between American Indian tribes, the federal government, and the state governments. Focus on jurisdictional disputes between those governments, the source and scope of Indian sovereignty, and recognition and enforcement of Indian land and treaty rights. (Take-home examination or research paper with permission of the instructor).

LAW 6398. The Law of Democracy. 3 Credits.
Consideration of the law that governs electoral processes. Topics include constitutional and statutory protection of voting rights, the legal status of political parties, the relationship between race and representation, judicial control of legislative apportionment and elections, and regulation of campaign finance. Credit may not be earned for both Law 6398 and either Law 6387 or Law 6419. (Examination).

LAW 6399. Constitutional Law Seminar. 2 Credits.
Selected topics in constitutional law to be announced at the time of registration. Enrollment is limited. (Research paper).

LAW 6400. Administrative Law. 3 Credits.
Study of the administrative processes of government in executive and independent agencies. The federal Administrative Procedure Act is emphasized, with particular attention to adjudication, rulemaking, judicial review, investigatory powers, and enforcement. Study may include comparative state administrative law. Constitutional topics include separation of powers and due process. (Examination).

LAW 6401. Selected Topics in Constitutional Law. 1-3 Credits.
Selected topics in constitutional law to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take home examination, research paper or writing assignments).

LAW 6402. Antitrust Law. 3 Credits.
Federal antitrust law and policy under the Sherman, Clayton, and FTC Acts; basic economic theory of free-market operation; the Rule of Reason and per se offenses; price fixing, market division, and boycotts; trade association activities; monopolization and attempts to monopolize; mergers and joint ventures; resale price maintenance and other vertical restraints; exclusive dealing and tie-in agreements; selected exemptions from antitrust liability. (Examination).

LAW 6403. Advanced Antitrust Law Seminar. 2 Credits.
Procedural and substantive overview of merger enforcement and analysis. Enforcement by federal authorities in the United States and merger procedures and standards in other jurisdictions, including the European Union. Appropriate welfare standard for merger analysis; the role of various types of evidence in examining mergers, including econometric and customer evidences; biases inherent in the institutional design of federal merger review; remedies; the effect of overlapping merger reviews by antitrust and industry-specific regulatory agencies; and comparisons of the U.S. merger review system with those used elsewhere. Prerequisite: Law 6402 or permission of the instructor. (Research paper).

LAW 6404. Regulatory Theory and Policy. 2 Credits.

LAW 6405. Selected Topics in Advanced Antitrust Law. 1-3 Credits.
Selected topics in advanced antitrust law to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take home examination, research paper or writing assignments).

LAW 6406. Regulated Industries. 2,3 Credits.

LAW 6408. Food and Drug Law. 2 Credits.
Regulation of foods, drugs, and medical devices under the federal Food, Drug, and Cosmetic Act. Historical development of the law and how it is interpreted and enforced by the Food and Drug Administration and the courts. Statutory interpretation, administrative law, judicial enforcement, and the underlying roles of politics and science. (Examination).

LAW 6409. Selected Topics in Health Care Law. 1-3 Credits.
Selected topics in health care law to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take home examination, research paper or writing assignments).

LAW 6410. Health Care Law. 4 Credits.
Survey of the history, structure, and operation of the health care delivery system and related legal and policy issues. Emphasis on public and private health care financing, antitrust, fraud and abuse, managed care, tort liability of medical professionals and institutions, tort reform, and definition and regulation of the quality of health care. Concepts and terms of health care delivery, particularly the design, finance, and administration of current and proposed arrangements. (Take-home examination).

LAW 6411. Health Care Law Seminar. 2 Credits.
Intensive study of the health care industry, focusing on one or more of the following topics: liability arising out of managed care, ERISA preemption of state health laws, and various federal antitrust statutes as they pertain to health care. (Research paper).

LAW 6412. Communications Law. 2,3 Credits.
Study of the text, historical origin, and theoretical foundation of the Press Clause and of the role played by the mass media in modern society. Examination of the common law and constitutional protection accorded mass media publishing in areas such as libel law, the law of privacy, and liability for physical, emotional, or economic harm. The legal status of newsgathering, including journalist's privilege and access to information possessed by government. Problems of reconciling freedom of the press with guarantee of a fair trial. Government regulation of commercial speech, including advertising and promotion. Prior or concurrent enrollment in Law 6380 is recommended. (Examination).

LAW 6413. Federal Comm. Law Journal. 1,2 Credit.
Limited to third-year members of the student staff of the Federal Communications Law Journal. Second-year students must have enrolled in Law 6657 to reflect journal participation. This course is graded on a CR/NC basis. Satisfactory completion of Law 6657 in the second year and satisfactory completion of all journal work in the third year is required to receive credit for this course.

LAW 6414. Develpmnt in Telecomm Law. 2 Credits.
Legal and regulatory treatment of communications services and service providers, including telephone companies, cable operators, broadcast stations, wireless carriers, satellite providers, and new IP-based and next-generation networks. Regulatory challenges created by the delivery of content and services over multiple platforms employing different technologies. Rules, policies, and processes of the Federal Communications Commission and the statutory and judicial constraints on the FCC's authority to regulate existing and developing business models. (Take-home examination).

LAW 6416. Legislation. 2,3 Credits.
Legislative process and the construction and legal effect of statutes. Topics that may be considered include representational structures, lobbying, judicial review, direct democracy, legislative fact-finding and drafting, and the preparation and significance of legislative history. This course is a prerequisite to several advanced public law courses. (Examination).

LAW 6418. Legislative Analysis/Drafting. 2 Credits.
Instruction in the basic skills necessary for translating the specifications of the policymaker into legislation. Topics include determining policy objectives and an appropriate legislative scheme for their achievement; an overview of the legislative process; typical provisions in legislation; organizational issues in drafting; and the structural component of legislation. Enrollment is limited. (Take-home examination and drafting assignments) (Skills).

LAW 6419. Campaign Finance Law. 2-3 Credits.
The history, structure, application, and constitutionality of campaign finance laws. Topics include disclosure, regulation of corporations and unions, contribution limits, the role of issue advocacy in election campaigns, political party activities, public funding of campaigns, the role of the FEC, criminal enforcement of finance laws, and campaign finance reform. Focus on the Federal Election Campaign Act of 1971 and the Bipartisan Campaign Reform Act of 2002. (Take-home examination or research paper with permission of the instructor).

LAW 6420. Congressional Investigtn Smnr. 2 Credits.
Congressional powers to conduct oversight and investigations of the executive branch. Topics include the scope of Congressional inquiries and investigations; subpoena, grant-of-immunity, hearing, and rule-making powers; the use of select committees, the Government Accounting Office, and other special investigative techniques; pre-hearing depositions; the rights and preparations of witnesses; the role of the press; and the interaction between Congress and prosecutorial functions, including investigations conducted pursuant to the Independent Counsel Statute. (Writing assignments).

LAW 6421. Lawyers,Lobbying, and the Law. 2 Credits.
The role of the lawyer in business–government relations. Topics include an overview of government policymaking processes; how lawyers participate in influencing government decisions; the various types of lobbying (grassroots, direct, etc.); ethics and lobbying; lobbying regulatory agencies; and attorney–media relations. (Examination).

LAW 6422. Local Government Law. 2 Credits.
Survey of the legal authority of city, county, and special-district local government units. Topics include the relationship of municipal governments with state and federal agencies; recent U.S. Supreme Court decisions affecting local governments; organizational structure and internal decision-making processes in metropolitan and other municipal-level governments; procedures for changing the form and function of local governments (e.g., annexation); local legislative and administrative authority and processes (e.g., municipal police powers); municipal finance; responsibility in tort and insurance issues; community and regional land use planning; and joint power agreements and intergovernmental compacts. (Research paper).

LAW 6423. Veterans Law. 2 Credits.
Because of its isolation from judicial review for more than 20 years, the uniquely proclaimant veterans benefits system has procedures with no direct analogies to other legal areas and has different approaches to familiar legal issues. The history and politics of veterans benefits. The system's ideals and the burden of processing more than one million claims per year. (Take-home examination).

LAW 6424. Animal Law Seminar. 2 Credits.
Survey of the treatment of animals in state, federal, and international law. Topics include the historical status of animals; federal statutes such as the Animal Welfare Act, the Endangered Species Act, and the Marine Mammal Protection Act; international conventions, free trade, and comparative animal protection laws; state laws concerning animal cruelty, hunting, animal fighting, and performing animals; free speech, religion, and other constitutional issues; litigation in state and federal courts; citizen initiatives and referenda; and the movement to obtain legal recognition of the rights of animals. (Research paper).

LAW 6426. Public Law Seminar. 2,3 Credits.
Selected topics in public law to be announced at the time of registration. Enrollment is limited. (Research paper).

LAW 6427. Selected Topics in Public Law. 1-3 Credits.
Selected topics in public law to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take home examination, research paper or writing assignments).

LAW 6430. Environmental Law. 2,3 Credits.
Philosophical foundations, common law roots, and constitutional framework of U.S. environmental law. Major statutes dealing with endangered species, clean air, clean water, environmental impact assessment, and hazardous waste cleanup. Statutory objectives and regulatory strategies of these efforts and their relative effectiveness. Decision making in the face of scientific uncertainty, the role of cost–benefit analysis, and the relative distribution of environmental burdens and pursuit of environmental justice. Alternatives to conventional regulatory approaches. Not for credit toward an LL.M. in environmental law. (Examination or take-home examination).

LAW 6431. Wildlife and Ecosystems Law. 2-3 Credits.
In-depth study of the complex body of laws that protect or regulate wildlife, including laws that protect ecosystems and the habitats in which wild animals live. The course addresses more than two dozen wildlife-specific federal laws and their accompanying regulations, similarly intricate state law schemes, federal and state civil and criminal enforcement, constitutional and tribal issues that arise in wildlife cases, and a vivid common law history that stretches across several centuries. (Examination).

LAW 6432. Air Pollution Control. 2,3 Credits.
An in-depth analysis of the Clean Air Act. Topics include the history of air pollution control, air quality planning, standard setting, technology-based controls, incineration, indoor air pollution, permitting, and control of electrical utilities. (Examination or takehome examination).

LAW 6433. Environmental Law Enforcement. 2,3 Credits.

LAW 6434. Water Pollution Control. 2 Credits.
Introduction to water pollution control and the Clean Water Act, with emphasis on water quality requirements and policies affecting industrial, municipal, and agricultural/ development interests. Related federal laws and policies involving wetlands, watersheds, coastal pollution, oil spills, groundwater, and safe drinking water. (Examination).

LAW 6435. Trade&SustainableDevelpmnt Law. 2 Credits.
Overview of the major environmental treaties and other legal and institutional frameworks at the intersection of international trade issues and sustainable development efforts. Examination of the frequently conflicting views of judicial and quasi-judicial bodies, policymakers, and issue advocates. Emphasis on developing the theoretical bases and practical skills to address issues of trade and sustainable development that arise in governmental, private sector, and NGO practice, and effective legal strategies for addressing those issues on behalf of a wide range of clients. (Research paper).

LAW 6436. Water Resources Law. 2 Credits.

LAW 6437. Coastal,Navigatn,Wetlands Resr. 2 Credits.
Federal statutory and constitutional law governing the development, regulation, and protection of the waters of the United States, including wetlands. Focus on federal and state regulation and protection of wetlands and other aquatic resources, with special emphasis on Clean Water Act Section 404. Other topics include the evolution of federal authority over the navigable waters of the United States; legal issues involved in the planning, construction, and operation of federal water resource development projects by federal and state agencies (i.e., for navigation, flood control, hydropower, water supply, etc.); the federal navigation servitude; the Coastal Zone Management Act; the Marine Protection, Research, and Sanctuaries Act (i.e., the "Ocean Dumping Act"); the London Dumping Convention; and Fifth Amendment "regulatory takings." (Examination).

LAW 6438. Energy Law and Regulation. 2-3 Credits.
Survey of the law and regulation of energy production, distribution, and use. Topics include fuel production, electricity and natural gas utility regulation, nuclear and hydroelectric facility regulation, renewable energy, energy efficiency, and energy tax policy and financial incentives. Legislation and regulations developed in response to climate change concerns. (Examination, take-home examination, or writing assignments and class participation).

LAW 6439. Environmental Issues/EnergyLaw. 2 Credits.
Legal and policy issues at the intersection of energy and environmental law. Petroleum consumption, energy efficiency, clean air, renewable energy, nuclear energy, facility siting, and project finance. (Class presentation and research paper).

LAW 6440. Natural Resources Law. 2-3 Credits.
Introduction to federal public lands (BLM lands, national forests, national parks, and national wildlife refuges) and the legal issues related to their multiple resource uses– forestry, mining, water, recreation, wildlife, endangered species, and wilderness. Principles of federal and state authority over these lands. Administrative law and practice governing land-management agency decision making and litigation challenging such decisions. Focus on topical case studies, statutory materials, and case law. (Take-home examination).

LAW 6441. Energy Law Seminar. 2 Credits.
Selected topics in energy law to be announced at the time of registration. May be repeated for credit provided the topic differs. Enrollment is limited. (Research paper).

LAW 6442. Control-Solid/Hazardous Waste. 2,3 Credits.
Principal federal statutes governing the management and cleanup of hazardous substances and waste. Site and remedy selection processes, liability regime, and government and private enforcement rights under the Superfund statute. Rules for identifying industrial and commercial waste as hazardous; treatment, storage, and disposal standards; regulation of recycling; and operation of underground storage tanks. (Take-home examination).

LAW 6443. Oil and Gas Law. 2 Credits.

LAW 6444. Regulatn/ToxicSubstancesRisk. 2-3 Credits.
Government regulation of the production and use of toxic substances and the management of hazardous waste. The basic analytical processes of risk assessment and risk management; common law approaches to reducing risks from management of toxic substances; and precautionary legislation. Emphasis on federal legislation, including the Toxic Substances Control Act; the Federal Insecticide, Fungicide, and Rodenticide Act; the Safe Drinking Water Act; provisions of the Federal Food, Drug, and Cosmetic Act; the Resource Conservation and Recovery Act; and selected aspects of the Comprehensive Environmental Response, Compensation, and Liability Act. (Take-home examination).

LAW 6446. Nuclear Energy Law. 2 Credits.

LAW 6448. Occupational Health/Safety Leg. 2 Credits.

LAW 6449. Environmental & Toxic Torts. 2 Credits.
The use of common law and statutory remedies to compensate those experiencing personal injuries or economic harm caused by exposure to toxic products or toxins in the environment. Topics covered include novel and emerging theories of recovery (e.g., medical monitoring), class actions/mass torts, preemption, and methods of proving scientific causation. (Research paper or take-home examination).

LAW 6450. Federal Facilities Environ Law. 2 Credits.
Analysis of the legal framework governing environmental law compliance at federal facilities. Review of a wide range of environmental, fiscal, and other laws that uniquely regulate federal installations and operations. Topics include the National Environmental Policy Act, statutes governing management and conservation of federal property, expenditure of federal funds, public involvement in federal environmental decision making, federal–state sovereignty issues, federal agency litigation, and professional responsibility issues. Prerequisite or concurrent enrollment: Law 6432, 6434, and 6442. (Problem assignments).

LAW 6452. Environmental Issues-Bus Trans. 2,3 Credits.
Focus on applied environmental law. Emphasis on environmental compliance counseling, identifying environmental issues in business and real estate transactions, and drafting techniques to avoid environmental problems. Topics include environmental audits, securities disclosure issues, green advertising, criminal liability for officers, environmental liability for purchase of stock and corporate assets, lender liability, and partnership liability. Prerequisite: any environmental law course. (Take-home examination).

LAW 6454. International Environmentl Law. 2-3 Credits.
The treaty negotiation process, role of international institutions in developing and implementing environmental agreements, relationship between environmental law and international issues, developing countries' perspectives on environmental issues, and social and cultural changes that affect the implementation of environmental law. Issues covered include climate change, export of hazardous waste, deforestation and biodiversity, Antarctica, and environmental concerns in war, human rights, and development financing. (Examination).

LAW 6455. Int'l Climate Change Law. 2-3 Credits.
Analysis of the legal regimes created by the United Nations Framework Convention on Climate Change (UNFCCC) and by the Kyoto Protocol. Carbon finance and trading mechanisms created by Kyoto and national and regional schemes to assist parties to the treaty in meeting their obligations. Forest carbon sequestration schemes, structure and legal aspects of carbon finance transactions, and the drafting of carbon agreements. Proposals for federal legislation and emerging state and voluntary carbon credit schemes in the United States. Potential conflicts with WTO law and proposals for a successor regime to Kyoto post–2012. (Take-home examination).

LAW 6456. Environmental Planning. 2 Credits.

LAW 6457. Sustainable Communities Law and Policy Seminar. 2 Credits.
Focus on the emerging field of smart growth—regional development that takes into account economic, environmental, and social considerations. Factors influencing sprawl; urban trends in the U.S. and abroad; and new legal and interdisciplinary approaches to promote comprehensive planning, urban redevelopment, and regional competitiveness. (Research paper).

LAW 6458. Enviro Negot & Dispute Resol. 2 Credits.
Negotiation and alternative dispute resolution theories and processes, focusing on complex environmental disputes and transactions involving multiple parties and scientific or technical issues. Students participate in negotiation and mediation exercises both in and outside of class, using diagnostic and other tools useful for pre-negotiation preparation, mid-negotiation analysis, and post-negotiation evaluation of proposed agreements or deadlock. Prerequisite: completion of at least 6 credits of environmental law courses or permission of the instructor. Credit may not be earned for both Law 6458 and 6648. (Simulation and short papers)(Skills).

LAW 6459. Atomic Energy Law. 2 Credits.
The evolution of the Atomic Energy Act, the regulatory structure for non-military nuclear materials, federal and state law related to nuclear waste; waste transportation; the contrasting stories of two deep geologic permanent waste repositories (Waste Isolation Pilot Plant [WIPP] and Yucca Mountain); the dilemma posed by nuclear wastes having no disposal pathway; the law and policies to avert nuclear terrorism; and compensation when the unexpected happens. (Class presentation and research paper).

LAW 6460. Envir&Energy Policy Practicum. 2 Credits.
Students conduct in-depth law and policy development work on behalf of environmental or energy nonprofit organizations or government agencies, working closely with the client organization or agency to research one, or perhaps two substantial policy issues during the semester. The research is expected to lead to rule comments, a white paper, policy recommendations, draft legislation, revised organization procedures, or other similar policy outcomes. Students regularly meet with faculty supervisors to discuss project developments. Corequisite: Law 6469. Students are evaluated with a letter grade based on the written work product for the client organization or agency. Enrollment is limited. (Skills).

LAW 6461. Selected Topics in Environmental Law. 1-3 Credits.
Selected topics in environmental law to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take home examination, research paper or writing assignments).

LAW 6462. Law,Science,Technology Seminar. 2 Credits.

LAW 6463. Intl Environmental Compliance. 2 Credits.

LAW 6464. Environmental Crimes. 2 Credits.
Focus on crimes under various federal environmental statutes, including the interplay of statutory and regulatory provisions that define such crimes, development of investigations and prosecutions, the rationale for criminal sanctions for certain environmental violations, and salient policies and issues associated with environmental crimes. Prior experience with environmental law from either an academic or practical perspective is recommended. (Examination).

LAW 6465. Environmental Crimes Project. 1,2 Credit.
Focus on litigation and legislative projects relating to environmental crime. Students work on federal or state legislation to enhance both the existing environmental criminal laws and the resources available for their enforcement. Students also work with the instructor on developing environmental criminal cases around the country. Prerequisite: Law 6430. The instructor's approval is required for enrollment. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. This course is graded on a CR/NC basis. (Writing and project assignments) (Skills).

LAW 6466. Environmental Law Seminar. 2 Credits.
Selected topics in environmental law to be announced at the time of registration. May be repeated for credit provided the topic differs. Enrollment is limited. (Research paper).

LAW 6467. Environmental Legislation Proj. 1-4 Credits.
Open to second-, third-, and fourth-year students with permission of the instructor. Legislative research and drafting projects related to environmental issues. Students work under supervision of the instructor in conjunction with federal and state legislators and committees to draft specific bills or background papers for congressional committees or state bodies. Enrollment is limited. The grade of H, P, LP, or NC is given for this course. Prerequisite or concurrent registration: Law 6430. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6468. Graduate Enviromental Placemnt. 1-4 Credits.
The student works on a project in the environmental law field under the supervision of both the faculty director of the program and a lawyer practicing environmental law. The project may involve working with a government agency, a congressional committee, a private practitioner, or a nonprofit public-interest environmental organization. Admission to the course is limited to LL.M. students with permission of the environmental law program director. Students may earn no more than a total of 4 credit hours for this course. This course is graded on a CR/NC basis. Five hours of work per week are required for each credit.

LAW 6469. Environmental Lawyering. 1,2 Credit.
The role of the lawyer in representing government agencies and nonprofit organizations in the fields of environmental and energy law, with specific emphasis on public policy formation and interactions with regulated entities and the public. Environmental regulation, advanced environmental legal research, ethical concerns related to the practice of public interest law, client counseling and negotiations skills, the art of commenting on regulations and legislative drafting, the role of state and local governments in environmental protection, and the basics of environmental transactions. This course is corequisite for students enrolled in Law 6668 who have an environmental placement, as determined by the assistant dean for field placement; it is also corequisite for students enrolled in 6460. (Writing assignments).

LAW 6470. Intellectual Property. 3 Credits.
Survey of the different legal mechanisms for protecting intellectual property, including patent, trademark, copyright, and related state–law doctrines. This course is intended for students who desire a general exposure to intellectual property law but who do not plan to specialize in the field; taking this course as a foundation for more specific intellectual property courses is not recommended. Credit may not be earned for both Law 6470 and 6472 if 6472 is taken with Schechter. Not for credit toward an LL.M. in intellectual property law. (Examination).

LAW 6471. Patent Law. 2,3 Credits.
An overview of patent law designed for students without a patent background, including those without a technical background. Analysis of the goals and costs of the patent law system. Topics include patentability requirements, infringement, remedies, patent prosecution issues, and patent transactions. (Examination).

LAW 6472. Copyright Law. 2,3 Credits.
Historical background and general survey; how copyright is secured and maintained; subject matter of copyright; scope of protection; duration, renewal, and termination of transfers; jurisdiction and remedies; contracts and combinations, including compulsory licenses and performing rights societies; other doctrines neighboring on copyright; international aspects of copyright, including the Berne convention and other treaties on copyright and related subjects. Credit may not be earned for both Law 6472 and 6470 if 6472 is taken with Schechter. (Examination).

LAW 6473. International Copyright Law. 1-2 Credits.
Survey of the international law of copyright, including the application of key international law principles such as territoriality, national treatment and reciprocity, jurisdiction, and choice of law in copyright case law. International instruments for the protection of copyright and related rights; special problems such as P2P file sharing and technological protection measures; multilateral and bilateral enforcement issues; and unilateral approaches to combating piracy. Credit may not be earned for both Law 6473 and 6491. (Examination).

LAW 6474. Trademark & Unfair Compet Law. 2-3 Credits.
Consideration of how trademark rights are acquired at common law and under the Lanham Act; permissible and impermissible types of marks and the problem of "genericness"; protection of trade dress; trademark infringement and dilution; permissible uses of other firms' marks; trademark licensing and remedies; the right of publicity; and competitor and consumer remedies for false advertising under the Lanham Act and state statutes. When offered for 3 credits the course also addresses interference with contractual relationships and prospective economic advantage; the misappropriation doctrine; theft of business ideas and trade secrets; and prohibitions against unfair and deceptive practices under the Federal Trade Commission Act. (Examination or take-home examination).

LAW 6475. Entertainment Law. 2 Credits.
Overview of legal problems in film, theater, television, music, and publishing industries. Topics include the role of agents and managers, contractual provisions in different entertainment industries, protection for ideas and stories, right of publicity, and advanced copyright issues. Prerequisite: Law 6472 or permission of the instructor. (Examination and negotiation and drafting exercises).

LAW 6476. Patent Strategies and Practice. 2 Credits.
Patent practice and issues, with emphasis on strategic considerations. Focus on claim craftsmanship and consequences. Prerequisite: Law 6471 or permission of the instructor. (Examination).

LAW 6477. The Federal Circuit. 1-2 Credits.
The unique role of the U.S. Court of Appeals for the Federal Circuit as the only national court of appeals organized on the basis of subject matter rather than geography. Topics include the creation of the Federal Circuit and an overview of its varied jurisdictions (e.g., government contracts, constitutional takings, and international trade). Emphasis on the contributions of the Federal Circuit to patent law, and in particular its administration of eligibility, bars, "nonobviousness," equivalents, and other modern patent law problems. Comparative study of the patent jurisprudence of the Federal Circuit and other nations' courts. (Examination).

LAW 6478. Licensing-Intell Property Rght. 2 Credits.
Legal and business issues in the licensing of patents and other forms of intellectual property. Drafting of license agreements and the relationship between licensing of intellectual property and competition laws, including comparative regulations in Europe and Asia. License agreements involving governments and universities; tax and bankruptcy considerations; and multimedia licensing. (Examination and drafting exercises) (Skills).

LAW 6479. Intellectual Asset Management. 2 Credits.
Theoretical and practical aspects of managing such assets as intellectual property, technologies, knowledge, and human capital within business, economic, financial, and legal contexts. Intellectual assets recognized under domestic and international intellectual property and business laws; the limits of protection; claims for relief; the extent of damages that may be recovered; and identification, optimization, and strategic deployment of such assets within enterprises of varying sizes and in a variety of industries. Prerequisite: Law 6470, 6471, 6472, or 6474 or permission of the instructors. (Take-home examination).

LAW 6480. Chemical/Biotech Patent Law. 2 Credits.
Public policy and practice considerations relating to patenting biotechnology and chemical inventions with in-depth treatment of unique practice areas. Open to LL.M. students; J.D. students may enroll only with permission of the instructor. (Examination).

LAW 6481. Design Law. 2 Credits.

LAW 6482. Patent Enforcement. 1,2 Credit.
Patent litigation for those who may wish to specialize in general litigation with occasional handling of patent cases, as well as for those interested in a patent solicitation career. Focuses on a rounded understanding of policy and practice considerations in the enforcement of patents. (Examination or take-home examination at the instructor's discretion).

LAW 6483. Patent Appellate Practice. 2 Credits.
Comprehensive study of the Court of Appeals for the Federal Circuit and its jurisdiction over patent cases from the perspective of an appellate practitioner. Litigation strategies and the process of guiding a client through an appeal. (Examination).

LAW 6484. Computer Law. 2 Credits.
Intellectual property rights in computer software and in cyberspace. Public policy issues relating to software and computer-related inventions and works; patent vs. copyright vs. sui generis protection debate. Patent or copyright background and some knowledge of computer technology is helpful. In even-numbered years focus is on copyright; in oddnumbered years focus is on patents. Open to LL.M. students; J.D. students may enroll only with permission of the instructor. (Research paper).

LAW 6485. Law in Cyberspace. 2-3 Credits.
Survey of theoretical and practical aspects of legal issues concerning cyberspace, including First Amendment free speech rights, commerce, computer crime, privacy, political participation, and jurisdiction. Computer background is not a prerequisite. (Examination).

LAW 6486. Information Privacy Law. 3 Credits.
Information privacy law, including the development of constitutional, tort, contract, property, and statutory law to address emerging threats to privacy. Privacy and the media, privacy and law enforcement, workplace privacy, privacy and online transactions, medical and genetic privacy, and privacy and personal records and information. (Examination).

LAW 6488. Art CulturalHeritage & the Law. 2 Credits.
Legal and policy implications at the intersection of art and the law, including intellectual property, First Amendment, and international law issues. Legal relationships between artists, dealers, auction houses, collectors, and museums. The international framework for the trade and protection of cultural property and heritage. Prior course work in intellectual property law and international law is recommended. (Research paper).

LAW 6489. Enforcement of IP Rights/ITC. 2 Credits.
In-depth examination of the U.S. International Trade Commission (ITC). The full scope of the ITC's unique jurisdiction, with primary focus on its role with respect to the adjudication and enforcement of intellectual property rights. The enactment of Section 337 of the Tariff Act of 1930 and important amendments that enable the ITC's authority over unfair trade practices relating to intellectual property matters, including patents, copyrights, trademarks, trade dress, gray market, and trade secrets. Organization of the ITC, including its commissioners, administrative law judges, and the Office of Unfair Import Investigations. All aspects of litigation, from the institution of an investigation under Section 337 to post-hearing phases. The unique requirements in Section 337 cases of importation, domestic industry, and injury. The scope of available remedies in Section 337 cases, the role of U.S. Customs in enforcing ITC exclusion orders, and review of ITC decisions and the Federal Circuit's jurisprudence relating to ITC matters. (Examination).

LAW 6490. Intrntl/Comparative Patent Law. 2 Credits.
A study of patent reform issues including domestic patent reform legislation and ongoing harmonization treaty discussions under WIPO; review of selected topics with comparative study from viewpoint of Japan, the United States, and Europe. (Research paper).

LAW 6491. Int'l Intellectual Property. 3 Credits.
Examination of international protection of intellectual property, surveying various international agreements and treaties for copyrights, patents, trademarks, and trade secrets, with focus on the agreement on Trade Related Aspects of Intellectual Property (TRIPs) of the World Trade Organization. Consideration of the basic concept of territoriality, national treatment, minimum standards, and political and policy concerns related to efforts to secure and strengthen protection of intellectual property internationally. Credit may not be earned for both Law 6491 and Law 6473. (Examination).

LAW 6492. Advanced Trademark Law. 2 Credits.
In-depth analysis of developing issues in trademark and unfair competition law, including legal, economic, and moral rationales for protection of trademarks, trade dress, domain names, celebrity persona, and related intellectual property rights; the nebulous concept of trademark dilution; tensions among trademark protection on the one hand and parody, fair use, and free speech on the other; the trademark functionality doctrine; regulation of comparative, misleading, and deceptive advertising; trademark and advertising surveys; the international dispute resolution system for challenges to domain name registrations; use and abuse of trademarks on the Internet; and trademarks in international trade, including the extraterritorial effect of U.S. trademark law, protection of well-known marks not used in the United States, restrictions on parallel imports, and use of geographic trademarks and indications. In-class practical exercises include challenging domain names using the Uniform Domain Name Dispute Resolution Policy, reviewing a mock website for a new consumer product; and seeking provisional relief based on consumer perception surveys in a trade dress litigation. (Take-home examination or research paper with permission of the instructor).

LAW 6493. Internet Law. 0-2 Credits.
Focus on speech on the Internet, including governmental attempts to control or filter speech, intermediary liability for third-party speech, digital rights management and other copyright issues, and domain names as speech. The rules and institutions that permit or disallow governance of these issues. GW degree candidates may not receive credit for both Law 6493 and 6485. (Examination).

LAW 6494. Intellectual Proprty Antitrust. 2 Credits.
Domestic and international concerns relating to antitrust and fair trade, with emphasis on U.S., European, and Japanese models. Consideration of basic intellectual property principles in patents, trademarks, and copyrights necessary for application of antitrust principles. Advanced understanding of antitrust law is a prerequisite unless waived by the instructor. Enrollment is limited. Prerequisite: Law 6402 or permission of the instructor. (Research paper).

LAW 6495. USPTO Post-Grant Patent Proceedings. 2 Credits.
This course covers all post-grant patent proceedings conducted before the United States Patent and Trademark Office (USPTO) including inter partes reviews (IPR), post-grant reviews (PGR), covered business method (CBM) reviews, patent reexaminations, patent reissues, patent interferences,derivative proceedings, and supplemental examinations. Differences between these administrative proceedings, presiding bodies, and Article III proceedings are studied as well as their practical and theoretical interplay. The course also explores the legislative evolution that led to the development of post-grant proceedings, as well as pending legislative and rule-based initiatives, and compares them with similar European proceedings. Prerequisite: Law 6471 (Patent Law) or permission of instructor(s). (Examination) Prerequisite: LAW 6471.

LAW 6496. Intellectual Property Law Sem. 0-2 Credits.
Selected topics in intellectual property law to be announced at the time of registration. Open to LL.M. students; J.D. students may enroll only with permission of the instructor. (Research paper).

LAW 6497. Selected Topics in Intellectual Property Law. 1-3 Credits.
Selected topics in intellectual property law to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take-home examination, research paper, or writing assignments) Prerequisites: Law 6471.

LAW 6498. Intell Property Issues Shrt Sm. 1 Credit.

LAW 6500. Government Contracts. 3 Credits.
Survey of the basic principles of government procurement, including the powers and limitations on government instrumentalities entering into contracts, the respective roles of the three branches of government in the process, the processes of contract formation and administration, the resolution of disputes arising out of both processes, and the various forums available for dispute resolution. Although the focus of this course is primarily on federal government procurement, there will be some consideration of state and local government contracting and may be some coverage of procurement by other nations or inter-national organizations. This course covers some of the material covered in Law 6502 and 6503, but at an introductory level. Not open to students in the LL.M. program in government procurement law. (Examination and problem assignments).

LAW 6501. MSGC Capstone Research and Writing Project. 3 Credits.
Research and writing project under the supervision of the government procurement law faculty. Integration and demonstration of cumulative learning experiences in the Master of Science in Government Contracts program offered by the GW School of Business. Taken in the student's final semester in the program and in conjunction with LAW 6504. (Research paper) Restricted to Master of Science in Government Contracts (MSGC) students in the GW School of Business.

LAW 6502. Formation-Government Contracts. 3-4 Credits.
Survey of the law pertaining to government procurement, including an analysis of the unique features of government contracting and a discussion of the functions of Congress, the executive branch, and the courts in the procurement process. The course focuses on the contract formation process, including techniques for awarding contracts and litigation and protests involving awards. (Examination and problem assignments).

LAW 6503. Selected Topics in Government Contracts. 1-3 Credits.
Selected topics in government contacts to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take home examination, research paper or writing assignments).

LAW 6504. MSGC Capstone Scholarly Writing. 1 Credit.
Topic selection, specialized research, and the process of organizing and writing for students in the Master of Science in Government Contracts program offered by the GW School of Business. Taken in the student's final semester in the program and in conjunction with LAW 6501. Restricted to Master of Science in Government Contracts students in the GW School of Business.

LAW 6505. Government Contracts Advocacy. 2-3 Credits.
Categories of federal government contract litigation, including bid protests, contract claims, qui tam suits, and administrative suspension and debarment proceedings. Substantive and procedural problems and emerging legal and policy issues involving the Government Accountability Office, the U.S. Court of Federal Claims, and the agency boards of contracts appeals. Students draft pleadings and briefs and participate in simulations, including depositions and settlement negotiations. Enrollment is limited. (Writing assignments) (Skills).

LAW 6506. Govt Contracts Cost & Pricing. 2 Credits.
Legal aspects of government contract accounting principles and allowability of costs. Cost accounting standards and cost allocation issues. Negotiation of cost, profit, and price. Disclosure of cost accounting data. (Problem assignments).

LAW 6507. Gov Procuremnt,Contrct,Env Law. 2 Credits.

LAW 6508. Comparative Public Procurement. 2-3 Credits.
Comparative study of laws, regulations, and procedures dealing with public procurement. Differences between national and international procurement practices, and common principles that span many procurement systems across the world. Contract formation, performance, and dispute resolution processes. The influence of international organizations such as the European Union, United Nations Commission on International Trade Law, World Trade Organization, financing institutions, and professional organizations. Prerequisite or concurrent registration: Law 6500, 6502, 6503, or permission of instructor. (Research paper).

LAW 6509. Government Contracts Seminar. 2 Credits.
Selected topics in government procurement law to be announced at the time of registration. (Research paper).

LAW 6510. Graduate Gov Contracts Placemt. 1-4 Credits.
Students work on a project in the government contracts field under the supervision of the faculty directors of the program and a lawyer practicing government contract law. The project may involve working with a government agency, a congressional committee, a private practitioner, or a nonprofit public-interest organization. Admission to the course is limited to LL.M. students and requires approval of one of the faculty directors of the program. This course is graded on a CR/NC basis. Five hours of work per week are required for each credit.

LAW 6511. Anti-Corruption and Compliance. 2 Credits.
This course will cover domestic and international anti-corruption laws. Domestically, this course will examine traditional U.S. bribery and gratuity laws, the U.S. Foreign Corrupt Practices Act, the Procurement Integrity Act, fraud actions under the False Claims Act, contractor compliance programs, mandatory disclosure rules, the suspension & debarment regime – and the implementation and enforcement of these laws and programs. The course will also cover international anti-corruption efforts both in enforcement and through international instruments, such as the Organization for Economic Cooperation and Development Anti-Bribery Convention, the UK Bribery Act, and other emerging anti-corruption regimes. (Take-home examination and exercises).

LAW 6512. Gov.Procurement-Itel. Property. 2 Credits.
Intellectual property law in terms of its challenges to federal government procurement rules. Competing policy demands for innovation, transparency, and sound public investment in the intersection of intellectual property law and federal procurement rules. (Problem assignments) International Law.

LAW 6513. Selected Topics in Government Contracts. 1-3 Credits.
Selected topics in government contracts to be announced at the time of registration. May be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take home examination, research paper, or writing assignments).

LAW 6520. International Law. 3,4 Credits.
Introductory survey of the legal system governing relations among states and its expansion to non-state actors, such as international organizations, natural and juridical individuals, indigenous groups, and proto-states. Analysis of the sources of international law, including the formation of customary norms and techniques of treaty interpretation; the application and enforcement of international law in domestic courts, international tribunals, organizations, and diplomacy; doctrines of jurisdiction and immunities; the impact of emerging states and new technologies on doctrine; the use of force; human rights; constitutional aspects of international law; and recurring political and jurisprudential issues. (Examination).

LAW 6521. Int'l Money Laundering. 3 Credits.
Interrelationships among money laundering, corruption, and terrorism, their threat to global peace and prosperity, and the convergence of international law efforts to confront them. Because the detection of concealed assets is essential to deterring these crimes, students will learn the fundamentals of financial investigation and "mutual legal assistance" between countries through a five-week computerized gaming exercise. (Paper and examination or take-home examination at the instructor's discretion).

LAW 6522. Internatl Business Transaction. 3 Credits.
U.S. law and practice relating to characteristic forms of international trans-actions, including the transnational sale of goods (the law governing the documentary sale, various forms of letters of credit, commercial terms and insurance); the export of technology through franchising, distributorship, and licensing contracts; and the export of capital through the establishment, operation, and withdrawal of foreign direct investment. The impact of relevant international organizations and/or emerging substantive international commercial law (e.g., the United Nations Convention on Contracts for the International Sale of Goods). Specialized problems in the negotiation and structure of international transactions. (Examination).

LAW 6523. Int'l Competition Law Regime. 2 Credits.
Anti-monopoly laws and their national and international enforcement. Competition policy and key national, bilateral, and multinational elements of the emerging international competition regime. Recommended: Law 6402. (Research paper).

LAW 6524. International Commerce Law. 2 Credits.
The study of international transactions for the purchase, sale, payment for, and financing of goods, as governed by the U.N. Convention on Contracts for the International Sale of Goods and other multilateral treaties on international lease financing, factoring, commercial paper, and fund transfers. The substantive provisions of these treaties, the process by which they are developed, and the various interpretive approaches available under different legal regimes will be considered. (Examination or research paper with permission of the instructor).

LAW 6526. International Trade Law. 2,3 Credits.
Study of domestic and international laws and institutions governing foreign trade. Legal aspects of U.S. participation in the World Trade Organization, NAFTA, and other international forums; laws regulating customs and tariffs, most-favored nation treatment, subsidies, dumping, unfair trade practices, and disruptive imports under the escape clause. Specialized problems in regulating exports under the Export Administration Act, boycotts, corrupt practices, and restrictive business practices may be covered. (Examination).

LAW 6527. Adv International Trade Law. 2-3 Credits.
In-depth study of the World Trade Organization rules and its dispute settlement system. Each year the course examines some of the most recent developments in trade law, with a close reading of recent WTO adjudicatory decisions on issues such as subsidies, regulation of goods, regulation of services, sanitary restrictions, product standards, investment measures, and intellectual property. Issues of U.S. trade law and the relationship of international trade law to other fields of international law may also be addressed. Prerequisite: Law 6526 or permission of the instructor. (Take-home examination or research paper with permission of the instructor).

LAW 6528. International Civil Litigation. 2-3 Credits.
Analysis of the law relevant to the trial of cases having international elements in U.S. domestic courts, including the problems of establishing jurisdiction over foreign defendants, obtaining transnational discovery and service of process, enforcing foreign judgments, drafting and defending choice of forum and choice of law clauses, determining the extraterritorial reach of U.S. law, proving foreign law, and assessing the role of U.S. courts in deciding cases with potential consequences for U.S. foreign relations. The impact of international issues on actual litigation as well as the initial structuring of a transaction in light of the client's potential litigation interests. Prerequisite or concurrent registration: Law 6520; for post-J.D. students, permission of instructor may be substituted. (Examination).

LAW 6530. International Organizations. 2,3 Credits.
Analysis of characteristic legal issues arising out of the creation and operation of organizations of nation states. Included are issues of legal personality, treaty making and norm creation, law making, privileges and immunities, membership, dispute settlement, and withdrawal. Emphasis on the United Nations and its activities, including those relating to peace, security, and human rights. Exemplary problems in organizations such as the International Labour Organization, the World Health Organization, and the World Trade Organization. (Examination).

LAW 6532. Comparative Law. 2,3 Credits.
Study of legal systems in the civil law tradition (France, Germany, Italy, Spain, Latin America, Japan). Comparison with the common law system. Consideration of the history and sources of the civil law, the major public and private law institutions in civil law countries, civil and criminal procedure, the role of civil law lawyers (and of international lawyers working with them), and selected substantive legal issues. Several sessions are devoted to Islamic law as an example of a sophisticated non-European system. (Examination).

LAW 6533. International Family Law. 2-3 Credits.
Comparative study of domestic and international laws and institutions affecting family law. The role of the state and religion in family decision making, marriage, divorce, child custody, property distribution, alimony, adoption, and inheritance rights. Treaties affecting substantive rights and international recognition of domestic decisions. Recommended: Law 6520 or 6532. (Examination or research paper with permission of the instructor).

LAW 6534. Law of the European Union. 2-4 Credits.
Study of the legal nature and structure of the European Union. Topics include the roles of the Court and the other institutions, the question of sovereignty, the "four freedoms," competition, company law and labor relations, agriculture, and the EU in international law. (Examination).

LAW 6535. Islamic Law. 2 Credits.
Overview of the origins of Islamic law and development of schools of Islamic jurisprudence. Foundations of Islamic constitutional law, separations of powers, civil rights, the law of obligations, formation and dissolution of contracts, remedies, business contracts, banking law, and family law including marriage, divorce, child custody, and the law of property and inheritance. Crimes and punishments. Islamic law as it pertains to international issues. (Take-home examination or research paper with permission of instructor).

LAW 6536. Law of Japan. 2,3 Credits.
Introduction to the Japanese legal system and comparative analysis of U.S. and Japanese law. Constitutional law, separation of powers (including political institutions and the judicial system), corporate law, equality law, religious freedom, administrative law, civil and criminal procedure, and the legal profession. (Examination or research paper with permission of the instructor).

LAW 6537. Traditional Jewish Civil Law. 2 Credits.

LAW 6538. Immigration Law I. 2-3 Credits.
Theory and application of the Immigration and Nationality Act and 8 Code of Federal Regulations. Examination of practice before the Executive Office for Immigration Review, Citizenship and Immigration Services, Immigration and Customs Enforcement, Customs and Border Protection, Department of State, and Department of Labor. Removal, political asylum, adjustment of status, naturalization, and other issues. Enrollment is limited. (Examination).

LAW 6539. Immigration Law II. 2 Credits.
Family- and employment-based immigration practice. Regulations, case law, and procedural aspects concerning employment-based, nonimmigrant visa admission into the United States and lawful permanent resident status in the United States through employment and/or family preferences categories. Prior enrollment in an immigration law course is not required. (Take-home examination).

LAW 6540. Refugee and Asylum Law. 2 Credits.
Selected topics from the areas of international law pertaining to the protection of refugees and domestic law of political asylum. Enrollment is limited. (Take-home examination).

LAW 6541. International Finance. 3 Credits.

LAW 6542. Int'l Banking&Investment Law. 2 Credits.
Study of the legal aspects of international banking and finance, including international laws and regulations concerning the structure and transactions of international banks and institutions. Topics include the institutional, legal, and regulatory frame work for international commercial banking and development finance; the emerging rules regarding international trade in financial services; international supervision of banking activities and regulation of banking transactions; contractual instruments for international financial transactions; and international debt and development crisis. Credit may not be earned for both Law 6542 and 6541. (Examination).

LAW 6543. Law of the People's Repub/Chin. 2-3 Credits.
Introduction to the basic institutions and processes of the legal system of the People's Republic of China. Focus on the contemporary system and its role in political, economic, and social developments. (Take-home examination).

LAW 6544. Foreign Direct Investment. 2 Credits.
An examination of the legal, business, and financial problems involved in investing across national borders. Focuses on the strategies and techniques for structuring such investments and on the framework of regulation that affects them. The analysis includes U.S. regulation of foreign investors, different types of foreign regulation of U.S. investments, and international controls on domestic regulation of foreign investment through treaties and conventions. Model international transactions and sample documents are used to illustrate basic issues. (Examination).

LAW 6545. International Project Finance. 2 Credits.
The use of contracts to shift and mitigate risks inherent in the acquisition, construction, and development of capital-intensive infrastructure projects (e.g., power generation, oil and gas production and distribution, industrial processes, telecommunications networks). Structural and risk allocation issues. Project finance in an international context with a focus on emerging markets. Prior enrollment in Law 6280 is recommended. (Examination).

LAW 6546. International Law-Human Rights. 3,4 Credits.
An overview of international and regional human rights instruments and institutions, focusing on the manner in which the United Nations, Inter-American, European, and African human rights systems seek to protect individual and group rights. Examination of the problems these systems have encountered in discharging their mandate and exploration of ways to strengthen international and regional governmental and nongovernmental efforts in the human rights field. Prerequisite or concurrent registration: Law 6520; for post-J.D. students, permission of instructor may be substituted. (Examination).

LAW 6547. RegionalProtection/HumanRights. 3 Credits.
Advantages and disadvantages of addressing human rights issues regionally rather than at the national or global levels. The jurisprudence and procedures of the European, Inter-American, and African human rights systems. The potential for developing a regional system in parts of Asia. Prerequisite: Law 6520. (Research paper).

LAW 6548. Air and Space Law. 2 Credits.
International law related to the use of outer space. Analysis of space treaties in force, the role of intergovernmental and nongovernmental international organizations, and space laws and regulations of various nations. The relationship of space law to air law. Issues of liability resulting from space activities, military use of space, pollution and contamination of outer space, and earth observations and remote sensing. Enrollment is limited. Prerequisite: Law 6520 or permission of the instructor. (Research paper).

LAW 6549. Chinese Business Law. 2 Credits.
Introduction to the regulatory regime governing business activity in China. Issues of concern to foreign traders and investors. Specific regulations and their implementation in practice. (Take-home examination).

LAW 6550. Law of the Sea. 2 Credits.
International law related to the use of ocean space. Development of international law concerning internal waters, territorial sea, contiguous zone, high seas, continental shelf, fisheries, exclusive economic zone, maritime boundaries, marine environment, marine scientific research, deep seabed, and settlement of disputes. Current legal and policy issues associated with these areas. Prerequisite or concurrent registration: Law 6520; for post-J.D. students, permission of instructor may be substituted. (Examination).

LAW 6551. Intl Law/Territory&TerritDispu. 2,3 Credits.

LAW 6552. Law of War. 2 Credits.
Human rights law in international and internal armed conflict, examining the origins of the law of war, the 1949 Geneva Conventions for the Protection of War Victims, the Geneva Protocols of 1977, the 1980 Geneva Conventional Weapons Convention, other treaties and customary international law relating to means and methods of warfare, the role of the International Committee of the Red Cross, war crimes and enforcement mechanisms, and current problems in the regulation of hostilities. Prerequisite: Law 6520. (Research paper).

LAW 6553. Export Ctrl Law & Reg. 2 Credits.
Study of U.S. laws and regulations that govern the export of defense products and dualuse civilian technologies. Examination of international export control treaties and case studies. Students participate in team exercises involving export transactions. (Takehome examination).

LAW 6554. International Criminal Law. 2 Credits.
Prosecution of international crimes and application of national criminal law across international boundaries. The use of criminal sanctions to serve the objectives of the international community, particularly with respect to peace, national security, and human rights. Prior enrollment in Law 6520 is recommended. (Examination).

LAW 6555. Comparative Constitutional Law. 2-3 Credits.
Comparative study of U.S. and non-U.S. legal systems. Structural issues including federalism and separation of powers; individual rights issues including affirmative action, abortion, and freedom of speech. (Take-home examination).

LAW 6556. International Arbitration. 2 Credits.
Survey of arbitration and related mechanisms of dispute resolution in the international legal system that arise out of commercial, financial, and governmental transactions. Analysis of the arbitration agreement, the process of arbitration, and the enforcement of arbitral awards as well as the common principles governing the disposition of claims. Review of the various arbitral tribunals and their rules. Prerequisite or concurrent registration: Law 6520 or 6522; for post-J.D. students, permission of instructor may be substituted. (Examination or take-home examination at the instructor's discretion).

LAW 6557. Intro. to Trans. Islamic Law. 1-2 Credits.
Examination of the principles of Islamic finance, Shari'a investment criteria, and the means to structure Shari'a-compliant transactions and products. Focus on Islamic law as applied to cross-border transactions, regardless of the nature and identity of the players. Case studies analyze underlying investment principles and agreements and the legal environment in which they operate, including the role of Islamic banking and finance in addressing global challenges in such sectors as the development of renewable energy, infrastructure, and technology transfer. (Take-home examination).

LAW 6558. International Negotiations. 2 Credits.
International negotiations from a practitioner's perspective, with a focus on privatesector negotiations. The roles and interests of each of the parties to a negotiation (including private actors, lending institutions, governments and government agencies, and multinational nonprofit organizations); political and other domestic issues affecting international negotiations; practical exercises in negotiations; and multilateral negotiations. Prerequisite or concurrent registration: Law 6520 or 6522; for post-J.D. students, permission of instructor may be substituted. (Research paper).

LAW 6559. Nation Building & Rule of Law. 2 Credits.
Legal norms and techniques used to help stabilize and rebuild societies emerging from violent conflict. Clarifying and reforming laws, reconstructing and staffing judicial and law enforcement institutions, and establishing mechanisms to deal with past atrocities. Prior enrollment in Law 6520 or 6532 is recommended. (Research paper).

LAW 6561. Selected Topics in Public International Law. 1-3 Credits.
Selected topics in public international law to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take home examination, research paper or writing assignments).

LAW 6562. Public International Law Sem. 2 Credits.
Selected topics in the theory and practice of international law to be announced at the time of registration. Enrollment is limited. May be repeated for credit if topic differs. Prerequisite: Law 6520 or permission of instructor. (Research paper).

LAW 6563. Trade Remedy Law. 2 Credits.
Remedies for U.S. businesses facing competition from imports, including U.S. laws concerning antidumping, countervailing duties, and safeguards. (Take-home examination).

LAW 6564. Intrntl Business Transactions. 2 Credits.
Selected topics in international business law and practice to be announced at the time of registration. Enrollment is limited. Prerequisite: Law 6522 or permission of instructor. (Research paper).

LAW 6565. Comparative Law Seminar. 2,3 Credits.
Selected topics in comparative law to be announced at the time of registration. Enrollment is limited. (Research paper).

LAW 6566. Selected Topics in International Business Transactions. 1-3 Credits.
Selected topics in international business transactions to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take home examination, research paper or writing assignments).

LAW 6567. Human Rights Advocacy. 2 Credits.

LAW 6568. Human Rights Lawyering. 2,3 Credits.
Human rights lawyering from the perspective of victims' advocates and governmental and inter-governmental officials. Overview of international human rights law and key domestic legal principles. Methods of investigation and fact-finding, interpretation and application of law, and choice of remedies. Role playing and other class exercises using the United Nations and Inter-American systems as models. (Take-home examination).

LAW 6569. Selected Topics in Comparative Law. 1-3 Credits.
Selected topics in comparative law to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take home examination, research paper or writing assignments).

LAW 6570. Int'l Human Rights of Women. 2 Credits.
Theoretical and practical challenges to reinforcing international human rights of women. Major international and regional treaties and instruments; standards to determine sex discrimination as developed by international tribunals and domestic courts; interaction of international and domestic law in the context of women's rights; and feminist/ activist theories and critiques on topics such as state responsibility for violence against women and conflicts between women's rights and religious or cultural rights. (Research paper).

LAW 6571. Human Rights&Enviro Protection. 2-3 Credits.
The intersection of national and international law on human rights and environmental protection, with focus on rights-based approaches to environmental protection and how environmental deterioration may limit or infringe the enjoyment of guaranteed rights. The current state of the law concerning a claimed right to a safe and healthy environment, corporate social responsibility, land and resource rights of indigenous peoples, the role of international financial institutions, and human rights litigation linked to environmental harm. Prerequisite: Law 6520. (Research paper).

LAW 6573. Tax-Timing of Income/Deduction. 2 Credits.

LAW 6576. Human Rights and Women. 2 Credits.

LAW 6577. Special Corporate Tax Problems. 2 Credits.

LAW 6578. Human Rights Advocacy/Dissemnt. 2 Credits.

LAW 6584. Human Rts & Mil Resp/Terrorism. 2 Credits.

LAW 6585. Fundamentals/Intl Trade Law. 1 Credit.

LAW 6588. Tax Practice/Procedure Seminar. 2 Credits.

LAW 6589. Women, Money and Law. 2-3 Credits.
Historical, theoretical, and practical approaches to issues involving the relationship between gender and financial power with an introduction to basics of financial planning. Recommended prerequisite or corequisite: Law 6300 and either Law 6250, 6342, or 6343. (Research paper).

LAW 6590. Jurisprudence. 2,3 Credits.
Basic jurisprudential concepts; nature of law; development of legal institutions; jurisprudential schools—natural law, analytical, historical, sociological, functional; law and logic; law and justice; the judicial process; legislative, executive, administrative decision making; impact of politics, economics, and scientific advance on legal systems; contemporary trends in jurisprudential thought. (Take-home examination).

LAW 6591. Survey of US Legal History. 2-3 Credits.
Examination of the history of U.S. law from the seventeenth century to the present. Topics include Anglo-American constitutionalism, the reception and transformation of the common law, slavery and the law, race and gender in U.S. law, corporations, labor and the rise of the regulatory state, and legal education and the legal profession in U.S. history. (Research paper).

LAW 6592. Jurisprudence Seminar. 2,3 Credits.
Selected topics in legal theory to be announced at the time of registration. Enrollment is limited. (Research paper or examination).

LAW 6593. Introduction to Legal Theory. 1 Credit.
Introduction to different schools of legal thought and theory, including but not limited to Lockean, Hegelian, utilitarian, economic, feminist, critical legal, public choice, and sociobiological theory. Principles and policies that motivate changes in legal doctrine and how concepts of morality, personal autonomy, collective action, tripartite government, equity, and efficiency affect the legal process. The objective is to offer law students a foundation to be conversant in different concepts that relate to their legal training, particularly in the first-year curriculum. Enrollment is restricted to first-year J.D. students assigned to this course. (Examination).

LAW 6594. History of the US Constitution. 2,3 Credits.
Examination of the philosophical and historical background of the U.S. Constitution, including the writings of Locke and Montesquieu, with particular attention to social contract theory, natural law, and separation of powers principles. Consideration of the relevance of these concepts to the debates surrounding the drafting and ratification of the Constitution and the original Bill of Rights, and the degree to which these concepts have been reflected in decisions of the Supreme Court, including selected decisions of the Marshall Court and several more recent decisions. (Take-home examination or research paper with permission of the instructor).

LAW 6595. Race, Racism, & American Law. 2-3 Credits.
Examination of the influence of race and racism on the development of law in the United States. The use of law by legislatures and judges, both to enforce and to remedy racism in selected contexts, possibly including criminal justice, voting rights, public accommodations, education, employment, housing, free speech, and family law. The course will also consider the utility of critical race theory as a method of legal analysis. (Examination or take-home examination).

LAW 6596. Law of Race and Slavery. 2,3 Credits.
The role of legal norms and processes in developing patterns of slavery and race relations in the United States and other societies. Application of themes and methods from comparative and historical sociology to the study of legal history. Topics include the legal origins of slavery in the Americas, law and racial classifications, social and economic consequences of legal discrimination, and legal remedies and the undoing of systems of discrimination. Comparative study of the history of race relations in the United States, Latin America, and South Africa. Enrollment is limited. (Research paper).

LAW 6597. Legal History Seminar. 2,3 Credits.
Selected topics in legal history to be announced at the time of registration. Enrollment is limited. (Research paper).

LAW 6598. Law and Economics. 2,3 Credits.
An introduction to the main features of the Law and Economics movement, with particular attention to the content, application, and criticisms of the Coase theorem. Topics include a brief review of essential aspects of price theory (including the concept of a competitive price equilibrium), an introduction to the principal notions of welfare optimality (including Pareto and Hicks–Kaldor efficiency), and the problems posed by externalities and public goods. Emphasis on some of the classical works in this field and applications to specific decisions. (Examination).

LAW 6599. Prof. Resp. & Ethics Seminar. 2 Credits.
Selected topics in professional responsibility and ethics. Intensive study of questions of lawyer responsibility and ethics raised by professional codes and moral philosophy. This course does not satisfy the professional responsibility requirement. Prerequisite: Law 6218. Enrollment is limited. (Research paper).

LAW 6600. Public Economic Policy & Law. 2 Credits.

LAW 6601. History of the Common Law. 3 Credits.
The history of legal procedure and institutions in England and the United States, in particular the relationships among judges, juries, and lawyers in civil and criminal cases. Development of rules of evidence; links between law and equity. How changes in politics, society, and economics affect legal procedures and courts. Origins of the adversarial legal system and comparisons with the inquisitorial system on the European continent and elsewhere. (Examination or research paper with permission of the instructor).

LAW 6602. Law and Accounting. 2,3 Credits.
Study of fundamental accounting principles with emphasis on corporation accounting; legal and accounting implications of specific items in financial statements of corporations; inventory adjustments; corporate transactions, distributions, capital adjustments. No accounting background required; students who majored (or the equivalent) in accounting or who hold certifications as Certified Public Accountants (CPA) may not enroll. (Quizzes and problem assignments or examination with the permission of the instructor).

LAW 6603. Selected Topics in Professional Responsibility and Ethics. 1-3 Credits.
Selected topics in professional responsibility and ethics to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take home examination, research paper or writing assignments).

LAW 6604. Quantitative Analysis-Lawyers. 2,3 Credits.
Introductory course for lawyers that does not assume or require advanced mathematical skills. Application of non-legal methods of analysis in public policy problems with attendant evidentiary requirements, including the effective use of experts. Principal nonlegal methods of policy analysis, including micro-economic analysis (basic price theory and industrial organization), financial analysis (including the roles of financial institutions), and statistical analysis. Introduction to basic analytic concepts and terminology/ jargon, common applications of the analysis in the law, and practical problems of expert witnesses. (Examination or research paper with permission of the instructor).

LAW 6605. Selected Topics in Legal History. 1-3 Credits.
Selected topics in legal history to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take-home examination, research paper or writing assignments).

LAW 6606. Law and Literature. 2-3 Credits.
The ways in which the law is depicted in literature, and how literary interpretation can be applied to legal texts. Literary and philosophical works of short to moderate length by Melville, Kafka, Shakespeare, Capote, Morrison, Garcia Marquez, and Faulkner, among others. (Research paper and oral presentations).

LAW 6607. The Law& Regulation of Science. 2 Credits.
The ways in which scientific reasoning and the scientific method have been applied, and misapplied, to legal and policy decisions. The differing standards for scientific and legal inquiry and whether these standards have proven to be compatible. Analysis of pivotal science-based legal decisions, beginning with the trial of Galileo and including evolving standards for scientific evidence in the courtroom, the difficulty of proving causation in toxic torts, regulation of hazardous substances, balancing of personal liberty and public health, determining when a drug is safe enough to market, attempts to define fundamental aspects of the human condition, the debate over evolution in public schools and the legal and ethical issues arising from mapping and patenting the human genome. The means by which scientific inquiry itself is fostered and regulated in the United States and abroad, including the recent policy debates over human cloning and embryonic stem cell research, as well as scientific misconduct, fraud, bias, and the politicization of scientific debate. Prerequisite: Law 6230. (Examination or research paper).

LAW 6608. Feminist Legal Theory. 2-3 Credits.
Law and society studied from the point of view of women. The course focuses on feminist jurisprudential treatment of gender and examines the prospects for sex equality under the law. Enrollment is limited. (Research paper).

LAW 6609. Selected Topics in Jurisprudence. 1-3 Credits.
Selected topics in jurisprudence to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take-home examination, research paper, or writing assignments).

LAW 6610. Cult Hist & the Lawyer Sem. 2 Credits.

LAW 6612. Law and Anthropology. 2 Credits.
Cultural aspects of law in the context of various societies. Traditional African dispute resolution and the changes brought about by colonialism; Native American political structures; Gypsy courts; the relative legal rights of insiders and outsiders in small-scale European communities; non-legal resolution of disputes in urban neighborhoods in the United States. Legal rules and cultural traditions of these and other societies compared in terms of economic efficiency, personal responsibility and freedom, and ethical balance. (Research paper).

LAW 6614. Law and Psychiatry. 2 Credits.
The problems and legal issues raised by the interface of psychiatry and the law: informed consent, privacy, the insanity defense, civil and criminal commitment under questions of legal competency, forced medication, and disability law with reference to the mentally ill. Evolving trends in professional standards, constitutional rights, legislative rights, ethics, licensing, contracts, and torts in the relationships among the psychiatric profession, the law, and the mentally ill. The role of psychiatric experts, standards of admissibility, and weight of evidence and their impacts on the relationship between the law and the mentally ill. (Take-home examination).

LAW 6615. Law and Psychology. 2 Credits.

LAW 6616. Genetics and the Law. 2,3 Credits.
Examination of the legal and ethical issues that genetics research and technology present. Topics include eugenics; the Human Genome Project; ethical, legal, and regulatory issues associated with clinical genetics and various types of genetic testing; possible discriminatory uses of genetic information by employers, insurers, and others; legislative attempts to protect the privacy and confidentiality of genetic information; ownership of genetic samples and information; patent law issues; forensic uses of genetic information; gene therapy; and cloning. (Examination).

LAW 6617. Law and Medicine. 2,3 Credits.
Examination of legal and ethical issues that arise in the doctor–patient relationship and medical decision making. Topics include informed consent; human experimentation; personhood; reproduction, including advanced technologies and prevention; patients' rights; death, dying, and limits on intervention; hard choices; and public policy issues. (Examination).

LAW 6620. Consumer Mediation Clinic. 1-5 Credits.

LAW 6621. Small Bus & Comm Dev Clinic. 4-6 Credits.
Under faculty supervision students assume substantial responsibility for advising small businesses and nonprofit organizations. Students interview and counsel clients; draft incorporation, limited liability company, and partnership documents (such as articles of incorporation, bylaws, articles of organization, operating agreements, and partnership agreements); research local licensing requirements and zoning laws; review and draft contracts and leases; and advise on basic intellectual property issues, tax problems, and related matters. Prerequisites: Law 6250 and 6300 and permission of instructor. Law 6472 and 6474 are recommended. The grade of H, P, LP, or NC is given for this course. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6622. Public Justice Advocacy Clinic. 4-6 Credits.
Under faculty supervision, students represent clients in federal and local courts before administrative agencies in public interest litigation on behalf of low-income clients. Student responsibilities include client interviewing, factual development, legal analysis, drafting of pleadings, discovery, motions, briefs, oral advocacy, and negotiating settlements in cases. Students may also work with nonprofit and community organizations to present positions before the City Council and administrative agencies. Open to secondand third-year students. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6623. Neighborhood Law&Policy Clinic. 4-6 Credits.
Students represent indigent clients in a range of civil matters, including welfare, disability, and housing benefits, as well as matters pertaining to offender re-entry. Student responsibilities include interviewing, fact investigation, negotiations, and conducting hearings at administrative tribunals and in D.C. Superior Court. Students may have the opportunity to participate in policy advocacy before the D.C. Council and administrative rule-making bodies. Open to second-year and third-year students. (Skills).

LAW 6624. Family Justice Litig. Clinic. 4-6 Credits.
Under faculty supervision, students represent indigent litigants in D.C. Superior Court. Students undertake a range of cases in the Family Court (divorce, custody, child support, alimony) and the Domestic Violence Unit (civil protection orders, modification and extension of civil protection orders, and contempt). While representing domestic violence litigants, students also have an opportunity to gain experience in criminal practice by collaborating with the U.S. Attorney's Office in related prosecutions of accused batterers. Students are responsible for every phase of litigation, drafting of initial pleadings, motions, conducting discovery, settlement negotiations, and taking the case to trial. In the weekly two-hour seminar, students study the substantive and procedural law relevant to their cases, including the local domestic violence and family law statutes, criminal law, evidentiary principles, and procedural rules. The seminar also focuses on litigation skills exercises, including performing direct and cross examinations, arguing motions, and conducting negotiations. Permission of the clinic director is required prior to registration. Prerequisites: Law 6230 and 6360. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6625. Fed, Criminal, Appellate Clinc. 4-6 Credits.
Under supervision of the instructor, third-year students litigate appellate cases, primarily direct appeals from criminal convictions in area courts of appeal. Student responsibilities include development of the lawyer/client relationship, record review and selection of issues, briefing, and oral argument. A weekly seminar addresses the lawyer's role, ethical and procedural problems, litigation strategy, and criminal justice issues through role-playing, simulation, and written exercises. Enrollment is by permission of the instructor. Prerequisite: Law 6230 and 6360; Law 6650 is recommended. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6626. Vaccine Injury Clinic. 4-6 Credits.
This clinic allows second- and third-year students, under faculty supervision, to represent individuals who may have suffered serious vaccine-related injuries and who are seeking damages in trial and appellate proceedings before the U.S. Court of Federal Claims. A weekly two-hour seminar focuses on multidisciplinary (medical/legal) training in vaccine injury issues, and on lawyering skills such as client interviewing and counseling and cross examination of medical experts. Students also evaluate the Vaccine Injury Compensation Program as a model for tort reform. Students must register for this clinic for both the fall and spring semesters. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6627. Environmental Law Clinic. 2,3 Credits.
Second-, third-, and fourth-year students participate in the J.B. and Maurice C. Shapiro Environmental Law Clinic, representing clients in environmental litigation in both the federal and state systems. Students work under faculty supervision in administrative, trial, or appellate actions, particularly citizen suit actions. This work includes actions under the Clean Air Act, the Clean Water Act, the Comprehensive Environmental Response, Compensation and Liability Act, the Endangered Species Act, the Resource Recovery and Conservation Act, and the Federal Facilities Compliance Act. Permission of the instructor is required prior to registration. Two or 3 hours of graded credit are given for this course. Prerequisite or concurrent registration: Law 6430. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6628. Clinic Teaching & Scholarshp I. 1-4 Credits.
Exploration of the multiple goals of clinical education, with an intensive orientation to clinical methods and a historical and philosophical overview of clinical education. Students examine, use, and evaluate clinical pedagogies designed to meet these multiple goals and submit regular journals throughout the year. Other areas of inquiry include: the role of clinical education in legal education; the role of law school clinics in social justice issues and in communities; pedagogies for teaching and supervising lawyering in a public service context; the nature of reflective learning and the value of journals as pedagogy; and types of clinical scholarship. Enrollment limited. Open to LL.M. students serving in clinical fellowships. Law 6628 is prerequisite to Law 6629. (Writing assignments).

LAW 6629. Clinic Teaching & Scholarshp 2. 1-4 Credits.
Exploration of the multiple goals of clinical education, with an intensive orientation to clinical methods and a historical and philosophical overview of clinical education. Students examine, use, and evaluate clinical pedagogies designed to meet these multiple goals and submit regular journals throughout the year. Other areas of inquiry include: the role of clinical education in legal education; the role of law school clinics in social justice issues and in communities; pedagogies for teaching and supervising lawyering in a public service context; the nature of reflective learning and the value of journals as pedagogy; and types of clinical scholarship. Enrollment limited. Open to LL.M. students serving in clinical fellowships. Law 6628 is prerequisite to Law 6629. (Writing assignments).

LAW 6630. Immigration Clinic. 4-6 Credits.
Students assume substantial responsibility for handling a range of immigration law matters, including determining what benefits or forms of relief, if any, are available to their clients, and, in appropriate circumstances, representing their clients in removal proceedings. Because the Clinic's clients come from all over the world, cultural sensitivity is essential and foreign language skills are welcome. A minimum of 210 hours of work per semester and attendance at a two-hour weekly seminar are required. Permission of the instructor is required prior to registration. Prerequisite: Law 6538. Students may enroll in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6631. Health Law Rights Clinic. 4-6 Credits.
Second-year and third-year students counsel clients of the Health Insurance Counseling Project, a legal services organization that responds to more than 3,000 requests for assistance each year. Students advocate for clients who have unpaid medical bills; or who need medical care that an insurer, public or private, is unwilling to provide; or who must choose among various types of health insurance. Students learn about Medicare, Medicaid, and other health insurance law and procedures in the weekly two-hour seminar; simulation exercises hone interviewing, counseling, and advocacy skills. Students can expect to work with at least five to six clients in one semester, and should plan to devote to the course four hours per week per credit. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6632. Administrative Advocacy Clinic. 2-3 Credits.

LAW 6633. Int'l Human Rights Clinic. 4-6 Credits.
Under faculty supervision, students work in a clinical setting in partnership with experienced attorneys and specialized institutions engaged in human rights activism on case projects drawn primarily from one of two main areas: (1) litigation and advocacy before international human rights tribunals and treaty bodies, primarily in the Inter-American and United Nations human rights systems; or (2) human rights litigation and advocacy in the United States, especially in relation to the Alien Tort Claims Act and the Torture Victims Protection Act. Prerequisite: Law 6520. Recommended courses include: 6546, 6547 and/or completion of the GW–Oxford International Human Rights Law Program. (Skills).

LAW 6634. Law Students in Court: Criminal Division. 4-6 Credits.
This is a clinical program in pre-trial and trial litigation that offers students the opportunity to develop skills as litigators while representing persons in the Superior Court of the District of Columbia. Students who participate in the criminal division represent persons charged with misdemeanor offenses, but may also handle some juvenile cases. Under the supervision of clinical instructors, students are responsible for all aspects of litigation: interviewing clients and witnesses, conducting investigations, preparing pleadings, engaging in plea bargaining, and conducting all motions hearings and trials pursuant to the Superior Court's student practice rule. Only third-year students who have completed LAW 6230 and LAW 6360 may participate in the clinic. Students must participate in the program for two consecutive semesters. Seminars are held in the evening. Students must have one day per week available for court appearances and plan to devote approximately 25 hours to the clinic each week. Students may enroll concurrently in this course and LAW 6668 only with permission of both instructors. This course is graded CR/NC for the Fall semester and with letter grades for the Spring semester. (Skills).

LAW 6635. Disabled People and the Law. 2 Credits.
Examination of those areas in which persons with disabilities have traditionally been denied some right or benefit afforded other persons in our society and have resorted to legal action; introduction to statutes and agencies designed to protect people with disabilities. Students may choose to prepare a research paper (and receive legal writing credit and a numerical grade) or to gain practical experience doing a clinical project (on a CR/NC basis). Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6636. Law and the Deaf. 1-3 Credits.

LAW 6637. Legal Activism. 2,3 Credits.

LAW 6638. Intensive Clinical Placement. 1-12 Credits.
Projects involving litigation, research, or public interest activities of a legal nature (including aid to indigents, support of public interest nonprofit corporations, and support of governmental agencies or courts) may be initiated and will be supervised by a faculty member. Projects must be approved in advance by the Law School Supervisory Committee (three members) both as to whether the project is appropriate and as to the number of credit hours to be granted. A maximum of 10 credit hours may be taken in one or two semesters. This course is open to a limited number of third-year students. This course is graded on a CR/NC basis. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors.

LAW 6639. Law Students in Court: Civil Division. 4-6 Credits.
This is a clinical program in pre-trial and trial litigation that offers students the opportunity to develop skills as litigators while representing persons in the Superior Court of the District of Columbia. Students who participate in the civil division represent tenants in landlord-tenant actions, but may also handle some consumer cases, negligence cases, and other civil matters. Under the supervision of clinical instructors, students are responsible for all aspects of litigation: interviewing clients and witnesses, conducting investigations, preparing pleadings, engaging in settlement negotiations, and conducting all motions hearings and trials pursuant to the Superior Court's student practice rule. Only third-year students who have completed Law 6230 and 6360 may participate in the clinic. This is a one-semester clinic. Seminars are held in the evening. Students must have one day per week available for court appearances and plan to devote approximately 25 hours to the clinic each week. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. Enrollment is limited. (Skills) Prerequisites: LAW 6230, LAW 6360.

LAW 6640. Trial Advocacy. 3 Credits.
Pretrial and trial techniques with emphasis on procedural, evidentiary, tactical, and ethical problems experienced by trial lawyers in actual cases. Complaint drafting, pretrial motions, depositions and other discovery methods, preparation of witnesses, jury selection, the use of experts, direct and cross-examination, introduction of documents, courtroom techniques, and opening and closing arguments. Role playing in simulated courtroom situations. Once registered, no student may drop this course without permission of the dean of students. Prerequisite: Law 6230; Saltzburg—students may be enrolled concurrently in Law 6230. Enrollment is limited. (Short papers and exercises) (Skills).

LAW 6641. Other Student Competitions. 1 Credit.
An 'Other Student Competition' is typically a non-adjudicative competition which does not fall under the definitions of competitions listed as Law 6642, 6644, or 6645. To qualify as an Other Student Competition for credit (1) the competition must be sponsored by the ABA or an ABA-accredited law school, and (2) a faculty member must serve as coach for the competing students and certify that they have earned the course credit. Presently, qualifying Other Student Competitions include, but are not limited to, the ABA Section of Taxation Law Student Tax Challenge, the Drexel University School of Law's Transactional LawMeet, the Georgetown University Law Center's National Security Crisis Law Invitational, the National Animal Law Legislative Drafting & Lobbying Competition, and the University of Maryland School of Law's Health Law Regulatory & Compliance Competition. This is a restricted class. In no event may a student receive more than a total of 3 credits for intra- and interscholastic competitions under Law 6641, 6642, 6644, or 6645. This course is graded on a CR/NC basis.

LAW 6642. ADR Competition. 1 Credit.
Participants in intrascholastic and interscholastic ADR competitions may register for this course and receive 1 credit for each competition in which they participate. A student successfully advancing from a regional to a national competition must register for this course again to receive 1 additional credit for participation in the national. All students competing must complete and submit an Intent to Compete form available in the Dean of Students Office. In no event may a student receive more than a total of 3 credits for intra- and interscholastic competitions under Law 6642, 6644, and/or 6645, nor may a student participate in more than one such competition in any given semester. Once registered, no student may drop this course without permission of the dean of students. This course is graded on a CR/NC basis.

LAW 6643. Pre-Trial Advocacy. 2-3 Credits.
Pre-trial and trial techniques of civil discovery and motions practice by role-playing in simulated cases. The class is divided into "law firms" that represent clients in cases at the pre-trial stage. Students are required to attend pre-trial conferences and conduct extensive discovery, including conduct of depositions, argument on discovery motions to compel or sanctions, preparation and service of interrogatories, requests for production, requests for admissions, and motions for physical and mental examinations. The course ends with a five-hour mock trial by jury. (Simulation and paper) (Skills).

LAW 6644. Moot Court. 1 Credit.
The Moot Court Board sponsors four upper-level, intrascholastic competitions each year: the Van Vleck Constitutional Law Moot Court Competition, the Jessup International Law Moot Court Competition, the Giles Sutherland Rich Intellectual Property Law Moot Court Competition, and the Government Contracts Moot Court Competition. Participants earn 1 credit for each competition in which they participate, regardless of how they finish. Participants in the Jessup Competition and the Giles Sutherland Rich Competition who compete in the regional rounds must register for this course again, and receive 1 credit in addition to the credit earned for participating in the inhouse competition. All students competing must complete and submit an Intent to Compete form available in the Dean of Students Office. Only current members of the Moot Court Board may petition to receive Moot Court Board funds to attend external competitions, unless approval is otherwise granted by the dean of students. In no event may a student receive more than a total of 3 credits for intra- and interscholastic competitions under Law 6642, 6644, and/or 6645, nor may a student participate in more than one such competition in any given semester. Once registered, no student may drop this course without permission of the dean of students. This course is graded on a CR/NC basis.

LAW 6645. Mock Trial Competition. 1 Credit.
The Mock Trial Board sponsors the intrascholastic Cohen & Cohen Mock Trial Competition in the fall semester. The competition offers students an opportunity to practice trial skills and serves as a basis for selection of teams to represent the Law School at various interscholastic trial competitions. The competition requires a two-person team to prepare a written trial brief and argue its case before a judge and jury. The competition also provides a seminar on trial advocacy skills, strategies, and techniques. Students who participate in the fall competition receive 1 credit. Those students attending interscholastic trial competitions must register for this course again, and receive 1 credit for each competition in which they participate. All students competing must complete and submit an Intent to Compete form available in the Dean of Students Office. In no event may a student receive more than a total of 3 credits for intra- and interscholastic competitions under Law 6642, 6644, and/or 6645, nor may a student participate in more than one such competition in any given semester. Once registered, no student may drop this course without permission of the dean of students. This course is graded on a CR/NC basis.

LAW 6646. Mediation. 2 Credits.
Consideration of the growing use of mediation to resolve disputes and comparison with other dispute resolution processes. Taking the roles of mediators and disputants, students participate in a number of simulations. Mock mediations are conducted individually and with a co-mediator. Examination of practical and ethical issues; applicability to various substantive areas including contract, tort, consumer, family, criminal, discrimination, and landlord/tenant. Students are expected to fill out role-playing evaluations of themselves and classmates on a regular basis and to prepare written assignments as directed by the instructor. Enrollment is limited. Students may take both Law 6646 and 6647 from the same instructor only with the instructor's permission. (Skills).

LAW 6647. Alternative Dispute Resolution. 2,3 Credits.
Theoretical and practical aspects of negotiating and mediating transactions and disputes. Techniques studied include neutral evaluation, regulatory negotiations, minitrials, settlement judge approaches, arbitration, and other "hybrids." Students participate in a number of simulated disputes related to various practice areas, both in and outside of class. Enrollment is limited. Students may take Law 6647 and either 6646 or 6648 from the same instructor only with the instructor's permission. (Role playing andwritten assignments) (Skills).

LAW 6648. Negotiations. 1-3 Credits.
Examination of the negotiation process employed by legal practitioners. The assigned text considers the negotiation process, negotiating techniques, verbal and nonverbal communication, and other factors that influence these interpersonal transactions. Students engage in negotiation exercises that enable them to practice the art of negotiating and to examine their personal strengths and weaknesses. Grades are determined in meaningful part by the results obtained, vis-a-vis other class members, from these exercises. Students are also required to prepare a short paper on a topic pertaining to the negotiation process. Enrollment is limited. Students may take both Law 6648 and 6647 from the same instructor only with the instructor's permission. Credit may not be earned for both Law 6648 and 6458. (Skills).

LAW 6650. Client Interviewing/Counseling. 2 Credits.
Practice with gathering and evaluating facts supplied by clients, followed by presentations of advice based on consideration of facts and applicable law. Discussion of interpersonal aspects of client relations and ethical problems that may arise in the context of client interviews. Students participate in simulated interviews, portraying both clients and attorneys. A paper discussing some aspect of the interviewing and counseling process is required. Enrollment is limited. (Simulation and paper) (Skills).

LAW 6652. Legal Drafting. 2,3 Credits.
Students learn the fundamental skills necessary to draft litigation and transactional documents. Practical application of the drafting process to the preparation of litigation documents, such as pleadings and motions, and transactional documents, such as contracts, deeds, wills, or other agreements. Topics include planning and structuring a document, legal research strategies, the role of procedural rules, plain language initiatives, and ethical principles that affect the drafting process. (Drafting projects and short writing exercises) (Skills).

LAW 6653. Advanced Appellate Advocacy. 2 Credits.
Intensive study of appellate process, brief writing, and argumentation. Focus on techniques for creating and structuring an appellate brief and developing effective arguments to support a client's position and refute an opposing party's position on appeal. Topics include developing a theory of the case and developing arguments based on precedent. Strategic considerations of appellate briefs and effective oral argument. (Appellate briefs and oral argument) (Skills).

LAW 6654. Law and Rhetoric. 2,3 Credits.

LAW 6655. Advanced Legal Research. 2 Credits.
Intensive review of legal research tools and methods involving both digital and print resources. This course reviews general categories of materials, including reporters, codes, and secondary sources, and their place in contemporary law practice. Students will explore methods of conducting research in specific areas of the law. (Research exercises and paper) (Skills).

LAW 6656. Independent Legal Writing. 1,2 Credit.
Preparation of a research paper under the supervision of a member of the faculty who will determine, prior to registration, whether the work required for the topic justifies 1 or 2 credit hours. If elected for 1 credit hour, this course may be repeated for 2 credit hours to meet the legal writing requirement for the J.D. degree. Approval by the faculty supervisor is required prior to registration; if the faculty supervisor is a member of the part-time faculty, approval is also required from the senior associate dean for academic affairs or associate dean for academic affairs. Compliance with the legal writing requirement as outlined in this Bulletin is necessary if the course is used to satisfy that requirement. Students may not take more than a total of 2 credits in this course under the supervision of part-time faculty members. (Research paper).

LAW 6657. Scholarly Writing. 1-2 Credits.
Introduction to writing for scholarly legal journals. Topic selection, research strategies, organization, style, grammar, usage, and the editing process. This course reflects journal participation for second-year students on all journals. Satisfactory completion of Law 6658, 6659, 6660, 6661, 6662, 6663, 6664, or 6667 in the third year is required to receive credit for this course. The grade of H, P, LP, or NC is given for this course.

LAW 6658. Law Review. 1-4 Credits.
Limited to third-year members of the student staff of the Law Review. A maximum of 2 credit hours may be earned in this course. Second-year students must enroll in Law 6657 to reflect journal participation. This course is graded on a CR/NC basis. Satisfactory completion of Law 6657 in the second year and satisfactory completion of all journal work in the third year is required to receive CR for this course.

LAW 6659. International Law Review. 1-4 Credits.
Limited to third-year members of the student staff of the International Law Review. A maximum of 2 credit hours may be earned in this course. Second-year students must enroll in Law 6657 to reflect journal participation. This course is graded on a CR/NC basis. Satisfactory completion of Law 6657 in the second year and satisfactory completion of all journal work in the third year is required to receive CR for this course.

LAW 6660. Federal Circuit Bar Journal. 1-2 Credits.
Limited to third-year members of the student staff of the Federal Circuit Bar Journal. A maximum of 2 credit hours may be earned in this course. Second-year students must enroll in Law 6657 to reflect journal participation. This course is graded on a CR/NC basis. Satisfactory completion of Law 6657 in the second year and satisfactory completion of all journal work in the third year is required to receive CR for this course.

LAW 6661. Public Contract Law Journal. 1-4 Credits.
Limited to third-year members of the student staff of the Public Contract Law Journal. A maximum of 2 credit hours may be earned in this course. Second-year students must enroll in Law 6657 to reflect journal participation. This course is graded on a CR/NC basis. Satisfactory completion of Law 6657 in the second year and satisfactory completion of all journal work in the third year is required to receive CR for this course.

LAW 6662. Intellectual Property Law Jrnl. 1-4 Credits.
Limited to third-year members of the student staff of the American Intellectual Property Law Association Quarterly Journal. A maximum of 2 credit hours may be earned in this course. Second-year students must enroll in Law 6657 to reflect journal participation. This course is graded on a CR/NC basis. Satisfactory completion of Law 6657 in the second year and satisfactory completion of all journal work in the third year is required to receive CR for this course.

LAW 6663. IntlLawInDomesticCourtsJournal. 1-4 Credits.
Limited to members of the student staff of the International Law in Domestic Courts Project. A maximum of 4 credits may be earned in this course. Second-year students must enroll concurrently in Law 6520 and 6657. This course is graded on a CR/NC basis.

LAW 6664. JournalEnergy/EnvironmentalLaw. 1-2 Credits.
Limited to third-year members of the student staff of the Journal of Energy and Environmental Law. A maximum of 2 credit hours may be earned in this course. Second-year students must enroll in Law 6657 to reflect journal participation. This course is graded on a CR/NC basis. Satisfactory completion of Law 6657 in the second year and satisfactory completion of all journal work in the third year is required to receive CR for this course.

LAW 6665. Upper-Level Writing. 1 Credit.
This course is an elective corequisite to seminar courses that require or permit a research paper or Law 6656, Independent Legal Writing, for students who intend to seek publication. Instruction on legal research strategies and structural techniques; individual and small-group feedback on interim writing assignments; and guidance on seeking publications. Credit may not be earned for both this course and Law 6657. Permissionof the instructor of the course for which the research paper is to be written is required. Enrollment is limited. This course is graded on a CR/NC basis. (Writing Assignments).

LAW 6666. Research and Writing Fellow. 1-3 Credits.
Limited to students selected to assist in teaching first-year Legal Research and Writing (Law 6216) and Introduction to Advocacy (Law 6217). Two credit hours may be earned in both the fall and spring semesters. This course is graded on a CR/NC basis.

LAW 6667. Advanced Field Placement. 0 Credits.
The Advanced Field Placement Program provides students who have previously participate in the Field Placement Program with the opportunity to maximize their externship experiences through contemporaneous guided reflection and faculty supervision.Students who have already taken a corequisite course in conjunction with a previous placement (for which they earned Field Placement credit) may be eligible to waive the corequisite course requirement and participate in Advanced Field Placement. Students will receive no additional credit(s) beyond those awarded for their externship (see Law 6668). All waiver requests must be approved by the assistant dean for field placement. Students participating in Advanced Field Placement are required to complete reflective learning exercises under the supervision of a designated faculty member. Advanced Field Placement is not available to students seeking credit for international externships, regardless of any previous corequisite course(s) taken. Concurrent registration: Law 6668. Pre-Requisite: Law 6469, 6669, 6670, 6671, 6672, 6674, or another Law School course along with Law 6673, as determined by the assistant dean. (Reflective Assignments).

LAW 6668. Field Placement. 0-4 Credits.
Students earn academic credit for externships with qualifying judicial, public interest, government, and nonprofit organizations. The placement must be at a qualifying judicial, government, or non-profit organization. During the fall and spring semesters, the placement must be located in the Washington, D.C. metropolitan area. Students may earn credit for internships outside of the D.C. metropolitan area, including international internships, during the summer session only. In order to enroll in the summer distance classes, students must have completed at least 28 credits toward the J.D. degree. During the fall and spring semesters, the placement must be located in the Washington, DC metropolitan area. Students may earn credit for externships outside of the DC metropolitan area, including international externships, during the summer session only. A list of pre-approved placements is available on the Law School portal and from the Field Placement Program Office. If a placement has not been previously approved, the assistant dean for field placement must approve the placement for registration to be completed. Students enrolled in this course must fulfill a classroom component requirement by enrolling concurrently in Law 6469, 6669, 6670, 6671, 6672, 6674, or in another Law School course along with Law 6673, as determined by the assistant dean. Students who have already taken a corequisite course in conjunction with a previous placement may be eligible to waive the corequisite course requirement and participate in the Advanced Field Placement Program. All waiver requests must be approved by the assistant dean for field placement. Students participating in the Advanced Field Placement Program are required to complete reflective learning exercises under the supervision of a program faculty member. Corequisite course waivers are not available to students seeking credit for their first judicial externship or for international externships, regardless of any previous corequisite course(s) taken. Students may enroll concurrently in this course and any other clinical course only with the permission of both instructors. This course is graded on a CR/NC basis and requires students to complete 60 hours of work and 5 pages of substantive legal or legislative writing per credit. Students may earn up to 4 field placement credits per semester for a total of no more than 8 credits for this course in their degree program. Students participating in the Domestic Violence Project must register for this course for 2 to 4 credits and enroll concurrently in Law 6674. Students participating in Environmental Lawyering must register for this course for 2 to 4 credits and enroll concurrently in Law 6469. Permission of the assistant dean for field placement is required prior to registration in this course and any corequisite courses. Additional information about the program, including a detailed description of program requirements, its registration process, and other policies and procedures is located in the Field Placement Student Handbook. Students are responsible for reading the handbook and complying with all program policies and procedures.

LAW 6669. The Craft of Judging. 2 Credits.
Current issues in judicial ethics, judicial administration, and the trial and appellate process. Topics include standard of review, statutory interpretation, the role of precedent, and judicial activism. This course is corequisite for students enrolled in Law 6668 in a judicial placement, as determined by the assistant dean for field placement. Students not concurrently enrolled in Law 6668 may take this course only with the permission of the instructor. Enrollment is limited. This course is graded on a letter-grade basis. (Writing assignments).

LAW 6670. Public Interest Lawyering. 2 Credits.
Examination of the role of the public interest lawyer. The lawyer's role and responsibilities in different branches of government and in public affairs, both historically and currently; ethical issues; identification of public interest clients and the potential for conflicts of interest among them; organizational settings; and the politics of public interest lawyering. This course is corequisite for students enrolled in Law 6668 in a public interest placement, as determined by the assistant dean for field placement. Students not concurrently enrolled in Law 6668 may take this course only with the permission of the instructor. Enrollment is limited. This course is graded on a letter-grade basis. (Writing assignments).

LAW 6671. Government Lawyering. 2,3 Credits.
The role of the lawyer in federal government agencies. Agency adjudication and rulemaking; judicial review; enforcement; regulatory reform; the role of the office of general counsel; alternative dispute resolution; the Freedom of Information Act; and congressional relations. This course is corequisite for students enrolled in Law 6668 in a government agency placement, as determined by the assistant dean for field placement. Students not concurrently enrolled in Law 6668 may take this course only with the permission of the assistant dean for field placement. Enrollment is limited. This course is graded on a letter-grade basis. (Research paper).

LAW 6672. The Art of Lawyering. 2 Credits.
Issues concerning the nature of the legal profession, its institutions, and its members in the international context. Topics include the diverse organizations in which law is practiced, ethical dilemmas, workplace culture, supervision, and career expectations. This course is corequisite for students enrolled in 6668, as determined by the assistant dean for field placement. Students not concurrently enrolled in Law 6668 may take this course only with the permission of the instructor. Enrollment is limited. (Writing assignments).

LAW 6673. Field Placement Tutorial. 1 Credit.
This course is corequisite to Law 6668, Field Placement, for students whose classroom component is fulfilled by a course designated by the assistant dean for field placement other than Law 6469, 6669, 6670, 6671, 6672 or 6674. Requirements of this course include writing a 10-page research paper under the supervision of the instructor of the approved course and meeting with the instructor at least twice during the semester to discuss the paper and the externship experience. This course is graded on a letter-grade basis. Registration is permissible only with the prior express approval of the assistant dean for field placement. (Writing Assignments).

LAW 6674. Domestic Violence Project. 2 Credits.
Social change lawyering in the battered women's movement. The role of lawyers in the development of the movement, and, major legal reforms of the past three decades, domestic violence lawyering skills, the challenges of work in this field, and students' professional development. This course is corequisite to Law 6668 for students enrolled in a placement consisting of trial work with a local legal service provider on domestic violence cases, policy or legislative work on domestic violence issues with a national organization, or appellate work with attorneys in law firms conducting pro bono domestic violence appeals. Students not concurrently enrolled in Law 6668 must have the instructor's permission to register for this course. (Writing assignments) (Skills) Graduate Courses in Litigation and Dispute Resolution.

LAW 6675. Advanced Trial Advocacy. 3 Credits.
Conduct of a simulated civil, criminal, or administrative trial before a jury or judge. Students learn to present persuasive opening statements and closing arguments and to conduct forceful direct and cross-examination of fact witnesses and experts. Ethical, evidentiary, procedural, and substantive aspects of litigation. Practical solutions to typical problems litigators encounter in the presentation of a case. At the conclusion of the course, students undertake the trial of a simulated case from opening statement through jury deliberation before a judge or very experienced litigator. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6676. Mediation/Alternative Disp Res. 3 Credits.
An introduction to alternative dispute resolution, with a focus on the many ways in which ADR can be used effectively by the advocate. Issues include determining whether ADR is appropriate in a given case, the timing of an ADR process, and the type of process that should be used. The role of the advocate during a mediation or other dispute resolution process, e.g., the selection of the neutral, preparing for a mediation, and the advocate's participation in the mediation itself. Emphasis on the mediation of civil cases, with a briefer discussion of the use of ADR in the criminal justice context. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6677. Pretrial Practice-Civil/Crimnl. 3 Credits.
Students are divided into simulated law firms and assigned roles that correspond to the pre-trial tasks lawyers routinely are called upon to perform in civil cases. The exercises begin with discovery, and students attend a Fed.R.Civ.P.26(f) meeting, dealing with required disclosures and other preliminary discovery matters. Students prepare discovery motions and responses, take and defend depositions, file dispositive motions, attend a pretrial conference, and prepare a joint pretrial memorandum. By the end of the course, each student will have simulated moving a case from the filing of a complaint to the eve of trial. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6678. Ethics-Adjustment/Settlement. 3 Credits.
Ethical issues that come into play once disputes have arisen and litigation has either commenced or been threatened. The ethical rules that govern threats to sue and responses to such threats, and the rules that are important once litigation has commenced. Each class focuses on a hypothetical problem involving an ethical issue or set of issues. In each hypothetical, the lawyer's duty to the client and to the court through role playing. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6679. Advanced Evidence. 3 Credits.
How the rules of evidence can be used to build and present a case more effectively. Theory and philosophy of the rules of evidence; scope of attorney–client privilege in corporate and government litigation; joint defense agreements; vicarious admissions in civil and criminal litigation; hearsay; expert evidence; character evidence rules; motions in limine; impeaching witnesses; laying foundations; exhibits and charts; and the evidentiary difference between bench and jury trials. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6680. The American Jury. 3 Credits.
Focus on a variety of issues that arise in civil and criminal jury trials in federal and state courts. Topics include separating judicial from jury functions; the jury pool; the grand jury; jury voir dire; challenges for cause and peremptory challenges; scientific jury selection: jury instructions; verdict forms; presentation of evidence; jury nullification; improving juror participation; impeaching verdicts; and high-publicity trials. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6681. Negotiation/Conflict Mgt Systm. 3 Credits.
Analysis of negotiation techniques, verbal and nonverbal communication, and other factors that influence interpersonal communication in a typical negotiation. Introduction to the theories, principles, and practices of organizational development and dispute systems design. Focus on strategies for designing systemic approaches to resolve a cluster or stream of disputes in particular organizations or institutions, including government agencies, educational and health care settings, corporations, and nonprofit organizations. The concept of "negotiating" with clients in order to develop effective conflict management systems. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6682. International Dispute Resolutn. 3 Credits.
Development of complex dispute cases involving multiple parties. International case law and conventions, including jurisdiction, forum selection, comity, enforcement, and application and proof of foreign law. Students work in teams to prepare motions, gather evidence, interview and depose fact and expert witnesses, interview clients, develop and present opening and closing arguments, and conduct direct and cross examination of lay and expert witnesses. Simulation exercises include adjudication of disputes through role playing and preparation and participation in a mock trial. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6683. College of Trial Advocacy. 3 Credits.
An intensive, six-day course focusing on trial simulation and role playing. A varying panel of experienced lawyers and judges discuss and demonstrate trial skills and ethics, and oversee and critique small-group simulations by students in making opening and closing statements and in conducting direct and cross-examination of experts and other witnesses. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6684. Pre-Trial Pract-Criminal Cases. 3 Credits.
Students in this course are assigned alternating roles as prosecutor and defense counsel in order to simulate the pre-trial tasks lawyers routinely perform in criminal cases. Simulation exercises begin after the arrest of the suspect, with student-prosecutors conducting a preliminary investigation and student-defense counsels interviewing the defendant. Thereafter, students conduct and attend grand jury proceeding, arraignments, bail hearings, preliminary hearings, suppression hearings, plea bargaining sessions, and plea hearings before the trial judge. Students conduct discovery and file pre-trial motions and responses. By the end of the course, each student will have simulated moving a case from arrest to the eve of trial. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6685. Arbitration. 3 Credits.
The arbitration process from making arbitration agreements to making and enforcing awards. Arbitration versus traditional civil litigation. Types of arbitrators and their selection. Procedural, evidentiary, and ethical rules in arbitration practice. Enrollment is limited. Open only to LL.M. students. (Writing assignments and oral exercises) Special Courses for Graduate Law Students.

LAW 6690. Thesis. 2 Credits.
Students must register for two consecutive semesters and cannot register for both courses in one semester. In addition to identifying a member of the full-time faculty to serve as thesis adviser, students are required to attend scheduled class sessions, which cover issues such as topic selection, specialized research, and the process of organizing and writing the thesis.

LAW 6691. Thesis. 2 Credits.
Students must register for two consecutive semesters and cannot register for both courses in one semester. In addition to identifying a member of the full-time faculty to serve as thesis adviser, students are required to attend scheduled class sessions, which cover issues such as topic selection, specialized research, and the process of organizing and writing the thesis.

LAW 6692. LRW for Int'l LLM Students I. 1 Credit.
Required for LL.M. students who do not hold a J.D. degree from a U.S. law school. Topics include research in primary, secondary, and specialized sources of law; legal citation; the structure of a legal memorandum; writing style; and plagiarism. Students prepare legal memoranda and perform specific research and writing assignments. The director of the International and Comparative Law Program may waive the requirement of this course for students who have taken a similar course at another U.S. law school.

LAW 6693. LLR for Int'l LLM Students II. 1 Credit.
Required for LL.M. students who do not hold a J.D. degree from a U.S. law school and who intend to sit for a bar examination in the United States. The course provides an advanced focus on legal research, writing, and analysis. Students prepare short legal writing assignments and legal memoranda.

LAW 6694. Fundamental Issues in US Law. 2 Credits.
Required for LL.M. students who do not hold a J.D. degree from a U.S. law school. The course covers fundamental topics in U.S. law (e.g., constitutional law, contracts, civil procedure, federal courts, conflicts of law, torts, corporations) and introduces students to U.S. legal methods. The director of the International and Comparative Law Program may waive the requirement of this course for students who have taken a similar course at another U.S. law school and who successfully pass a test administered by the director that demonstrates knowledge of the subject matter. (Examination).

LAW 6695. Legal Practicum. 0 Credits.
Students independently arrange paid positions with outside organizations in order to obtain in-depth practical experience. The placement should provide on-the-job practical training for career preparation or advancement. Prior approval must be obtained from the associate dean for international and comparative legal studies. No academic credit is given for this course.

LAW 6696. Graduate Indep Legal Writing. 1,2 Credit.
Students enrolled in this course must prepare a research paper under the supervision of a member of the faculty who will determine, prior to registration, whether the work required for the topic justifies 1 or 2 credit hours. The course is limited to graduate students who have had a seminar or comparable course in the field of proposed research. Students are responsible for obtaining an adviser from the full- or part-time faculty who is willing to sponsor their research. Written approval by the faculty supervisor, the graduate program director, and either the senior associate dean for academic affairs or associate dean for academic affairs is required prior to registration. Work must be completed within the semester. Students may repeat this course once for credit with the approval of the dean of students, but students may not take more than a total of 2 credits in this course under supervision of part-time faculty members. The availability or nonavailability of this course to particular students does not preclude any students from enrolling In Law 6656. (Research paper).

LAW 6697. Graduate Outside Placement. 1-4 Credits.
Limited to LL.M. candidates. Practical experience in the student's area of specialization or interest. The student may work with a government agency, congressional committee, court, or other such entity performing tasks normally assigned to an attorney. Course approval must be obtained from the student's faculty adviser and/or the dean. Students enrolled in either the Environmental Law or Government Contracts program should refer to Law 6468 and Law 6510. A maximum of 4 credit hours may be applied toward graduation. Five hours of work per week are required for each credit. This course is graded on a CR/NC basis.

LAW 6698. S.J.D. Dissertation Research. 0 Credits.
Candidates for the Doctor of Juridical Science degree must register for this course in four consecutive semesters (excluding the summer session), beginning with the semester of matriculation. No academic credit is given for this course. 6824 Examination of the protection of refugees, asylum seekers, and the internally displaced under the UN Refugee Convention and other international instruments, regional accords, and national law. Emphasis is placed on considering the various conceptions of "refugee," defining persecution, and understanding the rights of asylum and nonexpulsion. Regional developments in Europe, Southeast Asia, and Africa are covered. The predicament of populations at risk, especially women and victims of war or conflict, is discussed. The consequences for the human rights of forced migrants of humanitarian intervention, safe havens, and economic sanctions are analyzed. (Class participation and examination).

LAW 6701. THE U.N. & THE MAINTENANCE OF. 2 Credits.

LAW 6810. Business Lawyering. 2 Credits.
This is a two-credit, graded course in which we learn about lawyering, with a particular orientation to the practice of business law, conceived broadly. Along with New York area externships for which this is a co-requisite, the course is designed to integrate doctrine, theory, skills, ethics, and policy. We take multiple perspectives, starting with your varied externships and what you can learn from the experience of professional practice. We also consider materials that look at challenges in the business law setting such as counseling; crisis response and investigation; and prevention and compliance. There will be regular weekly discussions of externship experience; periodic written assignments; and the preparation of an associated research paper.

LAW 6820. Hmn Rts & Intl Crimnl Process. 2 Credits.

LAW 6822. Comparatv Hmn Rts Institutions. 2 Credits.

LAW 6824. Int'l Human Rights&Refugee Law. 2 Credits.

LAW 6825. Econ/Soc/CultrlRghtsLaw & Prac. 2 Credits.
Legal and practical challenges that arise from a state's obligation to protect economic, social, and cultural rights (ESCR), and the conceptual framework for those rights. Mechanisms and tools for implementation of ESCR, including the right to housing, health, food, water, education, and work. Obligations of states for human rights beyond their borders. (Class participation and examination).

LAW 6826. Human Rights in theMarketplace. 2 Credits.
The impact of international human rights standards on global trade, corporate governance and competition, international finance, and economic development. Basic principles and institutions; market-based initiatives toward corporate responsibility (i.e., efforts by companies to attract consumers and investors by voluntarily adopting human rights codes of conduct or social accountability standards); domestic regulation (directives and legislation in various countries that, through human rights conditionality, attempt to recruit the transnational corporation as an instrument of foreign policy); civil liability (the enforcement of standards against corporations through private lawsuits in domestic courts); and international regulation (under which intergovernmental organizations attempt to channel corporate conduct in ways that are thought to be socially responsible). (Examination).

LAW 6827. Gender,Sexuality&Int'l HR Law. 2 Credits.
Application of the international human rights framework to constructions of gender and sexuality. The politics of gender and sexual diversity within the universality of human rights, legal pluralism, and cultural relativism. Relevance of international human rights law to the global response to the HIV/AIDS epidemic. (Class participation and examination).

LAW 6828. International Rights of Women. 2 Credits.
Major treaties and international instruments (both U.N. and regional) relating to women's rights; standards of sex discrimination as developed by international tribunals and domestic courts; interaction of international and domestic law in the context of women's human rights; feminist and activist theories and critiques of state responsibility for violence against women; conflicts between women's rights and religious or cultural rights.

LAW 6830. Hmn Rts Advocacy & Disseminatn. 2,3 Credits.
This course offers students the opportunity to develop skills in human rights advocacy and dissemination. Through the use of simulation exercises, such as the preparation of petitions to regional and international human rights bodies, country condition reports in support of litigation in national courts, and applications for refugee status, students engage in critical analysis of the methods and strategies for human rights advocacy at the local, national, regional, and international levels. Emphasis is also placed on the training of officials in human rights standards and the dissemination of such information to the general public. Students who receive credit for Law 6570 may not enroll in this course. (Simulation exercises and class participation).

LAW 6831. Human Rights in a Digital Age. 2 Credits.
There is perhaps no greater example of the double-edged sword than the Internet. It is, on the one hand, the greatest tool (or set of tools) for access to information in human history, a great democratizing force in media, a source of connection for vulnerable communities and individuals. And yet it is provides governments and corporate actors with profound access to our opinions, curiosities, desires and relationships, a tool for surveillance and attack, propaganda and censorship. The UN General Assembly and Human Rights Council have repeatedly noted that offline rights apply online, but how? In what ways in digital space different from the physical world for human rights purposes? This course will introduce students to the variety of human rights issues at stake in a digital age. It will focus on the right to freedom of expression found in Article 19 of the Universal Declaration of Human Rights and the International Covenant on Civil and Political Rights. Students will spend the first week addressing general issues of freedom of expression in order to set the scene for the more detailed discussion of the most salient issues of freedom online, to which the subsequent weeks will be devoted. While the course is "about" human rights online, its secondary but nonetheless critical aim is to highlight for students the ways in which human rights mechanisms at international and regional levels are shaping the norms pertaining to freedom on line and how they may be used for purposes of advocacy and scholarship. (Class participation and examination).

LAW 6832. Rts/Minor/Grps/Indigns Peoples. 2 Credits.

LAW 6834. HmntarianLaw & Popultns atRisk. 2 Credits.

LAW 6836. Hmn Rts & Milit Rspns/Terrorsm. 2 Credits.
Examination of international human rights issues that arise when governments use military force, instead of traditional civilian law enforcement methods, to respond to terrorism or the threat of terrorism. Topics include definitions of terrorism and military force; basic authority of governments to use military force against suspected terrorists; and human rights questions posed by military actions such as surveillance of civilian populations to detect terrorist activity, targeted killings and destruction of property of suspected terrorists, and the detention, interrogation, trial, and other punishment of persons accused of terrorism. Consideration of the duty of governments to use military force to provide security against terrorism and the rights of persons injured by military responses to terrorism to receive compensation. (Examination).

LAW 6838. War, Peace & Human Rights. 2 Credits.
The international legal regime applicable during times of armed conflict. Protection and promotion of international human rights law in post-conflict situations, with emphasis on the role of United Nations peacekeeping operations. (Examination).

LAW 6839. Advanced Seminar/Human Rights. 2 Credits.

LAW 6840. Cross-Brdr Trade/Intellct Prop. 1 Credit.
Issues raised by international trade in goods protected by copyright, patent, or trademark law, and the response of the United States, the European Union, and other legal systems to those issues. Exploration of various doctrines that regulate the importation of goods protected by intellectual property rights, such as those forbidding parallel importation and those dealing with the first-sale doctrine and exhaustion of intellectual property rights. The economic and social policy considerations underlying these doctrines. (Examination).

LAW 6841. International Patent Law. 0-2 Credits.
Introduction to the techniques of international patent regulation and consideration of the effects and desirability of such regulation. International agreements concerning patents, including the Paris Convention, the Patent Cooperation Treaty, the European Patent Convention, and the Trade Related Aspects of Intellectual Property (TRIPs) Agreement. GW degree candidates may not receive credit for both Law 6841 and LAW 6490. (Examination).

LAW 6842. Internet Law I. 0-2 Credits.

LAW 6843. Internet Law II. 1 Credit.

LAW 6844. Patents, Technology & Society. 1 Credit.

LAW 6845. Tech Protectn/Author's Rights. 0-2 Credits.
Technologies used to protect authors' rights (such as encryption, flags, degradation schemes, and watermarking) and the law that protects and regulates them, including the U.S. Digital Millennium Copyright Act, the European Copyright Directive, the World Intellectual Property Organization (WIPO) Copyright Treaty, and the WIPO Performance and Phonograms Treaty. Consideration of the impact of these technologies. (Examination).

LAW 6846. Philosophical Foundations/IP. 1 Credit.
Selected themes in the history and theory of intellectual property, including philosophical rationales for intellectual property rights, the debate over the limits to intellectual property protection from the 18th through the 20th centuries, and historical accounts of the intellectual property system. (Writing assignment).

LAW 6847. IP & Indigenous Heritage. 1 Credit.
Conflicts of customary law claims of indigenous peoples with industries operating under Western intellectual property systems over the use of natural resources, traditional knowledge, and folklore. National and regional legislation and efforts to develop international norms and standards. (Examination).

LAW 6848. Technology Licensing in EC. 1 Credit.
Legal issues arising from technology licensing in the European Community, including antitrust considerations in the framework of Art. 81 of the EC Treaty and the legal means of securing and enforcing technology license contracts. The Technology Transfer Block Exemption Regulation (EC) No. 139/2004 and the secured transactions laws of England and Germany. (Examination).

LAW 6849. Trademrks&GeogrphclIndications. 0-2 Credits.
Regulation of terms that indicate or once indicated the geographic origin of goods or services (e.g., champagne, California Pizza Kitchen). Comparative study of U.S. and European Community approaches; the impact of international treaties, including the U.S.–EC dispute before the World Trade Organization; implications for affected industries; and broader cultural implications. (Examination).

LAW 6850. Law of Software Contracts. 1 Credit.
Contract and copyright issues arising out of software contracts. Contractual attempts to authorize or restrict copying and use of software; the proper legal characterization of software and software contracts; copyright limitations on contractual terms; formation of software contracts and potential remedies for their breach. (Examination).

LAW 6851. Copyright & Role of the Copy. 1 Credit.
Consideration of the changing role of the copy in copyright law and in cultural dissemination, using materials drawn from law, cultural history, sociology, and art theory. Articulation of features of traditional dissemination through discrete copies and the alteration of those features through digital network distribution and typical rights management permission bundles. The effect of audio and video recording and computer technologies on our understanding of the copy, and proposals for reform of the statutory exclusive rights. (Examination).

LAW 6852. European IP Law. 1 Credit.

LAW 6853. Chinese IP Law. 1 Credit.

LAW 6854. Artistic Freedom & Control. 1 Credit.

LAW 6869. Selected Topics in National Security Law. 1-3 Credits.
Selected topics in national security law to be announced at the time of registration. This course may be repeated for credit provided the topic differs. Enrollment may be limited. (Examination, take-home examination, research paper or writing assignments).

LAW 6870. National Security Law. 3 Credits.
U.S. law (and incorporated international law) affecting national security. Topics may include the use of armed force abroad (general war, defensive war and reprisal, peace and stabilization operations); intelligence operations abroad (history, organization and oversight, legal issues in the field); selected issues of counterterrorism; and access to and protection of classified information (classification, FOIA, state secrets privilege, leak control, prior restraints on publication). Students who have previously taken or are concurrently enrolled in Law 6875 must have the instructor's permission to enroll in this course. (Examination).

LAW 6871. U.S. Foreign Relations Law. 2-3 Credits.
The nature and origins of the federal government's foreign relations powers; cooperation and competition between the executive and legislative branches; the role of the courts in foreign affairs; limitations on state powers touching on foreign affairs; treaties, executive agreements, and customary international law and their relationship to U.S. domestic law; the extraterritorial application of U.S. law; and sovereign and official immunities. (Examination).

LAW 6872. Nat'l Security Law Seminar. 2 Credits.
Selected Topics in national security law to be announced at the time of registration. Enrollment is limited. (Research paper).

LAW 6873. Military Justice. 2-3 Credits.
The military justice system as a separate criminal justice system established by Congress due to the unique nature and mission of the U.S. Armed Forces. Policies, principles, standards, and rules governing the military justice process from investigation through trial and the appellate process. Review of the commander's role throughout the system. Detailed review of substantive military criminal law and peculiarly military offenses. Analysis of military criminal procedure as well as alternate actions available to dispose of criminal misconduct cases, including administrative separations from the Armed Forces. LL.M. students with prior military law experience may enroll only with the permission of the instructor. (Examination).

LAW 6874. Comparative Military Law. 2 Credits.
Analysis and critique of the broad concept of a separate military justice system; similarities between rules of evidence and rules of criminal procedure in the military and civilian systems; the role of Congress in overseeing the military criminal system; application of the First, Fourth, Fifth, and Sixth Amendments to service members; and broad policy issues such as the systemic challenges to the military justice system. (Examination or research paper with permission of the instructor).

LAW 6875. Counterterrorism Law. 2,3 Credits.
Analysis of legal mechanisms in the fields of criminal, civil, military, immigration, and administrative law used by the U.S. government to combat domestic and international terrorism. The effectiveness of government actions and alternatives for achieving public safety goals; the effect of such actions on U.S. citizens and citizens of other countries; and the reaction of federal courts and Congress to executive branch actions. Students who have previously taken or are concurrently enrolled in Law 6870 must have the instructor's permission to enroll in this course. (Take-home examination).

LAW 6876. Homeland Security Law & Policy. 2 Credits.
Legal issues related to homeland security before September 11, 2001, and the adoption of the Homeland Security Act of 2002. Protection of critical infrastructure; information sharing; liability for terrorist attacks; risk insurance; attempts to prevent the use of weapons of mass destruction; threats to electronic infrastructure; and combating the financing of terrorism. (Examination or take-home examination).

LAW 6877. Nuclear Nonprolif Law & Policy. 2-3 Credits.
The use of international agreements, legislation, and regulations to deter acts of nuclear terrorism. Major international agreements, programs, and efforts to stop nuclear proliferation. (Research paper).

LAW 6878. Intelligence Law. 2 Credits.
Identification and analysis of current legal questions that face intelligence practitioners. Constitutional, statutory, and executive authorities that govern the intelligence community; intelligence structures of other countries; the natural tension between law enforcement and intelligence activities. U.S. person protections, covert action, FISA, and data mining. The course may include application of intelligence law to hypothetical scenarios and student-generated legislative approaches to intelligence law problems. Recommended: Law 6870 or 6875. (Class presentation and research paper).

LAW 6879. Cybersecurity Law & Policy. 2 Credits.
Issues relating to the organization of the Internet and the federal government's response to cyberthreats. Legal concepts relating to the private sector and civilian government engagement in cyberspace. Application of traditional laws of armed conflict in the new cyberdomain. (Research paper or take-home examination with permission of the instructor).

LAW 6880. Disaster Law. 2 Credits.
The U.S. law applicable to natural and man-made catastrophes, including those caused by terrorist attacks and public health emergencies. Topics may include the role of federalism; pre-disaster mitigation and prevention programs; the National Response Framework; the role of the military; the tension between individual rights and government action in emergencies; disaster resistance, compensation, and insurance; long-term recovery; and international disasters. (Research paper).

LEADERSHIP EDUCATION AND DEVELOPMENT (LEAD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

LEAD 6001. The Academy and the Brigade. 3 Credits.
Introduction to topical leadership issues, adult learning theory, and organizational psychology associated with service as a company officer at the United States Naval Academy. Analysis of the most effective means to produce highly capable Navy and Marine Corps officers and examination of principal institutional challenges. Restricted to US Naval Academy students in its Leadership Education and Development program.

LEAD 6002. The Nature and History of Command. 3 Credits.
Study of evolving nature, imperatives, and unique demands of military leadership. Examination of the leadership styles of tactical/operational officers and strategic commanders. Illustration of principles of leadership through historical case studies. Restricted to US Naval Academy students in its Leadership Education and Development program.

LEAD 6003. Foundations of Moral Reasoning. 3 Credits.
Introduction to professional ethics for military officers. Deliberative study of fundamental moral theory and case studies to enhance critical thinking and moral reasoning skills. Restricted to US Naval Academy students in its Leadership Education and Development program.

LEAD 6004. LEAD Fellows Teaching Practicum. 4 Credits.
Seminar focused on the processes of teaching and learning at the United States Naval Academy. Designed to be taken concurrently with a field assignment to co-teach Midshipmen in a foundation course on the study of leadership. Restricted to US Naval Academy students in its Leadership Education and Development program.

LEAD 6005. LEAD Fellows Counseling Practicum. 2 Credits.
Study and practice of counseling. Exploration of the academic counseling resources available at the United States Naval Academy, the difference between counseling and coaching, and the elements of constructive counseling/coaching sessions. Students will work directly with Midshipmen and engage in targeted counseling/coaching. Restricted to US Naval Academy students in its Leadership Education and Development program.

LEAD 6006. LEAD Research Capstone. 3 Credits.
Students plan, implement, and present an individual, group, or faculty-designed research-based project. The final product should make defensible recommendations that can be showcased as the culminating experience of the student's time in the program. Restricted to US Naval Academy students in its Leadership Education and Development program.

LEGISLATIVE AFFAIRS (LGAF)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

LGAF 6201. Politics and Public Policy. 3 Credits.
Examination of political processes that influence policy formulation, policy implementation, and the uses of policy analysis. Topics include political and policy decision making, actors, and process.

LGAF 6202. Legislative Politics. 3 Credits.
Theory, structure, and process of the U.S. Congress, with emphasis on member–constituency relations, individual and collective decision making, party and committee activities, executive–legislative relations, and interest-group activities.

LGAF 6203. Executive–Legislative Relations. 3 Credits.
Political and institutional relationships between the executive and legislative branches of the federal government.

LGAF 6204. Research Methods for Legislative Affairs Specialists. 3 Credits.
Approaches to political analysis. Construction of research designs and problems of measurement.

LGAF 6210. Legislative Procedure. 3 Credits.

LGAF 6211. Congressional Leadership. 3 Credits.

LGAF 6212. Congressional Committees. 3 Credits.

LGAF 6217. Budgetary Politics. 3 Credits.
Examination of federal budget policymaking and politics.

LGAF 6218. Judicial Politics. 3 Credits.
Role of the judiciary in policy formulation; emphasis on Congress and the Supreme Court.

LGAF 6219. American Presidency. 3 Credits.
Personalized and institutionalized aspects of the presidency, with emphasis on the politics of contemporary policymaking.

LGAF 6221. ExecutiveBranchDecisionMaking. 3 Credits.

LGAF 6222. Parties and Elections. 3 Credits.
Nature and functions of American political parties: organizational status, nominating and electoral politics, and role in governing.

LGAF 6223. Public Opinion/Pol Socializatn. 3 Credits.
Sources and dynamics of public opinion and political socialization.

LGAF 6224. Interest Group Politics. 3 Credits.
Theory, structure, and activities of interest groups in America politics.

LGAF 6228. Media and Congressional Politics. 3 Credits.
Role of the media in American politics, with emphasis on news coverage, political debates, and political advertising, with their impact on the electorate.

LGAF 6233. Comparative Legislatures. 3 Credits.
Selected problems of legislative theory and behavior from a comparative perspective, with particular reference to the parliamentary systems of Germany, France, and Britain.

LGAF 6234. PACs and Congress. 3 Credits.
Examination of the structure and function of political action committees in the United States in the context of wider arenas of campaign finance, elections, and issue management.

LGAF 6240. Special Topics in Legislative Affairs. 3 Credits.
In-depth coverage of significant theoretical and empirical issues in American politics, including such topics as political behavior, electoral politics, and race and politics.

LGAF 6246. Congress & Foreign Policy. 3 Credits.
The role of Congress in setting foreign policy.

LGAF 6249. Congress and National Security Policy. 3 Credits.
The role of Congress in setting defense policy.

LGAF 6251. Budgetary Policy. 3 Credits.
Analysis of U.S. monetary and fiscal policy.

LGAF 6260. Special Topics: Domestic Policy. 3 Credits.
Analysis of U.S. policy on selected domestic problems.

LGAF 6270. Special Topics: Congress and Foreign Policy. 3 Credits.
Analysis of U.S. policy on selected issues, challenges, or world regions.

LGAF 6290. Independent Study. 1-3 Credits.
Directed readings in a topic related to Congress and public policymaking. Limited to Legislative Affairs degree candidates. Written permission of program director required.

LGAF 6299. Thesis. 3 Credits.

LGAF 6300. Thesis. 3 Credits.

LGAF 6998. Thesis. 3 Credits.

LGAF 6999. Thesis. 3 Credits.

LIFESTYLE, SPORT, AND PHYSICAL ACTIVITY (LSPA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

LSPA 1011. Hiking. 1 Credit.
Introduction to hiking as an element of outdoor education, environmental education, and basic wilderness travel, incorporating elements of outdoor leadership. For those with less experience with general outdoor recreation as well as more experienced hikers. Visits to D.C. metropolitan area parks and surrounding regions.

LSPA 1012. Dance Conditioning. 1 Credit.

LSPA 1013. Latin Dance Conditioning. 1 Credit.

LSPA 1014. Meditation. 1 Credit.

LSPA 1016. Running. 1 Credit.

LSPA 1017. Walking for Health. 1 Credit.

LSPA 1018. Trail Running. 1 Credit.

LSPA 1019. Outdoor Adventure. 1 Credit.

LSPA 1020. Beginning/Intermediate Golf. 1 Credit.
Course fee.

LSPA 1021. Foil Fencing. 1 Credit.

LSPA 1022. Basketball. 1 Credit.

LSPA 1023. Jow Ga Kung Fu. 1 Credit.

LSPA 1024. Volleyball. 1 Credit.

LSPA 1025. Thai Massage. 1 Credit.

LSPA 1026. Karate. 1 Credit.

LSPA 1027. Tennis. 1 Credit.

LSPA 1029. Yoga. 1 Credit.

LSPA 1030. Fitness. 1 Credit.

LSPA 1031. Conditioning with Weights. 1 Credit.

LSPA 1033. Swimming. 1 Credit.

LSPA 1035. Rock Climbing. 1 Credit.

LSPA 1036. Triathlon. 1 Credit.

LSPA 1037. Indoor Soccer. 1 Credit.

LSPA 1038. Racquetball. 1 Credit.

LSPA 1039. Cardio-Kick-Boxing. 1 Credit.

LSPA 1040. Self-Defense and Personal Safety. 1 Credit.

LSPA 1041. Mat Pilates. 1 Credit.

LSPA 1042. Cardio Conditioning. 1 Credit.
A variety of aerobic activities, including sports training and power walking. Each class includes a warm-up, aerobic segment, and cool down and stretching.

LSPA 1043. Tai Chi. 1 Credit.

LSPA 1044. Aikido. 1 Credit.

LSPA 1045. Experimental Activities. 1 Credit.
Topic and laboratory fee (if charged) announced in Schedule of Classes.

LSPA 1046. Taekwondo. 1 Credit.

LSPA 1048. Horseback Riding. 1 Credit.
Course fee.

LSPA 1049. Boxing. 1 Credit.

LSPA 1050. Backpacking. 1 Credit.

LSPA 1052. Cross Training. 1 Credit.
Instruction in and practical application of general fitness principles and techniques. Focus on improving overall fitness through activities that cover the five components of physical fitness—cardio-respiratory endurance, muscular strength, muscular endurance, flexibility, and body composition. The components of fitness are met through structured, individually paced aerobic activities as well as strength and endurance conditioning exercises. A variety of health and wellness issues are also addressed.

LSPA 1053. Squash. 1 Credit.
Equipment fee.

LSPA 1054. Metabolic Effect. 1 Credit.
Emphasis on resistance and cardiovascular training. Sessions follow a high intensity, rest-based interval training format. The goal of each session is to push the student's body outside of his or her normal level of exertion by coming close to anaerobic threshold, recovering, and engaging in exercise again. Each workout lasts approximately 30 minutes, comprising a 5 minute warm-up, 20 minute exercise session, and 5 minute cool down.

LSPA 1055. Barre. 1 Credit.
Barre cardio and Garuda-barre movement repertoire. Instruction focuses on precision in movement and spectrum of movement from simple to compound and complex patterns. The semester begins with breaking down barre choreography and movement patterns so that the student builds strength and competence at the barre. Barre cardio revolves around the Lotte Berke method.

LSPA 1056. Scuba Diving Certification Course. 2 Credits.
This is an entry-level PADI (Professional Association of Diving Instructors) course, leading to international diver certification. Course fee.

LSPA 1057. Zumba. 1 Credit.
ZUMBA® is a Latin-inspired dance fitness class that uses Latin and international music and dance movements to create a dynamic, exciting, exhilarating, and effective cardio workout.

LSPA 1059. Cycling. 1 Credit.
A high intensity cardio class performed on stationary bikes. Various training techniques and motivational strategies to simulate real cycling experiences. Students can adjust their own resistance and cadence so that beginners and experienced cyclists are challenged in the same class.

LSPA 1065. Introduction to Therapeutic Massage. 1 Credit.
Instruction to basic Swedish massage techniques. Draping, basic muscle anatomy, body mechanics, and the holistic benefits of therapeutic touch.

LSPA 1066. Sports Massage. 1 Credit.
Course fee.

LSPA 1067. Group Fitness Instructor Training. 1 Credit.

LSPA 1068. Sports Clinic and Workshops. 1-3 Credits.

LSPA 1081. Kendo I. 1 Credit.

LSPA 1082. Kendo II. 1 Credit.

LSPA 1083. Iaido I. 1 Credit.

LSPA 1102. Personal Trainer Preparation. 1 Credit.
Prepares students for the American Council on Exercise (ACE) personal trainer certification examination and to become effective personal trainers. Presents the ACE Integrated Fitness Training (ACE IFT) Model as a comprehensive system for designing individualized programs based on each client's unique health, fitness, and goals.

LSPA 2001. Special Topics. 1-3 Credits.

LINGUISTICS (LING)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

LING 3601. Language, Culture, and Cognition. 3 Credits.
The role of language and culture in the organization of human experience. Beginning with debates about linguistic relativity, the course explores the way language use shapes cognition and practice in a variety of cultures and social contexts. Prerequisites: ANTH 1004. (Same as ANTH 3601).

LING 3602. Ethnographic Analysis of Speech. 3 Credits.
Linguistic variation and change in discourse practices; social and political correlates of linguistic interaction; recording, transcription, and analysis of verbal interaction. Same as ANTH 3602. Prerequisite: ANTH 1004. Laboratory fee.

LING 3603. Psycholinguistics. 3 Credits.
Language as species-specific property of the human mind. Psychological processes involved in the encoding and decoding of language; first and second language acquisition and bilingualism. Same as ANTH 3603.

LING 3691. Special Topics in Linguistic Anthropology. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Same as ANTH 3691. Prerequisite: ANTH 1004 or permission of instructor.

MANAGEMENT (MGT)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MGT 3201. Leadership in Action. 3 Credits.
Leadership in organizations and society. Consideration of whether leadership is a personal trait or a structured behavior and whether it is universal across domains or situation-specific. Modern and historical examples; issues of leadership in popular contexts.

MGT 3202. Managerial Negotiations. 3 Credits.
Negotiation concepts, strategies, and tactics as applied to managerial situations. The nature of interdependencies; competitive and collaborative negotiations; negotiations involving third-party dynamics, such as mediation and arbitration. Employee relations, including employee rights; the impact of unions and collective bargaining on management practices.

MGT 3203. Advanced Human Resource Management. 3 Credits.
The labor force and labor markets. The legal environment of human resource management. Human resource planning; employee recruiting, selection, training, development, compensation, motivation, discipline, health and safety. Prerequisite: BADM 3101.

MGT 3204. Contemporary Topics in Management. 3 Credits.
Contemporary practice in human resource planning, recruitment and selection, training and development, performance management, compensation and benefits, employee relations, and international human resource management. Interaction with practitioners through actual situations, case analyses, and presentations. Prerequisite: BADM 3101.

MGT 3300. Entrepreneurship. 3 Credits.
Students develop the knowledge and ability to launch their own venture. The entrepreneur and the process of entrepreneurship; key aspects of entrepreneurial success, from idea generation and development to launching a firm. Practical skills applicable to real-world scenarios.

MGT 3300W. Entrepreneurship. 3 Credits.
Students develop the knowledge and ability to launch their own venture. The entrepreneur and the process of entrepreneurship; key aspects of entrepreneurial success, from idea generation and development to launching a firm. Practical skills applicable to real-world scenarios.

MGT 3301. Small Business Management. 3 Credits.
Theory and practice of entrepreneurship. How to start or acquire a new business; effective management, including the essentials of planning, organizing, financing, marketing, and controlling the smaller enterprise. Students consult with a small D.C.-area company as part of a team research project. Prerequisite: MGT 3300W or permission of instructor.

MGT 3302. e-Entrepreneurship. 3 Credits.
The process of turning a web, mobile, or wearable business idea into a validated, repeatable, and scalable business model using lean startup methodologies; testing and user feedback, technology basics, promotions, and tracking core metrics. Prerequisites: MGT 3300W.

MGT 3303. Women's Entrepreneurial Leadership. 3 Credits.
Students create and execute a business plan while developing essential skills, mentoring relationships, and self-confidence and self-insight.

MGT 3305. Human Capital Sustainability. 3 Credits.
Managerial challenges associated with employment, economic efficiency, employee equity, and employee voice. How market forces, public policy, negotiations, and globalization affect sustainable employment relationships.

MGT 4003. Management of the Growing Entrepreneurial Venture. 3 Credits.
Examination of the data, dilemmas, and decisions that can confront leaders of post-startup entrepreneurial ventures.

MGT 4900. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated once for credit.

MGT 4900W. Special Topics. 3 Credits.

MGT 4995. Independent Research. 1-6 Credits.
Assigned topics. Admission by prior permission of advisor. May be repeated once for credit.

MGT 6210. Leading Teams. 3 Credits.
Knowledge and skills for effectively leading teams, including setting teams up for success, promoting effective team dynamics, and other leadership issues for contemporary teams that operate in a global, digital environment.

MGT 6213. Orgnztnl Factors/Pro of Change. 3 Credits.
Behavioral and organizational components of individual, team, and firm-wide change. The dynamics that often accompany the change process.

MGT 6214. Consultative Processes. 3 Credits.
Theories and methods of planning, introducing, and coping with change in management through the helping process. Intended both for managers seeking an understanding of the consultative approach to planned change and for persons in staff or consultative roles seeking understanding of the consultative process. Same as SMPP 6214/ TSTD 6214.

MGT 6215. Conflict Management and Negotiations. 3 Credits.
The nature and sources of conflict and interdependence in social and organizational dynamics. Various means of resolving conflict, including the use of competitive and collaborative negotiations and mediation. Case discussion, exercises, role-playing, and simulation. Managers as mediators and negotiators.

MGT 6216. Cross-Cultural Management. 3 Credits.
The cultural foundations of organizations and institutions, with an emphasis on managerial behavior. Cross-cultural differences as they affect work-related behaviors, such as communication, attitude, teamwork, negotiation, and decision making.

MGT 6252. Global Human Resource Management. 3 Credits.
International applications of human resource management functions. Selection, preparation, and compensation of U.S. managers and executives for service abroad. Adaptation of human resource management policies to conform to specific cultural environments.

MGT 6253. Leadership and Executive Development. 3 Credits.
The required skills, knowledge, and abilities for effective executive leadership in organizations. Contemporary and classical leadership theories and research approaches.

MGT 6254. Negotiations and Labor Relations. 3 Credits.
Negotiation theory and practice in the context of labor–management relations in both union and nonunion settings. Emphasis on negotiation and conflict resolution skills, arbitration and grievance procedures, public-sector labor relations, labor laws and public policy, and global labor relations issues.

MGT 6257. Performance Management and Development. 3 Credits.
Comprehensive review of performance appraisal and training and development. Students learn to develop customized training programs that relate to the performance appraisal process.

MGT 6258. Applied Organization Leadershp. 3 Credits.
In-depth studies of theories of leadership. Legal and ethical obligations of leadership. The leader in the process of assuming responsibility. Experiential exercises designed to develop the students' interpersonal abilities and leadership capacities.

MGT 6259. Employment Law and Ethics. 3 Credits.
An examination of the interaction of legal requirements and personal ethics and their influence on managerial decisions affecting the employment exchange. Special emphasis on equal employment opportunity and civil rights, workers' compensation, occupational health and safety, collective bargaining, and wrongful discharge.

MGT 6270. Consulting Processes. 3 Credits.

MGT 6271. Consulting Practicum. 3 Credits.
Instruction in and application of integrative problem solving, team work, client relationship, and communications skills required to be a successful management consultant. Students gain practical experience through a team-based assignment consulting for a client. Prerequisite: MGT 6270.

MGT 6277. Critical Thinking Skills for Executive Leadership. 3 Credits.
Theory and practice of critical thinking; how it differs from other types of thinking and other executive leadership competencies; approaches known to improve thinking skills.

MGT 6280. Entrepreneurship. 3 Credits.
In exploring the "entrepreneur as a phenomenon," students will be exposed to the theory and experiences associated with entrepreneurs, entrepreneurial acts, and entrepreneurship in all organizational settings—large, small, public, and private.

MGT 6281. Small Business Management. 3 Credits.
The start-up process and management of small firms. Field projects involve student teams as consultants to local businesses. Case studies. Emphasis on total customer service, international opportunities, and minority and women's issues.

MGT 6282. New Venture Initiation. 3 Credits.
Essentials of planning a new business venture. Sources of financing, evaluation of alternative new business ventures, and analysis of business functions. Creating and analyzing the business plan.

MGT 6283. Strategic Entrepreneurship. 3 Credits.
Capstone course for the small business/entrepreneurship concentration. Student teams assist companies in upgrading strategies. Prerequisites: MBAD 6265, MGT 6281, MGT 6282 and/or permission of instructor.

MGT 6284. Family Business Management. 3 Credits.
Challenges of managing a family business: risk strategies; successor development and succession planning; stages of family business growth; family motivations and goals. Field projects provide hands-on experience.

MGT 6285. Social Entrepreneurship. 3 Credits.
Theory and practice of social entrepreneurship. The power and limits of social entrepreneurship as a tool for creating sustainable and scalable social impact.

MGT 6286. Creativity and Innovation. 3 Credits.
How organizational culture encourages or discourages creativity in individuals and teams and how organizational policies support or undercut innovation. Methods for developing and strengthening creative ideas and innovative action. Factors such as breakthrough design that encourage creativity and support innovation. Students examine and assess, on both personal and organizational levels, the bases of and propensity for creativity and innovation.

MGT 6290. Special Topics. 0-3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated once for credit.

MGT 6297. International Mgt Experience. 3 Credits.
Same as FINA 6297/ IBUS 6297/ MKTG 6297/ SMPP 6297. May be repeated for credit.

MGT 6298. Directed Readings & Research. 1-6 Credits.

MGT 6299. Thesis Seminar. 3 Credits.

MGT 6301. Negotiations. 1.5 Credit.

MGT 6999. Thesis Research. 3 Credits.

MGT 8382. Fndtns/OrgnztnlBehavr&Devlpmnt. 3 Credits.
The individuals and institutions central to the field of organizational behavior and development. Students read about, meet with, and discuss the work of persons central to the development of the field. Prerequisite: Doctoral candidate status with organizational behavior and development as a major or supporting field, or consent of instructor.

MGT 8383. Field Research in Organizational Settings. 3 Credits.
Applications of field research techniques in formal organizational settings. Examination of the logic of inquiry and techniques of qualitative data collection. Intensive interviewing and participant observation in field settings are emphasized.

MGT 8385. Special Topics in Research Methods. 3 Credits.
Research problems and issues related to student dissertations form topics for readings, group discussions, and assigned papers.

MGT 8386. Management Ideas in Progress. 3 Credits.
Doctoral students work with a variety of faculty members as they develop new ideas, research projects, and engage in seminal inquiry. The content and structure of the course will depend upon the instructor. Prerequisites: Doctoral candidate status with organizational behavior and development as a major or supporting field, or consent of instructor.

MGT 8390. Philosphcl Foundtns-Adm Resrch. 3 Credits.
Philosophy of science as applied to research in administration. Topics include the nature and current problems of epistemology, the development and role of theories, and the relationship between theory, methodology, and empirical data.

MGT 8391. Adv Prob-Research Methodology. 3 Credits.
Use of models and theoretical frameworks in research; formulation of research questions, hypotheses, operational definitions, research designs, sampling and data analysis approaches. For doctoral candidates who have completed the general examination and all courses and are preparing for their dissertation.

MGT 8397. Advanced Special Topics. 1-3 Credits.
Current research and scholarly issues in management science.

MGT 8998. Advanced Reading and Research. 1-12 Credits.
Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

MGT 8999. Dissertation Research. 1-12 Credits.
Limited to doctoral candidates. May be repeated for credit.

MARKETING (MKTG)

Explanation of Course Numbers

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MKTG 3142. Consumer Behavior. 3 Credits.
Social, cultural, and psychological factors influencing the behavior of consumers. Models of buyer behavior, consumption patterns, market segmentation, attitude formation and change, brand loyalty, adoption of innovations, and store choice decisions. Marketing management and public policy implications of consumer research. Prerequisite: BADM 3401.

MKTG 3143. Marketing Research. 3 Credits.
Basic methods and techniques of market research. Designing a marketing research project: research questions, secondary and syndicated data, primary data collection approaches, data analysis and report presentation. Focus group interviews, questionnaire construction, statistical software packages. Prerequisite: BADM 3401 and STAT 2112 or STAT 2118.

MKTG 4148. Advertising and Marketing Communications. 3 Credits.
Executing and measuring the effectiveness of advertising and integrated marketing communications campaigns. Methods for gathering research for a customer-based campaign, defining key target personas, developing a singular message strategy, and reaching consumers through media typically used in marketing communications. Prerequisites: BADM 3401 and MKTG 3142 and MKTG 3143.

MKTG 4149. Advanced Advertising Campaigns. 3 Credits.
Participation in the National Student Advertising Competition. Research, media planning, copywriting, layout/design. Travel to competition site. Prerequisite: BADM 3401 and MKTG 4148 and permission of instructor; corequisite: MKTG 4151.

MKTG 4149W. Advanced Advertising Campaigns. 3 Credits.
Experiential learning prepares students to execute an advertising campaign for entry in the American Advertising Federation's National Student Advertising Competition. Research, media planning, copywriting, and layout and design. Students travel to the competition site. Prerequisites: BADM 3401 and MKTG 4148 and permission of the instructor.

MKTG 4150. Salesmanship and Sales Management. 3 Credits.
Development of personal selling and presentation skills; examination of types of selling situations. Organization of sales department, sales planning and forecasting, quotas, territories, performance standards, and analysis and control of distribution costs. Prerequisite: BADM 3401; MKTG 3142.

MKTG 4151. Marketing Communications Planning. 3 Credits.
Components of a marketing communications plan. Writing a professional proposal, plans book, executive summary, and speech. Prerequisite: BADM 3401 and MKTG 4148; corequisite: MKTG 4149.

MKTG 4151W. Mktg Communications Planning. 3 Credits.
Components of a marketing communications plan. Writing a professional proposal, plans book, executive summary, and speech. Restricted to Permission of instructor required. Prerequisites: BADM 3401; MKTG 4148.

MKTG 4152. Retailing Management. 3 Credits.
A study of retailing management and strategy covering the current environment of retailing, retail market and financial analysis, store location and design, inventory management, and non-store and service retailing. Industry executive and student presentations; case analyses. Prerequisites: BADM 3401; MKTG 3142; MKTG 3143.

MKTG 4154. Digital Marketing. 3 Credits.
Using the social Web to leverage a firm's marketing strategy; developing and improving a company's electronic marketing strategy for the next evolution in Web commerce. Prerequisites: BADM 3401, MKTG 3142 and MKTG 3143.

MKTG 4156. Integrated Marketing Communications. 3 Credits.
The ubiquity of advertising and promotion; fundamental shifts in how consumers get information and from whom, and how much trust they place in different sources; strategies to address a rapidly changing media environment; concepts, analyses, and activities that comprise advertising; assessing and solving advertising challenges. Prerequisites: BADM 3401 and MKTG 3142 and MKTG 3143.

MKTG 4159. Marketing Strategy. 3 Credits.
The capstone course for marketing majors. Analytical integration of material covered in previous marketing courses. Marketing strategy literature, financial dimensions of marketing decisions, and comprehensive cases. Prerequisites: BADM 3401 or BADM 3401W; MKTG 3142; MKTG 3143.

MKTG 4900. Special Topics. 0-3 Credits.
Experimental offering: new course topics and teaching methods. Prerequisites: BADM 3401; MKTG 3142; MKTG 3143.

MKTG 4900W. Special Topics. 3 Credits.
Experimental offering; new course topics and teaching methods. Prerequisites: BADM 3401; MKTG 3142; MKTG 3143.

MKTG 4995. Independent Study. 1-12 Credits.
Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. Prerequisite: BADM 3401.

MKTG 6241. Advanced Marketing Management. 3 Credits.

MKTG 6242. Buyer Behavior. 3 Credits.
The buyer decision process model and how and why products and services are purchased; synthesis of behavioral sciences applied to understanding individual, family, and organizational decision processes; the impact of consumer decisions on the marketing strategies of business and public organizations; consumer marketing applications in high-tech and services industries and on a global scale.

MKTG 6243. Marketing Research. 3 Credits.
The marketing research process: designing, conducting, and using market research studies. Managing the market research project; qualitative research; survey and experimental designs; data analysis with statistical software packages. Prerequisite: MBAD 6221.

MKTG 6246. Marketing of Services. 3 Credits.

MKTG 6248. Advertising and Marketing Communications Strategy. 3 Credits.
Practical instruction in executing an advertising and integrated marketing communications campaign. Strategic planning, communication theory, planning from a consumer attitudes and behavioral perspective, and campaign execution are covered. Prerequisites: MBAD 6273 and MBAD 6272 or permission of the instructor. Recommended background: MKTG 6242.

MKTG 6250. Selling/Sales Management. 3 Credits.

MKTG 6251. Product Management. 3 Credits.

MKTG 6252. Digital Marketing. 3 Credits.
The impact of technology on sales and marketing strategy. Areas explored include e-branding, customer relationship management, permission e-mail, sales force technology enhancement, mobile commerce, online marketing research, and electronic channels of distributions.

MKTG 6255. Strategic Brand Management. 3 Credits.
Theoretical foundation for branding and brand management and practical application of these concepts in marketing management.

MKTG 6256. Integrated Marketing Communication. 3 Credits.
The ubiquitous nature of advertising and promotion. How and from whom consumers get information and their level of trust in different information sources; concepts, analyses, and activities related to advertising; assessing and solving challenges.

MKTG 6259. Marketing Strategy. 3 Credits.
Required capstone course for marketing students. Analysis of complex marketing problems involving policy and operational decisions; emphasis on creative marketing strategy.

MKTG 6290. Special Topics. 0-3 Credits.

MKTG 6297. International Management Experience. 3 Credits.
Same as FINA 6297/ IBUS 6297/ MGT 6297/ SMPP 6297. May be repeated for credit.

MKTG 6298. Directed Readings and Research. 1-3 Credits.

MKTG 6299. Thesis Seminar. 3 Credits.

MKTG 6999. Thesis Research. 3 Credits.

MKTG 8341. Seminar: Marketing. 3 Credits.

MKTG 8397. Doctoral Seminar. 0-3 Credits.

MKTG 8998. Advanced Reading/Research. 1-12 Credits.
Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

MKTG 8999. Dissertation Research. 1-12 Credits.
Limited to doctoral candidates. May be repeated for credit.

MASTER OF BUSINESS ADMINISTRATION (MBAD)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MBAD 6202. Foundational Management Topics in Health Care. 3 Credits.
How prevailing health care business models serve as barriers to economic and business gains; environmental changes and future directions of health care delivery, practice, and policy that can to innovation and serving as drivers for thinking strategically about the business components of the health care sector. Restricted to Healthcare MBA candidates.

MBAD 6203. Global MBA Career Roadmap. 0 Credits.
Career options; traditional and digital networking tools and techniques; resume, cover letter, and related correspondence writing; preparing for an interview. Restricted to students in the global MBA program.

MBAD 6211. Financial Accounting. 3 Credits.
The basic concepts and methods for understanding the content and context of financial reports. Income statement, balance sheet, and statement of cash flows. Detailed accounting procedures and choices. How the most important accounting procedures are calculated and how different choices impact financial statements. Prerequisites: None. (Same as ACCY 6101).

MBAD 6213. Managerial Accounting. 1.5 Credit.
Effective use of accounting information in decision making and control of organizations. (Same as ACCY 6201).

MBAD 6221. Judgment, Uncertainty, and Decisions. 1.5 Credit.
Classical theories of decision making; recent findings on human cognitive limitations and biases. Analytical approaches useful in cases involving uncertainty, multiple objectives, and multiple stakeholders.

MBAD 6222. Data Analysis and Decisions. 1.5 Credit.
Statistical analysis—how it is used, when it should be used, and what can be learned from it. Statistical inference, hypothesis testing, and regression analysis. Prerequisite: MBAD 6221.

MBAD 6223. Operations Management. 1.5 Credit.
Concepts and techniques related to manufacturing and service operations. Process mapping, capacity analysis, production control, quality management, and supply chains. Integration of operations with a firm's overall business strategy as a powerful competitive weapon. Prerequisites: MBAD 6221 and MBAD 6222, or MBAD 6224, or DNSC 6202.

MBAD 6224. Decision Making and Data Analysis. 0-3 Credits.
Elements of decision making that enable managers to characterize their strengths, assess the competition, and forecast the future. Deterministic and probabilistic decision models. Analytical approaches involving uncertainty, multiple objectives, and multiple stakeholders. Probability concepts are used to develop and apply statistical models, with both exploratory and inferential statistical techniques used, including sampling, estimation, and hypothesis testing.

MBAD 6233. Financial Markets. 1.5 Credit.
Sources of managerial information provided by money and capital markets, primary and secondary markets, and cash and futures markets. Money and capital market instruments, relevant return measures, risk metrics for bonds and equities. Prerequisites: MBAD 6222 or MBAD 6224; AND MBAD 6211; AND MBAD 6242.

MBAD 6234. Financial Management. 1.5 Credit.
Theory, policy, and practice in financial management. Financial analysis, sources of funds, investing, capital planning and budgeting, dividend policy, and working capital management.

MBAD 6235. Finance. 3 Credits.
Sources of managerial information that are provided by money and capital markets, primary and secondary markets, and cash and futures markets. Money and capital market instruments, relevant return measures, risk metrics for bonds and equities. Theory, policy, and practice of financial management are examined through the elements of financial analysis, sources of funds, investing, capital planning and budgeting, dividend policy, and working capital management. Prerequisites: MBAD 6211, MBAD 6242 and MBAD 6224; or MBAD 6211, MBAD 6242, MBAD 6221 and MBAD 6222; or MBAD 6211 and MBAD 6242 and DNSC 6202.

MBAD 6241. Global Perspectives. 1.5 Credit.
Differences between the domestic and international environments and their implications for management. Differences in the organization of institutions of capitalism across countries.

MBAD 6242. Microeconomics for the World Economy. 1.5 Credit.
The economics of supply and demand in product markets. Theory of the firm (production and cost structure) and its competitive environment (perfect competition, monopoly, oligopoly, and monopolistic competition).

MBAD 6243. Macroeconomics for the World Economy. 1.5 Credit.
How firms are affected by the performance of the macro economy and the macroeconomic variables that should be factored into managers' decision-making processes. The behavior of output, employment, interest rates, inflation, and exchange rates.

MBAD 6244. International Management. 1.5 Credit.
The challenges of operating in different cultures, implications of cross-national differences in institutional environments, and difficulties of designing effective organizational structures for coordination and control in multinational operations. Prerequisite: MBAD 6241.

MBAD 6245. Global Perspectives. 3 Credits.
How decisions and processes are modified for the complex global arena. Differences between the domestic and international environments and the implications for management; variations in the organization of institutions of capitalism across countries. Challenges of operating in different cultures, effects of national differences in institutional environments, and design of organizational structures for coordination and control in multinational operations.

MBAD 6246. Global Economy. 1.5 Credit.
Linkages within the global economy. International macro and micro economic and financial developments and trends in developed, emerging, and developing economies. Focus on understanding macroeconomic data, sources of long-term growth, critical global issues that impact long-term development, mega trends, globalization and technological advances, and cyber security issues. Restricted to Limited to World Executive MBA students.

MBAD 6247. Consulting Practicum and International Residency. 3 Credits.
Students gain consulting experience with an actual company in areas including global economics, finance, and cyber-security. Combination of on-campus coursework and overseas travel. Restricted to limited to WEMBA candidates.

MBAD 6252. Mgmt of Information Systems. 1.5 Credit.
An introduction to bridging the gap between the decision-making needs of managers and the terminology of technical personnel within an organization. The transformation of organizations in the digital economy.

MBAD 6253. Mgmt of Tech & Innovation. 1.5 Credit.
Business, technological, economic, and political factors that influence the development and adoption of new technology. Management concepts and practices useful in enhancing corporate innovation. Corporate venture divisions and organizational alternatives.

MBAD 6254. Database & Data Warehousing. 1.5 Credit.
An introduction to the model, design, and use of database and data warehousing systems for identifying, understanding, and designing database-centric solutions for business and organizations.

MBAD 6261. Organizations and Leadership. 1.5 Credit.
A behavioral perspective on core leadership concepts at the individual, team, and organizational level. Students apply these concepts to examine their own leadership qualities in organizations. Experiential exercises and participation in team projects.

MBAD 6262. Managing Human Capital. 1.5 Credit.
Issues of corporate culture, strategy implementation, growth management, employee recruitment and retention, organizational behavior, diversity, ethics, and legal aspects of business. How human resource policies and practices can become a source of competitive advantage.

MBAD 6263. Organizations and Human Capital. 3 Credits.
Formal and informal organizational dynamics related to leading and managing human capital. Motivation and compensation, managing diversity, power and employee relations, organizational culture and change, leadership and decision making, and staffing and performance management.

MBAD 6265. Entrepreneurship. 1.5 Credit.
The "entrepreneur as a phenomenon." The theory as well as the experiences associated with entrepreneurs, entrepreneurial acts, and entrepreneurship in all organizational settings—large and small, public and private.

MBAD 6272. Nature of Markets. 1.5 Credit.
Marketing as an organizational function as well as a set of processes for creating, communicating, and delivering value to customers and for managing customer relationships in ways that benefit the organization and its stakeholders.

MBAD 6273. Marketing Decisions. 1.5 Credit.
Formulation and implementation of marketing strategy, applying the analytic perspectives, decision tools, and concepts of marketing to the elements of marketing strategy. Prerequisite: MBAD 6272.

MBAD 6274. Marketing. 0-3 Credits.
Marketing as an organizational function creating, communicating, and delivering value to customers while managing customer relationships in ways that benefit both the organization and its stakeholders. Formulation and implementation of the elements of marketing strategy through the application of concepts of marketing, analytic perspectives, and decision tools.

MBAD 6281. Business Ethics. 1.5 Credit.
Businesses are experiencing increasing challenges and opportunities to ensure that they demonstrate integrity in all of their activities, both internal and external to their operations. Perspectives, information, and skill development in advancing the value of integrity in business organizations.

MBAD 6284. Business and Public Policy. 1.5 Credit.
The theory and practice of managing organizations in the context of a rapidly changing global environment. Structure, design, and operation of organizations as interrelated systems and integration of internal and external environments.

MBAD 6285. Business Law. 1.5 Credit.
The legal environment of business, with particular attention to the liability of organizations and their managers for contracts, torts, and crimes. Strategies for avoiding litigation, including the development of clear, concise, and accurate writing.

MBAD 6286. Strategy Formulation and Implementation. 1.5 Credit.
An integrative approach to strategic management, stressing the general manager's perspective, strategy formulation, implementation of strategy and policy, and evaluation and control of strategy in various types of organizations. A capstone course to be taken after completion of all core requirements. Prerequisite: All other MBA core courses.

MBAD 6287. Strategy Fundamentals. 1.5 Credit.
An introductory approach to strategic management, stressing the general concepts and methodologies used in strategic management and providing a foundation for the MBA learning experience.

MBAD 6288. Strategic Management. 3 Credits.
An integrative approach to strategic management; general manager's perspective, strategy formulation, implementation of strategy and policy, and evaluation and control of strategy in various types of organizations. To be taken after completion of all M.B.A. core requirements. Prerequisites: MBAD 6211, 6213, 6223, 6224, 6235, 6242, 6245, 6263, 6274, and 6289.

MBAD 6289. Business Ethics & Public Policy. 3 Credits.
Political, legal, social, economic, and ethical forces acting upon business. Interaction of the market system and public policy process in the development of law and regulation.

MBAD 6290. Special Topics. 0-3 Credits.
May be repeated to a maximum of 3 times.

MBAD 6291. Business Communications. 0-1.5 Credits.
Practical and effective written and oral communication skills for the business environment. Focus on developing and delivering messages clearly, concisely, and effectively, and on learning to write in plain English. The purpose and mechanics of different forms of business communications. Strategies for routine communications challenges.

MBAD 6293. Consulting I. 3 Credits.
Instruction in and application of the integrative problem-solving, communications, and leadership skills required by the successful management consultant.

MBAD 6294. Consulting Abroad Project. 3 Credits.
A real-life experience in the global environment, projects are provided by international or foreign companies. A representative of the company visits GW to work with students during the associated practicum. Students work on projects during the seven-week practicum prior to the international residency. Corequisite: MBAD 6245.

MBAD 6295. Interdisciplinary Projects. 1-6 Credits.
Project and experiential studies of an interdisciplinary nature involving student teams and faculty from more than one field of study. May be repeated for credit. M.B.A. Program Director approval is required.

MBAD 6296. Business Challenge. 1.5 Credit.
Students identify a business challenge in their own organization and formulate a proposal to address the challenge within the organization's social, political, and technical contexts. The problem and proposal are formally presented at the end of the course. Restricted to Limited to World Executive MBA students.

MBAD 6297. Business and Innovation. 1.5 Credit.
Innovation as a core business process involving technological, market, and organizational change. Strategic decisions, capabilities, and moves made or developed in established firms to create, deliver, and capture value. Restricted to Limited to World Executive MBA students.

MBAD 6298. Grad Intrnshp/Business & Mgt. 0 Credits.
Structured practical experience. Permission of instructor required.

MATHEMATICS (MATH)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: MATH 1220 Calculus with Precalculus I and MATH 1221 Calculus with Precalculus II each cover one-half the material of MATH 1231 Single-Variable Calculus I. Because MATH 1221 Calculus with Precalculus II, MATH 1231 Single-Variable Calculus I, and MATH 1252 Calculus for the Social and Management Sciences are related in their subject matter, credit for only one of the three may be applied toward a degree. The placement exam, which is one option for placing into Math 1051, 1220, 1231, or 1252 is at: http://math.columbian.gwu.edu/gw-mathematics-placement-test.

MATH 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

MATH 1007. Mathematics and Politics. 3 Credits.
A mathematical treatment of fair representation, voting systems, power, and conflict. The impossibility theorems of Balinsky and Young and of Arrow. The electoral college. The prisoner's dilemma.

MATH 1008. History of Mathematics. 3 Credits.
The history of mathematics, with emphasis on its importance in the evolution of human thought. Students learn some useful mathematics from areas such as geometry, number theory, and probability and develop an appreciation of the mathematical endeavor.

MATH 1009. Mathematical Ideas I. 3 Credits.
Elementary mathematical models of growth and decay, scaling, chaos, and fractals.

MATH 1010. Mathematical Ideas II. 3 Credits.
Continuation of MATH 1009. Elementary graph theory, scheduling, probability theory.

MATH 1051. Finite Mathematics for the Social and Management Sciences. 3 Credits.
Systems of linear equations, matrix algebra, linear programming, probability theory, and mathematics of finance. Prerequisite: the placement examination or a score of 560 or above on the SAT II in mathematics.

MATH 1220. Calculus with Precalculus I. 3 Credits.
An introduction to single-variable calculus (differentiation and integration of algebraic and trigonometric functions with applications), with the concepts and techniques of precalculus developed as needed. Prerequisite: the placement examination or a score of 560 or above on the SAT II in mathematics.

MATH 1221. Calculus with Precalculus II. 3 Credits.
Continuation of MATH 1220. An introduction to single-variable calculus (differentiation and integration of algebraic and trigonometric functions with applications), with the concepts and techniques of precalculus developed as needed. Prerequisites: MATH 1220.

MATH 1231. Single-Variable Calculus I. 3 Credits.
Limits and continuity. Differentiation and integration of algebraic and trigonometric functions with applications. Prerequisite: the placement examination or a score of 720 or above on the SAT II in mathematics.

MATH 1232. Single-Variable Calculus II. 3 Credits.
The calculus of exponential and logarithmic functions. L'Hopital's rule. Techniques of integration. Infinite series and Taylor series. Polar coordinates. Prerequisite: MATH 1221 or MATH 1231.

MATH 1252. Calculus for the Social and Management Sciences. 3 Credits.
Differential and integral calculus of functions of one variable; applications to business and economics. Prerequisite: the placement examination or a score of 560 or above on the SAT II in mathematics.

MATH 2020. Joint Math and Physics Seminar. 1 Credit.

MATH 2184. Linear Algebra I. 3 Credits.
Linear equations, matrices, inverses, and determinants. Vector spaces, rank, eigenvalues, and diagonalization. Applications to geometry and ordinary differential equations. Credit cannot be earned for both MATH 2184 and MATH 2185. Prerequisites: MATH 1221 or MATH 1231 or MATH 1051; and MATH 1252; or permission of the instructor.

MATH 2185. Linear Algebra I for Math Majors. 3 Credits.
For current or prospective math majors. Introduction to theory and computations involving linear equations, matrices, inverses, determinants, vector spaces, rank, eigenvalues, diagonalization, inner products, norms, and orthogonality. Reading and writing proofs is required. Credit may not be earned for both Math 2184 and 2185. Prerequisites: MATH 1221 or MATH 1231 or permission of instructor; prerequisite or corequisite: MATH 2971.

MATH 2233. Multivariable Calculus. 3 Credits.
Partial derivatives and multiple integrals. Vector-valued functions. Topics in vector calculus, including line and surface integrals and the theorems of Gauss, Green, and Stokes. Prerequisite: MATH 1232.

MATH 2971. Introduction to Mathematical Reasoning. 3 Credits.
An introduction to the fundamental abstract concepts of modern mathematics as well as various proof techniques demonstrated on numerous examples taken from within discrete and continuous mathematics. Prerequisite or concurrent registration: Math 1232. Open to majors and to others with permission of instructor or the departmental undergraduate advisor.

MATH 2971W. Introduction to Mathematical Reasoning. 3 Credits.

MATH 2991. Introductory Special Topics. 1-3 Credits.
Admission by permission of instructor. May be repeated for credit.

MATH 3120. Elementary Number Theory. 3 Credits.
Divisibility of integers, prime numbers, greatest common divisor, the Euclidean algorithm, congruence, the Chinese remainder theorem, number theoretic functions, Möbius inversion, Euler's phi function, and applications to cryptography and primality testing. Prerequisites: MATH 2971 or MATH 2971W.

MATH 3125. Linear Algebra II. 3 Credits.
Advanced topics in linear algebra such as duality of vector spaces, normal and self-adjoint operators, the singular value decomposition theorem, the spectral theorem, bilinear and quadratic forms, the geometry of orthogonal operators, the Jordan canonical form, and minimal polynomials. Prerequisites: MATH 2971 and MATH 2184; or MATH 2185; or permission of instructor.

MATH 3257. Introduction to Complex Variables. 3 Credits.
Analytic functions and power series. Contour integration and the calculus of residues. Conformal mapping. Physical applications. Prerequisites: MATH 2233 and MATH 2971; and MATH 2184 or MATH 2185; or permission of instructor.

MATH 3342. Ordinary Differential Equations. 3 Credits.
A first course in ordinary differential equations with an emphasis on mathematical modeling: solution curves, direction fields, existence and uniqueness, approximate solutions, first and second order linear equations, linear systems and phase portraits. Prerequisites: MATH 2233 and MATH 2184 or MATH 2185 or permission of the instructor.

MATH 3343. Partial Differential Equations. 3 Credits.
A first course in partial differential equations: Fourier series and separation of variables, vibrations of a string, Sturm–Liouville problems, series solutions, Bessel's equation, linear partial differential equations, wave and heat equations, separation of variables. Prerequisites: MATH 3342 or permission of instructor.

MATH 3359. Introduction to Mathematical Modeling. 3 Credits.
An introduction to the fundamental modeling ideas of dimensional analysis, scaling, and elementary approximations of curves and functions. Applications to development of models from science and engineering. Prerequisite: MATH 2572 and MATH 3342.

MATH 3410. Mathematics of Finance. 3 Credits.
A mathematical development and analysis of realistic models for financial option pricing. Mathematical underpinnings and financial concepts will be developed in parallel. Prerequisites: MATH 2233 and MATH 2971 or permission of instructor.

MATH 3411. Stochastic Calculus Methods in Finance. 3 Credits.
Review of probability theory, Brownian motion, Ito integrals, Ito's formula, martingales, stochastic differential equations, boundary value problems, the Dirichlet problem, the Black-Scholes equation, optimal stopping, and American options. Prerequisites: MATH 2184 or MATH 2185; MATH 3410.

MATH 3553. Introduction to Numerical Analysis. 3 Credits.
Accuracy and precision. Linear systems and matrices. Direct and iterative methods for solution of linear equations. Sparse matrices. Solution of nonlinear equations. Interpolation and approximate representation of functions, splines. Prerequisites: MATH 2184 or MATH 2185, and MATH 2233, and one of CSCI 1011, CSCI 1041, CSCI 1111, CSCI 1121 or CSCI 1131.

MATH 3613. Introduction to Combinatorics. 3 Credits.
Introduction to combinatorial enumeration. Basic counting techniques, inclusion–exclusion principle, recurrence relations, generating functions, pigeonhole principle, bijective correspondences. Prerequisite: MATH 2971 or permission of instructor.

MATH 3632. Introduction to Graph Theory. 3 Credits.
Fundamental concepts, techniques, and results of graph theory. Topics include trees, connectivity, traversability, matchings, coverings, colorability, planarity, networks, and Polya enumeration. Prerequisite: MATH 2971 or permission of instructor.

MATH 3710. Introduction to Mathematical Logic. 3 Credits.
Symbolic logic as a precise formalization of deductive thought. Logical correctness of reasoning. Formal languages, interpretations, and truth. Propositional logic and first-order quantifier logic suited to deductions encountered in mathematics. Goedel's completeness theorem; compactness. Prerequisite: MATH 2971 or permission of instructor.

MATH 3720. Axiomatic Set Theory. 3 Credits.
Cantor's theory of sets. Russell's paradox. Axiomatization of set theory as a framework for a contradiction-free mathematics. The Zermelo–Fraenkel axioms and the axiom of choice. Finite, countable, and uncountable sets; ordinal and cardinal arithmetic. The continuum hypothesis. Prerequisite: MATH 2971 or permission of instructor.

MATH 3730. Computability Theory. 3 Credits.
The unlimited register machine as a model of an idealized computer. Computable and partial computable functions; Church–Turing thesis. Kleene's recursion theorem. Algorithmic enumerability. Unsolvability of the halting problem and other theoretical limitations on what computers can do. Discussion of Goedel's incompleteness theorem. Prerequisite: MATH 2971 or permission of instructor.

MATH 3740. Computational Complexity. 3 Credits.
Automata and languages. Deterministic and nondeterministic Turing machines. Space and time complexity measures and classes. The P versus NP problem. The traveling salesman problem and other NP-complete problems. Intractability. Circuit complexity. Introduction to probabilistic and quantum algorithms. Prerequisite: MATH 2971 or permission of instructor.

MATH 3806. Introduction to Topology. 3 Credits.
Metric spaces: completeness, compactness, continuity. Topological spaces: continuity, bases, subbases, separation axioms, compactness, local compactness, connectedness, product and quotient spaces. Prerequisite: MATH 2971 or permission of instructor.

MATH 3848. Differential Geometry. 3 Credits.
Curves in space, regular surfaces, tensors, fundamental forms of a surface, Gauss–Bonnet theory, minimal surfaces. The geometry of the Gauss map. Prerequisites: MATH 2184 or MATH 2185, MATH 2233, MATH 2971, or permission of instructor.

MATH 4121. Introduction to Abstract Algebra I. 3 Credits.
Study of groups and associated concepts, including Lagrange's theorem, Cayley's theorem, the fundamental theorem of homomorphisms, and applications to counting. Prerequisites: MATH 2971 and MATH 2184 or MATH 2185 or permission of instructor.

MATH 4122. Introduction to Abstract Algebra II. 3 Credits.
Study of rings, through maximal and prime ideals, and the study of fields, through Galois theory. Prerequisite: MATH 4121 or permission of instructor.

MATH 4158. Introduction to Mathematical Statistics II. 3 Credits.
Continuation of STAT 4157. Inference procedures, including estimation, hypothesis testing, regression analysis, and experimental design. Prerequisites: MATH 1232.

MATH 4239. Real Analysis I. 3 Credits.
A rigorous study of differentiation, integration, and convergence. Topics include sequences and series, continuity and differentiability of real-valued functions of a real variable, the Riemann integral, sequences of functions, and power series. Prerequisites: MATH 1232 and MATH 2971 or permission of instructor.

MATH 4239W. Real Analysis I. 3 Credits.
A rigorous study of differentiation, integration, and convergence. Topics include sequences and series, continuity and differentiability of real-valued functions of a real variable, the Riemann integral, sequences of functions, and power series. Prerequisite: MATH 1232 and MATH 2971 or permission of the instructor.

MATH 4240. Real Analysis II. 3 Credits.
Continuation of MATH 4239. Topics include: topology of Rn, derivatives of functions of several variables, inverse and implicit function theorems, multiple integrals, generalized Stokes's theorem. Prerequisites: MATH 2233, MATH 2184 or MATH 2185, and MATH 4239; or permission of instructor.

MATH 4981. Seminar: Topics in Mathematics. 3 Credits.
Past topics have included computational mathematics, fractals, network flows and combinatorial optimization, information theory and coding theory, dynamical systems, queuing theory, wavelets and Fourier analysis, complex networks, classical and quantum complexity. Credit may not be earned for both MATH 2184 and 2185. Prerequisites: MATH 2233 and MATH 2184 or MATH 2185 or permission of instructor.

MATH 4991. Special Topics. 1-12 Credits.
Admission by permission of instructor. May be repeated for credit.

MATH 4995. Reading and Research. 1-6 Credits.
Under the personal direction of an instructor. Limited to majors with demonstrated capability. Prior approval of instructor required. May be repeated for credit.

MATH 6101. Algebra I. 3 Credits.
Group theory including symmetric groups, free abelian groups, finitely generated abelian groups, group actions, Sylow theorems, solvable groups. Ring theory including factorization in commutative rings, rings of polynomials, chain conditions.

MATH 6102. Algebra II. 3 Credits.
Continuation of MATH 6101. Theory of modules, including modules over a principal idea domain and tensor product of modules. Theory of fields, including finite fields and Galois theory.

MATH 6120. Topics in Algebra. 3 Credits.
Topics may include, but are not limited to, Lie groups and Lie algebras, non-associative algebras, abelian groups, classical groups, algebraic number theory, representation theory, algebraic geometry, and ring theory. May be repeated for credit with permission. Prerequisites: MATH 6101 and MATH 6102.

MATH 6201. Real Analysis I. 3 Credits.
A rigorous study of the real number system, metric spaces, topological spaces, product topology, convergence, continuity and differentiation. Topics include Dedekind's cuts, Tychonoff's theorem, sequences and series, Abel's theorem, continuity and differentiability of real-valued functions of a real variable. Credit may not be earned for both MATH 6201 and MATH 4239.

MATH 6202. Real Analysis II. 3 Credits.
Continuation of MATH 6201. Topics include Riemann–Stieltjes integrals, equicontinuity, Arzela–Ascoli theorem, Stone–Weierstrass theorem, derivatives of functions of several variables, contraction mapping theorem, inverse and implicit function theorems, differential forms, exterior differentiation, Stoke's theorem, differentiable manifolds. Credit may not be earned for both MATH 6202 and MATH 4240.

MATH 6214. Measure and Integration Theory. 3 Credits.
Lebesgue measure and integration in abstract spaces. Probability measures. Absolute continuity, the Radon–Nikodym theorem, measures on product spaces, and the Fubini theorem. LP spaces and their properties. Prerequisite: MATH 4239 .

MATH 6215. Introduction to Functional Analysis. 3 Credits.
Topological and metric spaces; Tychonoff theorem; Banach spaces; linear functionals and operators; Hahn–Banach, closed graph, and open-mapping theorems; uniform boundedness; Hilbert spaces; eigenvalues, projections. Prerequisite: MATH 6214 .

MATH 6225. Ergodic Theory. 3 Credits.
Ergodicity, mixing, the K-property and the Bernoulli property. Poincaré recurrence, the Rohlin lemma, the ergodic theorem, and entropy theory. Additional topics from isomorphism theory, spectral theory, the theory of joinings, and coding theory. Prerequisite: MATH 6214 or permission of instructor.

MATH 6226. Dynamical Systems and Chaos. 3 Credits.
Linear and nonlinear systems, flows, Poincaré maps, structural stability. Examples of chaotic systems in the physical sciences. Local bifurcations, center manifold theory, normal forms, the averaging theorem. Hyperbolic invariant sets, strange attractors, the Smale horseshoe, symbolic dynamics. Prerequisite: MATH 2184 and MATH 4240 or permission of instructor.

MATH 6230. Complex Analysis. 3 Credits.
Topology of the complex plane; complex differentiation and integration; Cauchy's theorem and its consequences; Taylor and Laurent series; classification of singularities; residue theory; conformal mapping; the Riemann mapping theorem. Prerequisite: Math 4239 .

MATH 6240. Topics in Real and Functional Analysis. 3 Credits.
Possible topics include Banach algebras, function algebras, spectral theory for bounded and unbounded operators, harmonic analysis on topological groups and semigroups, topological vector spaces and operator algebras. Prerequisite: permission of instructor. May be repeated for credit with permission.

MATH 6318. Applied Mathematics I. 3 Credits.
Boundary value problems in one dimension, first order equations, method of characteristics, shock waves, linear elliptic and evolution equations, calculus of variations. Prerequisite: MATH 2184.

MATH 6319. Applied Mathematics II. 3 Credits.
Stability and bifurcation, perturbation methods, Sobolev spaces, wave equation, nonlinear partial differential equations. Prerequisite: MATH 2184.

MATH 6330. Ordinary Differential Equations. 3 Credits.
Existence and uniqueness of solutions, continuity and differentiability of solutions with respect to initial conditions. Properties of linear systems, phase portraits, planar systems and Poincaré–Bendixson theory. Prerequisite: MATH 4240.

MATH 6340. Modern Partial Differential Equations. 3 Credits.
Emphasis on modern theory and analytical techniques applied to the solution of partial differential equations. Topics include Sobolev spaces, generalized solutions, strong solutions and regularity; Sobolev imbedding theorem; Rellich–Kondrachov theorem; Leray–Schauder fixed-point theorems; nonlinear eigenvalue problems. Prerequisite: MATH 6319 or permission of instructor.

MATH 6350. Topics in Applied Mathematics. 3 Credits.
Possible topics include, but are not limited to, the calculus of variations, control theory, nonlinear partial differential equations, and mathematical programming. May be repeated for credit with permission.

MATH 6441. Introduction to Financial Mathematics. 3 Credits.
Elementary finance. Basic probability. Discrete random variables. Forwards, futures, and options. Options and arbitrage. The binomial model. Cox–Ross– Rubenstein formula. Martingales. Continuous random variables. The continuous model as a limit of the binomial model. Prerequisite: MATH 2184, MATH 2233.

MATH 6442. Stochastic Calculus Methods in Finance. 3 Credits.
Review of finance and probability theory. Brownian motion. Ito's formula. Martingales. Stochastic differential equations. The Black–Scholes equation. Optimal stopping. American options. Prerequisites: MATH 2184, MATH 2233.

MATH 6522. Introduction to Numerical Analysis. 3 Credits.
Computer arithmetic and round-off errors. Solution of linear and nonlinear systems. Interpolation and approximations. Numerical differentiation and integration. Eigenvalues and eigenvectors. Prerequisite: MATH 1232 and MATH 2184 and knowledge of a programming language.

MATH 6523. Numerical Solution of Ordinary and Partial Differential Equations. 3 Credits.
Initial and boundary value problems for ordinary differential equations. Error propagation, convergence and stability. Finite difference and finite element methods for partial differential equations. Prerequisite: MATH 3342 and knowledge of a programming language.

MATH 6540. Topics in Numerical Analysis. 3 Credits.
Numerical methods and software. Introductions to the methods, tools, and ideas of numerical computation. Problem solving using standard mathematical software. Interpolation; linear and nonlinear equations. Differential equations. Prerequisite: MATH 3342; knowledge of a programming language.

MATH 6610. Combinatorics. 3 Credits.
An introduction to fundamental methods and current research problems in partially ordered sets and enumeration. Prerequisite: undergraduate modern algebra and linear algebra or permission of instructor.

MATH 6620. Graph Theory. 3 Credits.
Graphical enumeration, factors, planarity and graph coloring, algebraic graph theory, extremal graph theory, applications. Prerequisite: undergraduate modern algebra and linear algebra or permission of instructor.

MATH 6630. Topics in Combinatorial Mathematics. 3 Credits.
Topics selected from a wide range of research subjects in combinatorics, its relations with other areas of mathematics, and applications. Recent selections have included matroid theory, topological methods in ordered sets, algebraic methods in combinatorics, fractional graph theory, combinatorics of polytopes, the symmetric group. May be repeated for credit with permission.

MATH 6710. Mathematical Logic. 3 Credits.
Model theory: the relation between a formal language (syntax) and its interpretations (semantics). Consistency, completeness, and compactness. Tarski's theorem on the inexpressibility of truth. Godel's incompleteness theorem and its impact on mathematics.

MATH 6720. Topics in Logic. 3 Credits.
Topics selected from a broad spectrum of areas of logic and applications, based on students' suggestions and interests. Recent selections have included computable mathematics, computable model theory, computability theory, set theory, and algorithmic learning theory. May be repeated for credit with permission.

MATH 6810. General Topology. 3 Credits.
Topological spaces, bases and subbases, open sets and closed sets; continuous maps and homeomorphisms; connectedness and compactness; metric topology, product topology, and quotient topology; separation axioms; finite topological spaces, covering spaces, and fundamental groups.

MATH 6820. Algebraic Topology. 3 Credits.
Fundamental groups and the Van Kampen theorem; simplicial complexes, simplicial homology, and Euler characteristic; singular homology, Mayer–Vietoris sequences. Topics may include cohomology, cup products, and Poincaré duality; classification of surfaces; knots and their fundamental groups. Prerequisite: MATH 6810 or permission of instructor.

MATH 6850. Knot Theory and Low Dimensional Topology. 3 Credits.
Introduction to fundamental methods and current research in knot theory and 3-dimensional topology. Topics include Reidemeister moves, Alexander invariants, Jones-type invariants, skein modules, Khovanov homology, incompressible surfaces, and torus decomposition. Prerequisite: MATH 6810 or permission of instructor.

MATH 6860. Topics in Knot Theory and Low Dimensional Topology. 3 Credits.
Possible topics include, but are not limited to, topology of 3-manifolds and work of Perelman, quantum invariants and their categorizations, topology of 4-manifolds after Freedman and Donaldson, computational complexity in topology, and applications in biology, chemistry, and physics. Prerequisite: MATH 6850 or permission of instructor. May be repeated for credit with permission.

MATH 6890. Topics in Topology. 3 Credits.
Topics may include hyperbolic structures on surfaces and 3-manifolds; knot theory; topology of 3-manifolds; topology of 4-manifolds. Prerequisite: MATH 6820 or permission of the instructor. May be repeated for credit with permission.

MATH 6991. Graduate Student Experience. 0 Credits.
Introduction to the experience of studying mathematics as a graduate student at GW. Topics include understanding University rules and regulations, handling the literature in the subject, conducting research and delivering presentations, and pursing a successful career as a mathematician. Restricted to graduate students in the Department of Mathematics.

MATH 6995. Reading and Research. 0-12 Credits.
May be repeated for credit.

MATH 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

MECHANICAL AND AEROSPACE ENGINEERING (MAE)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MAE 1001. Introduction to Mechanical and Aerospace Engineering. 1 Credit.
Careers in mechanical and aerospace engineering and the necessary academic program. Teamworking and problem-solving skills for solution of design problems. Analytical and design problems and correlations between academic skills and the mechanical and aerospace engineering professions. Basic aspects of engineering ethics. (Fall).

MAE 1004. Engineering Drawing and Computer Graphics. 0-3 Credits.
Introduction to technical drawing, including use of instruments, lettering, geometric construction, sketching, orthographic projection, section view, dimensioning, tolerancing, and pictorial drawing. Introduction to computer graphics, including topics covered in manual drawing and computer-aided drafting. (Fall and spring).

MAE 2117. Engineering Computations. 3 Credits.
Numerical methods for engineering applications. Round-off errors and discretization errors. Methods for solving systems of linear equations, root finding, curve fitting, numerical Fourier transform, and data approximation. Numerical differentiation and integration and numerical solution of differential equations. Computer applications. Prerequisite: MATH 1232. (Fall, Every Year).

MAE 2124. Linear Systems Analysis for Robotics. 3 Credits.
Properties of linear systems. Mathematical modeling of dynamic systems. State space, state variables, and their selection. Linearization of non-linear behavior. Matrix functions. Solution of state equations in the time domain and using transformations. System stability and frequency response.

MAE 2131. Thermodynamics. 3 Credits.
Fundamentals of equilibrium thermodynamics; Zeroth, First, and Second Laws. Work, heat, internal energy, enthalpy, thermodynamic potential functions; heat transfer mechanisms, phase diagrams, equations of state and property tables, power systems, refrigeration, heat pump systems. Reversible and irreversible processes, Carnot cycle, entropy, exergy. Prerequisite: PHYS 1021.

MAE 2170. History and Impact of the U.S. Patent System. 3 Credits.
Economic systems and emergence of the free market; role of the patent system in the industrial development of the United States; constitutional foundations; evolution of the U.S. patent system; landmark litigation; impact on future innovation; international aspects; the likely future of the patent system.

MAE 3120. Methods of Engineering Experimentation. 0-3 Credits.
Acquisition and analysis of experimental data. Laws of modeling and simulation. Report formulation and presentation. Basic principles of measuring instruments and sensors. Fundamentals of digital data acquisition and use of computer-based data systems. Strain gages, oscilloscopes, transducers, and computerized data systems. Prerequisite: MAE 2117.

MAE 3126. Fluid Mechanics I. 0-3 Credits.
Fluid properties, fluid statics, integral and differential formulations of conservation of mass, momentum, and energy. Bernoulli's equation. Dimensional analysis and similitude. Inviscid flow. Viscous flow. Experimental and computational methods in fluid mechanics. Prerequisite: APSC 2058. (Fall, Every Year).

MAE 3128. Biomechanics I. 3 Credits.
Mechanical analysis of biological systems. Characterization of living tissue. Applications of statics, solid mechanics, kinematics, and elementary dynamics to the human musculoskeletal system. May be taken for graduate credit with departmental approval. Prerequisites: APSC 2057, CE 2220. (Spring, Every Year).

MAE 3134. Linear System Dynamics. 3 Credits.
Modeling of linear mechanical, electrical, and fluid systems as transfer functions and in state space. Linearization, discretization. Laplace and z-transforms. Natural frequencies and damping, free vibration, forced vibration. Measurement techniques, parameter estimation, and computer simulation. Time and frequency domain analysis. Prerequisite: APSC 2113; corequisite: APSC 2058.

MAE 3145. Orbital Mechanics and Spacecraft Dynamics. 3 Credits.
Coordinate systems and transformations, rocket equation, two-body problem, orbit transfers, orbit perturbations, attitude dynamics and stability of symmetric spacecraft, environmental and control torques. Prerequisite: APSC 2058. (Fall).

MAE 3155. Aerodynamics. 3 Credits.
Subsonic and supersonic aerodynamics: potential flow, lift and form drag, viscous effects, compressible flow. Prerequisite: MAE 3126.

MAE 3162. Aerospace Structures. 3 Credits.
Basic structural theory of lightweight aerospace structures; analysis of typical monocoque structures; load transfer in stiffened panel structures; virtual work and energy methods of structural analysis, bending of open and closed, thin walled beams, shear and torsion of beams, and structural idealization. Restricted to juniors and seniors; permission of the instructor may be substituted. Prerequisites: APSC 2057 and CE 2220. (Fall, Every Year).

MAE 3166W. Materials Science and Engineering. 3 Credits.
Mechanical properties, plastic deformation dislocation theory, yielding, strengthening mechanisms, microstructure and properties, heat treatment of steel, composites, amorphous materials, viscoelastic deformation, creep, fracture, fatigue, fatigue crack propagation. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: CHEM 1111 and PHYS 1022. (Fall, Every Year).

MAE 3167W. Mechanics of Materials Lab. 1 Credit.
Measurement of strains and study of failure resulting from applied forces in ductile, brittle, anisotropic, elastomeric, plastic, and composite materials. Tension, compression, bending, impact, and shear failures. Prerequisites: MAE 3166W. (Spring).

MAE 3171. Patent Law for Engineers. 3 Credits.
Types of patents; international patents; inventorship; prosecution process; basic references for patents; detailed structure of a patent; patentability requirements; reexamination and reissue; litigation; infringement and invalidity; copyrights, trademarks, and trade dress. May be taken for graduate credit with approval of department.

MAE 3184. Robotics Lab. 1 Credit.
Forward and inverse kinematics modeling of robots, control design, trajectory planning, and force rendering. Corequisite: MAE 3197.

MAE 3187. Heat Transfer. 3 Credits.
Steady- and unsteady-state heat conduction problems. Analytical and numerical solution methods. Convective heat transfer, boundary-layer approach, analogy between heat and momentum transfer. Thermal radiation; fundamental concepts and laws. Heat-exchanger design. Prerequisite: MAE 3126, MAE 2131.

MAE 3190. Analysis and Synthesis of Mechanisms. 3 Credits.
Kinematics and dynamics of mechanisms. Displacements, velocities, and accelerations in linkage, cam, and gear systems by analytical, graphical, and computer methods. Synthesis of linkages to meet prescribed performance requirements. Prerequisite: APSC 2058. (Fall).

MAE 3191. Mechanical Design. 3 Credits.
Integration of knowledge of strength of materials in a design context. Stresses and deflections in engineering structures. Theories of failure. Introduction to the design of mechanical components, such as fasteners, shafts, springs. Introduction to the use of computers in mechanical engineering design. Prerequisite: CE 2220, MAE 2117.

MAE 3192. Manufacturing Processes and Systems. 3 Credits.
Introduction to manufacturing techniques for metals, polymers, ceramics, and composites. Relationships between properties of materials and techniques for processing them. Process selection, design, control, and integration. Computer-integrated manufacturing, robotics and assembly automation. Prerequisite or concurrent registration: MAE 1004.

MAE 3193. Mechanical Systems Design. 3 Credits.
Creative engineering design, problem definition, and concept generation; design of mechanisms and mechanical systems; safety, reliability, manufacturability, material selections, cost, and integration in design process; finite element analysis of mechanical systems, computer-aided design, and optimization. Prerequisites: MAE 3191. (Spring).

MAE 3195. Computer-Aided Engineering of Mechanical Systems. 3 Credits.
Presentation of the major elements of computer-aided engineering systems: interactive computer graphics, finite element analysis, and design optimization. Consideration of economics, safety, and reliability factors. Prerequisite: MAE 4193; concurrent registration: MAE 3196.

MAE 3196. Computer-Aided Engineering Laboratory. 1 Credit.
Instruction and hands-on applications of computer-aided engineering systems to the design, analysis, and optimization of mechanical engineering components and systems. Concurrent registration: MAE 3195.

MAE 3197. Robotic Systems Design and Applications. 3 Credits.
Modeling and analysis of robot designs. Kinematics, statics, and dynamics of linkages. Design and selection of mechanical structures, actuators, transmissions, and sensors. Design of robotic control systems. Relevant computer hardware and software. Industrial applications and limitations of robot systems. Lab experiments. Same as ECE 4730. Prerequisite: MAE 3134.

MAE 4129. Biomechanics II. 3 Credits.
Mechanical analysis of physiological fluid dynamics. Application of fluid flow analysis techniques to cardiovascular, pulmonary, respiratory, and phonatory flows. Introduction to biomedical devices that manipulate physiological flows. May be taken for graduate credit with approval of department. Prerequisite: MAE 3128.

MAE 4149. Thermal Systems Design. 3 Credits.
Completion of a thermal systems design project that requires integration of engineering science, economics, reliability, safety, ethics, professional responsibility, and social considerations. Development and use of design methodology, optimization, feasibility considerations, detailed system descriptions, and presentation of results. Prerequisite: MAE 3187.

MAE 4151. Mechanical Engineering Project. 1 Credit.
Capstone design project. Conceptualization, research, specification of constraints, and preliminary design analysis. Presentations and proposal. Project is continued in MAE 4152W. Prerequisites: MAE 3193. (Fall).

MAE 4152W. Mechanical Engineering Laboratory. 3 Credits.
Project-oriented course. Simulates working environment of professional engineers. Projects are assigned in student's areas of interest; student is expected to design and assemble own experiments. Extensive use of instrumentation and computing facilities. Project proposal, progress reports, final report, and periodic oral presentations required. (Spring).

MAE 4157. Aerodynamics Laboratory. 1 Credit.
Subsonic and supersonic wind tunnel experiments and simulations. Prerequisite: MAE 3155. (Fall).

MAE 4163. Airplane Performance. 3 Credits.
Lift and drag estimation methods. Airplane performance measures, such as range and endurance, turning flight, specific excess power and acceleration, takeoff and landing performance. Longitudinal and lateral-direction static and dynamic stability. Control surface effectiveness. Prerequisites: MAE 3134. (Fall).

MAE 4168. Intro. to Biomaterials. 3 Credits.
Fundamentals of materials science and engineering applied to artificial materials in the human body. Topics include biocompatibility, techniques to minimize corrosion or other degradation of implant materials, and the use of artificial materials in various tissues and organs. Prerequisite: Approval of department. Course not open to MAE students.

MAE 4172. Engineering Design and the Patent System. 3 Credits.
Design experience in group projects involving following precisely the teachings of a licensed patent; or avoiding infringement of a provided patent while offering a competitive alternative; or evaluating a provided patent in light of prior art or by attempting to design a competitive product. May be taken for graduate credit with approval of department. Prerequisite: MAE 3171 and senior status.

MAE 4182. Electromechanical Control System Design. 3 Credits.
Application of control theory to the design of electromechanical systems. Transducers, valves, and other control components. Mathematical models of open- and closed-loop electromechanical systems. Root locus and frequency response methods; application to the synthesis of feedback systems by both manual and computer-aided techniques. Prerequisite: MAE 2117, MAE 3134.

MAE 4183. Controls Lab. 1 Credit.
Modeling, control design, simulation, implementation, tuning, and operation of a control system. Corequisite: MAE 4182.

MAE 4193. Engineering Systems Design. 3 Credits.
Creative engineering design, problem definition, and concept generation. Design of journal and roller element bearings, fasteners and permanent joints, and springs. Design project incorporating design selection, and optimization. Project presentation using graphical and computer resources. Prerequisite: MAE 3191. (Fall, Every Year).

MAE 4194. Mechatronics Design. 3 Credits.
Data acquisition and digital signal processing. Sensors and their characteristics—displacement, position/velocity, force/pressure, piezoelectric. Actuators—mechanical, electrical, pneumatic, hydraulic. Modeling and simulation of dynamic systems. Mechanism design. Digital control systems. Microprocessors, digital logic/circuits, motor drives. Lab experiments. Prerequisite: MAE 4182.

MAE 4195. Mechatronics Lab. 1 Credit.
Corequisite: MAE 4194.

MAE 4198. Research. 1-3 Credits.
Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status.

MAE 4199. Student Design Project. 1-3 Credits.
Special student projects involving extensive design of various mechanical engineering systems. Examples include the solar car, mini-Baja, or other design competitions that typically are national in scope. May be taken for graduate credit by graduate students.

MAE 6194. Mechatronics Design. 3 Credits.
Review of data acquisition and digital signal processing. Mathematical models, design, and applications of sensors and actuators in mechatronic systems. Theory and applications of mechanism design. Microprocessor-based design integration, motor drives, and digital logic/circuits. Case studies and lab experiments. Restricted to graduate students. (Same as MAE 4194) (Spring).

MAE 6195. Mechatronics Lab. 1 Credit.
Designing and building a mechatronic system based around a programmable microcontroller; using sensors and actuators to create devices capable of sensing their surrounding environment and reacting to stimuli from that environment. Restricted to graduate students. (Same as MAE 4195) (Spring).

MAE 6201. Intro to Manufacturing. 3 Credits.
Fundamentals of modern manufacturing. Processes for manufacturing mechanical and electronic components from metals, polymers, ceramics, and silicon. Manufacturing systems, CAD, robotics, and design for assembly. Current capabilities, technological needs, and competitiveness. Examples from high-tech industries. Prerequisite: approval of department.

MAE 6203. Adv Experimentation Tech. 3 Credits.
Sensors; measurement of displacement, temperature, pressure and velocity. Optical methods. Signal conditioning. Computer data acquisition. Uncertainty analysis. Case studies of instrumentation systems such as hot-wire anemometers, laser-doppler anemometers, shlieren/shadowgraph and interferometers. Laboratory projects. (As arranged).

MAE 6204. Tissue Engineering. 3 Credits.

MAE 6207. Theory of Elasticity I. 3 Credits.
Introduction to Cartesian tensors; deformation, stress, constitutive relations for linear elasticity; formulation of boundary value problems, variational principles, torsion and bending of prismatial rods, plane problems. Prerequisite: approval of department. Same as CE 6207.

MAE 6210. Continuum Mechanics. 3 Credits.
Tensor analysis; fundamental concepts of continuum mechanics; kinematics of continuum; derivation of balance laws of mass, linear momentum, angular momentum, energy and entropy; axioms of constitutive theory; formulation of constitutive theories; Onsager's principle; objectivity; representation theorem for isotropic functions; plasticity, including concepts of internal variables, yield surface, return mapping algorithm. Departmental approval required. (Fall, Every Year).

MAE 6220. Applied Computational Fluid Dynamics. 3 Credits.
Basic principles of fluid dynamics and aerodynamics. Finite difference and finite volume methods. Fluid flow and heat transfer analysis of thermo-fluid mechanical systems. Computational aerodynamics codes. Individual hands-on experience with a commercial CFD code such as FLUENT. Prerequisite: approval of department.

MAE 6221. Fluid Mechanics. 3 Credits.
Continuum, kinematics of fluids; stress and strain rate tensors; fundamental equations of viscous compressible flows. Irrotational flows; sources, sinks, doublets, and vortices. Laminar flow of viscous incompressible fluids; boundary-layer concept. Prerequisite: approval of department.

MAE 6222. Applied Aerodynamics. 3 Credits.
Introduction to practical and computational methods for solving two-dimensional and three-dimensional aerodynamics problems. Linear methods, nonlinear potential methods, coordinate transforms, and boundary-layer methods. Prerequisite: MAE 6221, MAE 6286.

MAE 6223. Turbomachinery. 3 Credits.
Turbine, compressor, and pump types and uses; dimensional analysis of turbomachines; cycle analysis of gas and steam turbines; energy interchange in fluid machinery; design, characteristics, and performance of turbines, compressors, and pumps; comparison of types of turbines, compressors, and pumps. Prerequisite: MAE 6221.

MAE 6224. Viscous Flow. 3 Credits.
Exact solutions of Navier–Stokes equations; the laminar boundary-layer theory. Reynolds stresses and turbulence; internal, boundary-layer, and mixing flows. Applications to heat and mass transfer and to reacting flows. Prerequisite: APSC 6213, MAE 6221, .

MAE 6225. Computational Fluid Dynamics. 3 Credits.
Theory of discrete methods for solving the governing equations of fluid dynamics. Potential flow, Euler equations, Navier-Stokes equations. Emphasis on algorithm development appropriate to modern supercomputers. Prerequisite: MAE 6221, MAE 6286.

MAE 6226. Aero/Hydrodynamics. 3 Credits.
Inviscid flows in two and three dimensions and irrotational flow theory; conformal mapping and applications. Helmoltz theorems and vorticity dynamics. Applications such as airfoil theory, finite wing theory, panel methods, instabilities, free surface flow. Prerequisite: MAE 6221 .

MAE 6227. Aeroelasticity. 3 Credits.
Static and dynamic structural deformations; static aeroelasticity (structural deformation, divergence, control effectiveness, and reversal); dynamic aeroelasticity (flutter, response to gusts and turbulence); unsteady aerodynamics for 2-D wings; strip theory for 3-D lifting surfaces; piston and Newtonian-flow theories. Prerequisite: MAE 6221, MAE 6257.

MAE 6228. Compressible Flow. 3 Credits.
Thermodynamics and equations of compressible inviscid flow. One-dimensional flow. Isentropic flow. Normal and oblique shock waves. Quasi-one-dimensional flow. Unsteady one-dimensional and steady two-dimensional flow. Introduction to transonic flow. Prerequisite: APSC 6213, MAE 6221 .

MAE 6229. Propulsion. 3 Credits.
Basic concepts of propulsion: energy transformations in propulsive flows, gas dynamics of combustion. Thermal and propulsive efficiencies. Cycle and engine component analysis. Intake, nozzle performance. Drag and thrust generation. Augmentation. Propellers, turbojets, turbofans, ramjets, and rockets. Prerequisite: Graduate Standing or MAE 2131 and MAE 3126. (Spring).

MAE 6230. Space Propulsion. 3 Credits.
Advanced chemical propulsion: dynamic combustion and instabilities in solid propellants. Injection, atomization, mixing in liquid propellant engine performance. Plasma propulsion: electrostatic, electromagnetic, and electrothermal instabilities (laser and microwave). Nuclear propulsion. Prerequisite: MAE 6229.

MAE 6231. Structure and Transformations in Materials. 3 Credits.
Structure of crystals, crystal binding, crystal defects, dislocations, solid solutions, phases, diffusion, phase transformations, deformation twinning, and martensite. Prerequisite: APSC 2130.

MAE 6232. Fracture Mechanics. 3 Credits.
Concepts, history, and recent developments of fracture mechanics. Singularity at the crack tip; solutions around crack tip; stress intensity factors; energy release rate; J-integral; direction of crack extension; Plasticity and slow crack growth; dynamic crack propagation; molecular dynamics simulation of fracture. Prerequisite: approval of department.

MAE 6233. Mechanics of Composite Materials. 3 Credits.
Stress-strain relationship for orthotropic materials, invariant properties of an orthotropic lamina, biaxial strength theory for an orthotropic lamina. Mechanics of materials approach to stiffness, elasticity approach to stiffness. Classical lamination theory, strength of laminates. Statistical theory of fatigue damage. Same as CE 6209. Prerequisite: approval of department.

MAE 6234. Composite Materials. 3 Credits.
Principles of composites and composite reinforcement. Micromechanics and failure, interface reactions in various composites, reinforcing materials. Structure of composites: fiber-reinforced polymers, filler-reinforced polymers, fiber-reinforced metals, directionally solidified alloys, dispersion-strengthened metals. Prerequisite: approval of department.

MAE 6235. Deformation and Failure of Materials. 3 Credits.
Elastic and plastic deformation, yield, dislocation theory, strengthening mechanisms, creep, polymers, fracture, transition temperature, microstructure, fatigue. (Spring, odd years).

MAE 6237. Applied Electrochemistry. 3 Credits.
Charged interfaces, electrochemical cells, corrosion thermodynamics, electrode kinetics, general corrosion, crevice corrosion, pitting, stress-corrosion cracking, corrosion protection, batteries and fuel cells, energy storage. May include current and potential distribution in electrochemical cells and scaling effects in modeling. Prerequisite: approval of department.

MAE 6238. Biomaterials. 3 Credits.
Applications of materials science and engineering to artificial materials in the human body with the objective of detailed understanding of synthetic materials and biopolymers. Biocompatibility and its consequences on tissue–implant interfaces. Design and development of new implant materials, drug delivery systems, and biosensors. Prerequisite: MAE 3166 or MAE 4168.

MAE 6239. Computational Nanosciences. 3 Credits.
Introduction to surface force measurements in nanosciences; continuum contact mechanics in nanoscience research; intermolecular forces; empirical potentials for transition metals; surface forces in liquids; large-scale atomic/molecular massively parallel simulator; force field development from quantum mechanical density–functional theory for organic/metal molecular systems. Prerequisite: approval of department.

MAE 6240. Kinematic Synthesis. 3 Credits.
Techniques for the analysis and synthesis of function, path, and motion generating mechanisms. Methods for the dimensional design of mechanisms. Computer-aided techniques for the optimal design of planar linkages. Review of recent developments and current research. Term project. Prerequisite: MAE 3190 .

MAE 6241. Computer Models of Physical and Engineering Systems. 3 Credits.
Reduction of physical and engineering systems to simplified physical and mathematical models. Manipulation of models using C/C programming. Numerical algorithms for optimization, graph identification, mini-sum arithmetic, and searching. Styles of problem solving. Prerequisite: MAE 2117.

MAE 6242. Advanced Mechanisms. 3 Credits.
Emphasis on spatial kinematics. Analysis and synthesis of mechanisms. Analytical techniques using matrices, dual numbers, quaternion algebra, finite and instantaneous screws, theory of envelopes. Applications to design of linkages, cams, gears. Use of digital computers in mechanism analysis and design. (Spring, even years).

MAE 6243. Advanced Mechanical Engineering Design. 3 Credits.
Design of mechanical engineering components and systems emphasizing computer-aided engineering (CAE), including interactive computer graphics, finite element analysis, and design optimization. Creation of a complete design on an engineering workstation. Prerequisite: approval of department.

MAE 6244. Computer-Integrated Engineering Design. 3 Credits.
Design of engineering components and systems on engineering workstations using I-DEAS. Interactive computer graphics, finite element analysis, computer-based design optimization, and other relevant computer-based tools. Students apply design concepts in a computer-aided engineering environment to a selected project. Prerequisite: approval of department.

MAE 6245. Robotic Systems. 3 Credits.
Classification, features, and applications of industrial robots. Spatial descriptions and transformations, forward and inverse kinematics. Jacobian matrix, velocities and static forces, manipulator dynamics and controls. Robot actuators, transmissions, sensors, end effectors, and programming. Prerequisite: MAE 4182 .

MAE 6246. Electromechanical Control Systems. 3 Credits.
State–space representations of dynamic systems; dynamics of linear systems; controllability and observability; linear observers; compensator design by separation principle; linear–quadratic optimal control; Riccati equations; random processes; Kalman filter; applications of optimal stochastic control theory to robotics and earthquake engineering. Prerequisite: approval of department.

MAE 6247. Aircraft Design I. 3 Credits.
Conceptual design methods used in response to prescribed mission and performance requirements, alternate configuration concepts. Configuration general arrangement and empennage sizing. Estimation of aircraft size, weight, and balance; lift, thrust and drag; system level tradeoff and sensitivity studies. Prerequisite: Graduate Standing or MAE 4163. (Spring).

MAE 6249. Spacecraft Design. 3 Credits.
Computer-aided design of spacecraft and satellites to meet specific mission requirements. Environment, propulsion, structure, heat transfer, orbital mechanics, control considerations. Use of modern computer codes for design studies. Prerequisite: MAE 3145 or graduate student standing. (Spring, Every Year).

MAE 6251. Computer-Integrated Manufacturing. 3 Credits.
Automation techniques for processing metals, polymers, and composites. Use of sensing and process modeling in process control. Numerical control and robot applications and limitations. Integration, scheduling, and tool management in the computer-integrated factory. Quality control. Social and economic considerations in CIM. Prerequisite: MAE 3192 .

MAE 6252. Projects in Computer-Integrated Design and Manufacturing. 3 Credits.
Applications of the concepts of computer-integrated manufacturing to group projects, culminating in written and oral presentations. Robot programming, vision-guided assembly, force sensing, fixturing, and end-effector design for practical applications. Factory simulation, part scheduling, and NC program-verification algorithms. Prerequisite: MAE 6251.

MAE 6253. Aircraft Structures. 3 Credits.
Statics of thin-walled beams and panels, force interplay between stiffeners and skin in the analysis and design of stiffened thin-walled structures. Strength and stiffness of locally buckled stiffened structures. Design considerations. Critical evaluation of various design procedures. Prerequisite: approval of department.

MAE 6254. Applied Nonlinear Control. 3 Credits.
Dynamic characteristics of nonlinear systems. State stability and input-output stability. Lyapunov stability theory and invariance principle. Nonlinear control systems, including feedback linearization, back-stepping, sliding mode control, and passivity-based design. Applications to robotics, aircraft, and spacecraft control systems. Geometric controls and hybrid systems. Prerequisite: approval of department.

MAE 6255. Plasma Engineering in Aerospace and Nanotechnology. 3 Credits.
Plasma fundamentals, electromagnetic waves in plasma, plasma–wall interactions, modeling and experimental techniques in plasmas, electrical discharge, plasma propulsion, plasma-based nanotechnology. Prerequisite: MAE 3126.

MAE 6257. Theory of Vibration. 3 Credits.
Damped and undamped natural vibration, response of single- and multiple-degrees-of-freedom systems to steady-state and transient excitations, modal analysis, nonproportional damping and complex modes, variation formulation of equations of motion, discretization of structural systems for vibrational analysis. Prerequisite: approval of department.

MAE 6258. Advanced Vibration Analysis and Control. 3 Credits.
Passive and active vibration control of discrete and continuous systems, dynamic vibration absorbers, random vibrations, failure analysis, modal analysis, nonlinear vibrations. Prerequisites: MAE 3134 and MAE 4182 or graduate standing. (Spring).

MAE 6260. Nanomechanics. 3 Credits.
Introduction to crystallography; interatomic potentials; phonon dispersion relations; molecular dynamics simulation; Nose–Hoover thermostat; coarse grained non-equilibrium molecular dynamics; multiple length/time scale theory of multi-physics; microcontinuum field theories; applications to nano materials/structures. Prerequisite: approval of department.

MAE 6261. Air Pollution. 3 Credits.
Introductory course on the generation, monitoring, and control of air pollution. Atmospheric pollutants; current levels and health problems. Combustion chemistry and mixing. Photochemical processes; smog and measurements. Atmospheric dispersion; inversion and acid rain. Prerequisite: approval of department.

MAE 6262. Energy Systems Analysis I. 3 Credits.
Analysis of energy resources and conversion devices. Statistical data analysis, forecasting, I/O, and net energy analyses, mathematical modeling. Prerequisite: approval of department.

MAE 6263. Advances in Energy Engineering. 3 Credits.
Review of thermodynamics, heat transfer, fluid dynamics, and materials technology used in the energy industries. New energy-efficient technologies in transportation and buildings; renewable energy (wind, solar, and biomass). Climate change and sustainability issues, such as carbon capture, cap and trade, carbon sequestration.

MAE 6270. Theoretical Acoustics. 3 Credits.
Basic acoustic theory in stationary and uniformly moving media; waves in infinite space; sound transmission through interfaces; sound radiation from simple solid boundaries, source and dipole fields; propagation in ducts and enclosures; elements of classical absorption of sound. Prerequisite: APSC 6213, MAE 6221.

MAE 6271. Time Series Analysis. 3 Credits.
Harmonic analysis of random signals; auto- and cross-correlations and spectra; coherence; modern techniques for spectral estimation, including fast Fourier transform, maximum entropy, and maximum likelihood; bias and variability; randomly sampled data; digital filtering; applications. Prerequisite: approval of department.

MAE 6274. Dynamics/Cntrl of Spacecraft. 3 Credits.
Fundamentals of satellite attitude dynamics and passive stabilization. Spacecraft attitude representation, rotational kinematics and kinetics. External torques. Dynamics of gyroscopes. Gravity gradient stabilization. Effect of internal energy dissipation on stability of spinning bodies and methods of despin. Dual spin satellites. Prerequisite: approval of department.

MAE 6275. Dynamics and Control of Aircraft. 3 Credits.
Derivation of equations of motion, Euler transformations and direction cosines, stability derivatives and linearization of equations of motion, stability of linear systems with application to longitudinal and lateral dynamics, Laplace transform techniques, and frequency-response analysis. Departmental approval required prior to registration. (Fall, even years).

MAE 6276. Mechanics of Space Flight. 3 Credits.
Coordinate and time systems. Newton's laws; 2-, 3-, and n-body problems, Lagrange points, gravity-assisted trajectories, variation of parameters and orbit perturbations, non-central gravity effects, drag, sun-synchronous, and formation orbits. Numerical applications using MatLab. Prerequisite: approval of department.

MAE 6277. Spacecraft Attitude Control. 3 Credits.
Control of spinning and three-axis stabilized spacecraft. Elements of linear control theory for single-input, single-output systems and basic feedback control laws. Momentum management and actuator desaturation. Sensors for attitude determination. Application of modern control for multi-input, multi-output systems. Control system simulations using MatLab. (As arranged).

MAE 6280. Thermodynamics. 3 Credits.
Review of First and Second Laws of Thermodynamics and combining the two through exergy; entropy generation minimization and applications. Single phase systems, exergy analyses, multiphase systems, phase diagrams and the corresponding states principle. Prerequisite: approval of department.

MAE 6281. Advanced Thermodynamics. 3 Credits.
Development of classical and quantum statistical mechanics, including Maxwell–Boltzman distributions and microscopic origins of entropy and other thermodynamic variables. Partition functions and micro- and grand-canonical ensembles; Fermi–Dirac, Bose–Einstein, and intermediate statistics. Einstein and Debye models of solids. Prerequisite: MAE 6280 .

MAE 6282. Convective Heat/Mass Transfer. 3 Credits.
Heat and momentum transfer in laminar and turbulent flow. The laminar boundary-layer solution. Similarity and nondimensional parameters. Mass-momentum heat transfer analogy. Convective heat transfer at high velocity. Stability, transition, and turbulence. Free convection. Prerequisite: MAE 6221 .

MAE 6283. Radiative Heat Transfer. 3 Credits.
Basic concepts of heat transfer by thermal radiation starting from Planck's equation for blackbody radiation. Realistic engineering problems are addressed, some involving radiative heat transfer with a variety of surfaces, geometries, and enclosures. Radiative heat flow combined with conduction and convection boundaries. Prerequisite: approval of department.

MAE 6284. Combustion. 3 Credits.
Basic combustion phenomena. Rate processes and chemical kinetics. Chain reaction theory. Detonation, deflagration, diffusion flames, heterogeneous combustion. Experimental measurements. Impact of pollution regulations and alternate fuels. Prerequisite: approval of department.

MAE 6286. Numerical Solution Techniques in Mechanica land Aerospace Engineering. 3 Credits.
Development of finite difference and finite element techniques for solving elliptic, parabolic, and hyperbolic partial differential equations. Prerequisite: APSC 6213.

MAE 6287. Applied Finite Element Methods. 3 Credits.
Review of theory of elasticity. Basic aspects of theory and application of finite element methods. Utilization of MSC/NASTRAN for static, dynamic, linear, and nonlinear analyses of problems in mechanical, aeronautical, and astronautical engineering. Course emphasizes individual hands-on experience with the MSC/NASTRAN code. Prerequisite: approval of department.

MAE 6288. Advanced Finite Element Analysis. 3 Credits.
Review of variational formulation of the finite element method. Finite element analysis of large-strain thermomechanics. Applications to static and dynamic problems in finite elasticity, Fung elasticity (biomechanics), nonlocal theory, active stress in living biological tissues, biological growth, and large-strain plasticity. Recent developments in finite element methods. Same as CE 8330. Prerequisite: approval of department.

MAE 6290. Special Topics in Materials Science. 3 Credits.
Selected subjects of current interest. Arranged by consultation between department faculty and students. Typical topics include experimental methods in materials science and nondestructive inspection of materials. Prerequisite: approval of department.

MAE 6291. Special Topics in Mechanical Engineering. 3 Credits.
Selected subjects of current interest. Arranged by consultation between department faculty and students. Typical topics include tribology, power systems design, solar heating systems, HVAC, and plasticity theory. Prerequisite: approval of department.

MAE 6292. Special Topics in Aerospace Engineering. 3 Credits.
Selected subjects of current interest. Arranged by consultation between department faculty and students. Typical topics include environmental noise control, aeroacoustics, hypersonic flow, and flight vehicle aerodynamics. May be repeated for credit. Prerequisite: approval of department.

MAE 6298. Research. 1-6 Credits.
Basic research projects as arranged. May be repeated for credit.

MAE 6998. MS Thesis Research. 3 Credits.

MAE 6999. MS Thesis Research. 3 Credits.

MAE 8350. Advanced Topics in Materials Science. 3 Credits.
Topics such as surface science that are of current research interest. Selected after consultation between department faculty and students. Prerequisite: approval of department.

MAE 8351. Advanced Topics in Mechanical Engineering. 3 Credits.
Topics such as advanced analytical mechanics, advanced mechanics of continua, and advanced theory of elasticity that are of current research interest. Selected after consultation between department faculty and students. Prerequisite: approval of department.

MAE 8352. Advanced Topics in Aerospace Engineering. 3 Credits.
Topics such as nonsteady flow, physical gas dynamics, turbulence, and nonlinear wave propagation that are of current research interest. Selected after consultation between department faculty and students. Prerequisite: approval of department.

MAE 8998. Advanced Reading & Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy qualifying examination. May be repeated for credit.

MAE 8999. Dissertation Research. 1-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

MEDICAL LABORATORY SCIENCE (MLS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MLS 0190. Blood Banking Exam Review. 0 Credits.
Review of professional knowledge in all areas of blood banking.

MLS 1070. Clinical Laboratory Rotation I. 10 Credits.

MLS 1071. Clinical Laboratory RotationII. 10 Credits.

MLS 1080. Intro to Laboratory Medicine. 0 Credits.

MLS 1081. Clinical Chemistry I. 6 Credits.

MLS 1082. Clinical Chemistry II. 6 Credits.

MLS 1083. Hematology I. 4 Credits.

MLS 1084. Hematology II. 3 Credits.

MLS 1085. Urinalysis and Body Fluids. 2 Credits.

MLS 1086. Clinical Immunology. 2 Credits.

MLS 1087. Blood Banking I. 4 Credits.

MLS 1088. Blood Banking II. 3 Credits.

MLS 1089. Clinical Microbiology I. 5 Credits.

MLS 1090. Clinical Microbiology II. 5 Credits.

MLS 2000. Biology for Health Sciences. 3 Credits.
This course will cover key concepts in biology with an emphasis on the similarities and differences between organisms and how they interact with their environment and with each other.

MLS 2001. Chemistry for Health Sciences. 3 Credits.
An introduction to basic concepts in general, organic and biological chemistry, including the nature of matter, chemical reactions, stoichiometry, solutions, and the chemistry of biomolecules.

MLS 4101. Introduction to Cytotechnology. 2 Credits.
The history and development of cytology; role and ethical practices of the cytotechnologist in the health care system. Basic cell structure and function with detailed microscopic study of normal squamous, endocervical, and endometrial epithelial cells, as well as other non epithelial cells and contaminants. Principles of microscopy, Kohler illumination, use and maintenance of the microscope. Restricted to METC Cytotechnology Program students.

MLS 4102. Gynecologic Cytology. 3 Credits.

MLS 4103. Abnormal Gynecologic Cytology. 5 Credits.
Histopathology, cytopathology, etiology, diagnosis, staging, and treatment of benign and malignant disease processes of the female reproductive system. Restricted to METC Cytotechnology Program students.

MLS 4104. Pulmonary Cytology. 2 Credits.
Epithelial appearances and changes associated with normal, benign, and malignant processes of the upper and lower respiratory tracts.

MLS 4105. Cytology of the Gastrointestinal Tract, Liver, and Pancreas. 3 Credits.
Characteristics of each body site in relation to normal, benign, and malignant cellular changes. Restricted to METC Cytotechnology Program students.

MLS 4106. Urogenital System Cytology. 2 Credits.

MLS 4107. Body Cavity Fluid Cytology. 3 Credits.
Examines the cytopathology of effusions, cerebrospinal fluids and other body fluids and the cytologic changes associated with benign and malignant processes.

MLS 4108. Fine Needle Aspiration. 5 Credits.
Basic principles of cytopathology applied to cellular samples from fine needle aspirations of the head and neck region, breast, lymph nodes, soft tissues, and bone. Restricted to METC Cytotechnology Program students.

MLS 4109. Cytotechnology Clinical Practicum. 18 Credits.
Clinical experience to apply the objectives learned and to develop the critical screening and interpretative skills to function as a cytotechnologist.

MLS 4110. Independent Study in Cytotechnology. 1 Credit.
Critical review and presentation of published research in the field of cytopathology; completion of an independent research project related to cytology. Restricted to METC Cytotechnology Program students.

MLS 4114. Clinical Microbiology. 2 Credits.

MLS 4115. Parasitology and Mycology. 1 Credit.

MLS 4118. Laboratory Operations. 1 Credit.

MLS 4120. Urinalysis & Body Fluids. 1 Credit.

MLS 4122. Clinical Chemistry. 3 Credits.

MLS 4123. Clinical Microbiology I. 3 Credits.
Principles of clinical microbiology with emphasis on pathogenic characteristics, isolation, and identification of bacteria and viruses related to human disease; theoretical approach to the current diagnostic techniques and identification systems used in clinical practice; disease causation, specimen collection and handling, laboratory identification, and treatment of medically significant bacteria and viruses. Laboratory fee. Prerequisites: BISC 1111 and HSCI 3106; for BISC 1111 an equivalent biology course and for HSCI 3106 an equivalent general microbiology course may be substituted at the instructor's discretion.

MLS 4124. Clinical Microbiology II. 2 Credits.

MLS 4126. Immunohematology II. 2 Credits.

MLS 4127. Clinical Immunology. 1 Credit.

MLS 4128. Hematology I. 2 Credits.

MLS 4129. Hematology II. 2 Credits.

MLS 4136. Clinical Experience I. 2 Credits.
This practicum course is an assessment and necessary supervised clinical experience in clinical chemistry. Laboratory fee.

MLS 4137. Clinical Experience II. 2 Credits.
This practicum course is an assessment and necessary supervised clinical experience in microbiology. Laboratory fee.

MLS 4138. Clinical Experience III. 2 Credits.
This practicum course is an assessment and necessary supervised clinical experience in hematology, coagulation and urinalysis. Laboratory fee.

MLS 4139. Clinical Experience IV. 2 Credits.
This practicum course is an assessment and necessary supervised clinical experience in transfusion medicine and serology. Laboratory fee.

MLS 4140. Clinical Laboratory Mgt. 3 Credits.

MLS 4141. Immunology and Serology. 3 Credits.
Principles of the immune system's components, functions, interactions with microorganisms, and the clinical applications of immunologic assays to human health and disease.

MLS 4145. Clinical Biochemistry I. 3 Credits.
Methodologies employed in the chemical analysis of human blood and body fluids. Prerequisites: MLS 4118, MLS 4141 and MLS 4151.

MLS 4146. Clinical Biochemistry II. 3 Credits.
Continued study of the measurement and interpretation of chemical constituents in human blood, urine, and body fluids; correlation of laboratory results of each analyte with its corresponding clinical significance and pathophysiology; the appropriate use of quality assurance measures necessary to ensure reliability and validity of the laboratory results. Laboratory fee. Prerequisites: MLS 4145 or permission of the instructor.

MLS 4150. Immunohematology. 3 Credits.

MLS 4151. Molecular Diagnostics. 3 Credits.

MLS 4155. Clinical Biochemistry II. 2 Credits.

MLS 4158. Laboratory Management and Operations. 3 Credits.
An introduction to critical concepts of lab management, including leadership theory, management principles, human resource management, financial management, quality management, and laboratory operations. Laboratory fee. Prerequisites: HSCI 2100 and HSCI 2117; for HSCI 2100 an equivalent English course and for HSCI 2117 an equivalent college-level math course may be substituted at the instructor's discretion.

MLS 4159. Capstone Seminar. 1 Credit.

MLS 4160. Blood Bank Practicum. 4 Credits.
Clinical practicum in which students apply medical knowledge and clinical skills gained in MLS 4150. Prerequisites: MLS 4150.

MLS 4161. Clinical Biochemistry Practicum. 4 Credits.

MLS 4162. Hematology Practicum. 2 Credits.
Two-week required rotation for students in the Bachelor of Science in Health Science in Medical Laboratory Science (MLS), Post-baccalaureate MLS, or Post-baccalaureated in Hematology for MLS certificate programs. Focus on analyses and laboratory testing of human blood specimens.

MLS 4163. Immunology and Serology Practicum. 1 Credit.

MLS 4164. ClinicalMicrobiology Practicum. 4 Credits.

MLS 4165. Urinalysis Practicum. 1 Credit.
Required one-week clinical rotation for students in the BSHS in MLS or post-baccalaureate MLS certificate program. During this practicum course, the student actively engages in applying the medical knowledge and clinical skills gained in MLS 4120.

MLS 4166. Coagulation Practicum. 1 Credit.
One-week required rotation for students in the Bachelor of Science in Health Science in Medical Laboratory Science (MLS), Post-baccalaureate MLS, or Post-baccalaureated in Hematology for MLS certificate programs. Focus on analyses and laboratory testing of human blood specimens.

MLS 4214. Clinical Microbiology I Laboratory. 1 Credit.
Observation of many of the medically important organisms and practical experience in current diagnostic techniques and identification systems used in clinical practice. Principles, procedures, techniques, and data interpretation for the isolation and identification of clinically significant organisms.

MLS 4215. Clinical Parasitology and Mycology Laboratory. 1 Credit.
Practical experience in the identification of medically significant parasites and fungi.

MLS 4224. Clinical Microbiology II Laboratory. 1 Credit.
Practical experience using patient samples commonly submitted to the microbiology laboratory. Current diagnostic techniques and identification systems used in clinical practice. Principles, procedures, techniques, and data interpretation for the isolation and identification of clinically significant organisms from patient specimens.

MLS 4228. Hematology I Laboratory. 1 Credit.
Diagnostic analyses used to evaluate disease states associated with human blood cells. Emphasis on quality assurance in the hematology laboratory and on the evaluation of stained blood smears and microscopic differentiation of blood cells.

MLS 4229. Hematology II Laboratory. 1 Credit.
Blood and body fluid analyses that are commonly performed in a diagnostic hematology laboratory.

MLS 4245. Clinical Biochemistry I Laboratory. 1 Credit.
Introduction to the principles of various diagnostic testing procedures performed in the clinical biochemistry laboratory. The physiological basis, principles and procedures, and clinical significance of biochemical test results, including quality control and reference values.

MLS 4250. Immunohematology Laboratory. 1 Credit.
Performance of routine blood banking procedures, including blood group and Rh typing, antibody screens, antibody identification, cross matching, and elution and absorption techniques. Prerequisites: Program Standing.

MLS 4251. Molecular Diagnostics Laboratory. 1 Credit.
An introduction to the theory of and laboratory techniques in molecular biology with an emphasis on molecular and serological techniques, including DNA extraction and quantitation, restriction enzyme digestion, polymerase chain reaction, agarose gel electrophoresis, flow cytometry, and ELISA. Prerequisites: Program Standing.

MLS 4255. Clinical Biochemistry II Laboratory. 1 Credit.
The measurement and interpretation of chemical constituents in human blood and body fluids.

MLS 6114. Advanced Clinical Microbiology I. 2 Credits.
Pathogenic characteristics, isolation techniques, specimen collection and handling, laboratory identification, and treatment of medically significant bacteria and viruses with emphasis on current diagnostic techniques used in clinical practice.

MLS 6115. Advanced Clinical Parasitology and Mycology. 1 Credit.
A systematic approach to the biology and epidemiology of human parasitic and fungal diseases. The symptomology, pathology, diagnostic procedures, and treatment of the various parasites and fungi that infect humans. Other topics include disease causation and specimen collection/handling.

MLS 6123. Advanced Clinical Microbiology I. 3 Credits.
This course covers the pathogenic characteristics, isolation techniques, specimen collection and handling, laboratory identification, and treatment of medically significant bacteria and viruses with an emphasis on current diagnostic techniques used in clinical practice. Laboratory fee. Prerequisites: BISC 1111 and HSCI 3106; for BISC 111 an equivalent biology course and for HSCI an equivalent general microbiology course may be substituted at the instructor's discretion.

MLS 6124. Advanced Clinical Microbiology II. 2 Credits.
The etiology of infectious diseases in different body sites using a case study approach. The epidemiology, pathogenic mechanisms, and laboratory identification of suspected etiologic agents. Commonly encountered clinical species are discussed using case studies that include clinical history, signs and symptoms, and laboratory test results of diseases produced by the etiologic agents.

MLS 6140. Advanced Laboratory Management. 3 Credits.
A problem-based approach to the principles of laboratory management with focus on managerial concepts that provide opportunities to apply theoretical management models to real-life situations in the clinical laboratory.

MLS 6141. Advanced Immunology and Serology. 3 Credits.
Principles of the immune system and the clinical applications of immunology related to the diagnosis of human diseases. Components of the immune system and the functions of each. The various immune-related diseases and how immunologic assays are used in the clinical setting to diagnose and monitor various disease states.

MLS 6151. Advanced Molecular Diagnostics. 3 Credits.
An overview of molecular biology and genetic concepts as well as the molecular techniques used to diagnose human diseases. The technology, theory, and methodology of molecular protocols utilized within a clinical and research laboratory setting.

MLS 6158. Advanced Laboratory Management and Operations. 3 Credits.
An introduction to critical concepts of lab management, including leadership theory, management principles, human resource management, financial management, quality management, and laboratory operations. Prerequisites: HSCI 2100 and HSCI 2117; for HSCI 2100 an equivalent English course and for HSCI 2117 an equivalent college-level math course may be substituted at the instructor's discretion.

MLS 6166. Molecular Diagnostics Practicum. 3 Credits.
During this practicum course, the student will actively engage in applying molecular techniques to diagnose various human diseases.

MLS 6201. Advanced Clinical Biochemistry. 3 Credits.
The structure and function of biological molecules, including proteins, carbohydrates, lipids, nucleic acids, vitamins, hormones, and buffers as well as their anabolism, catabolism, and regulatory mechanisms. The role of these molecules with regard to human health and the manifestation of disease.

MLS 6203. Clinical Immunohematology I. 5 Credits.

MLS 6204. Clinical Immunohematology II. 5 Credits.

MLS 6207. Clinicl Pract: Blood Banking I. 5 Credits.

MLS 6208. Clinicl Pract: Blood BankingII. 5 Credits.

MLS 6209. Clinicl Pract:Blood BankingIII. 5 Credits.

MLS 6210. Clinicl Immun:Prin & Lab Diag. 4 Credits.

MLS 6211. Hematopoiesis &Blood Pathophys. 2 Credits.

MLS 6212. Organiz & Mgt of Blood Banks. 3 Credits.

MLS 6213. Seminar in Immunohematology. 2 Credits.

MLS 6214. Specialized Practicum. 4 Credits.

MLS 6215. Research Project. 3 Credits.

MLS 6216. Microbial Pathogenesis. 3 Credits.
A comprehensive overview of the molecular basis of diseases caused by microbial pathogens with a focus on model microbial systems to illustrate mechanisms of the human infectious disease process.

MLS 6217. Medical Biotechnology. 2 Credits.
A comprehensive overview of current molecular technologies and how they are used in modern medicine.

MLS 6218. Genetics. 3 Credits.
This course will cover hereditary and molecular genetics, with an emphasis on genomics and human diseases.

MLS 6219. Molecular Biology. 3 Credits.
This course will emphasize the molecular mechanisms of DNA replication, repair, transcription, translation and gene regulation in prokaryotic and eukaryotic cells.

MLS 6242. Molecular Pathology. 3 Credits.
This course will investigate human disease processes with an emphasis on the molecular and genetic mechanisms of disease. The goal of this class is to advance students' understanding of how molecular, cellular and genetic approaches are used to investigate human diseases. Current knowledge of the molecular and cellular events which lead to various human diseases will be covered, including cardiovascular, neurological and musculoskeletal abnormalities, autoimmunity, endocrine defects, infectious disease and cancer. Through lectures, assigned readings and discussions, current applications and limitations of modern diagnostic medicine and the importance of basic and applied research to further the understanding of human disease will be addressed.

MLS 6243. Education & Assessment in MLS. 3 Credits.
This course studies the process of instructional design and applied to the education and training of MLS professionals. Topics include a fundamental review of instructional strategies, needs assessment, task analysis, analysis of subject-matter content, the development of goals and objectives, lesson design, and the assessment of instructional outcomes. This is a project-oriented course in which students will design, develop, and evaluate a set of MLS instructional materials and assessment tools. In addition, current trends in instructional design as applied to the MLS field will be explored.

MLS 6244. Research Ethics & Integrity. 3 Credits.
This course will address traditional and modern topics in research ethics and scientific integrity. The purpose of this course is to emphasize ethical theory and principles of bioethics while planning and conduction scientific studies. Through lectures, reading assignments, case studies and discussion sessions, the following topics will be covered: ethical theory and principles, scientific and academic integrity, informed consent in research; Intuitional Review Boards and the use of human subjects in research. IACUC and the use of animals in research, Institutional Biosafety Committees and the use of recombinant DNA in research; conflicts of interest and commitment; authorship and publication; the peer-review process; collaboration and mentoring; methodology, data reporting and data management; ownership of data and intellectual property; whistleblowing and dispute resolution; and privacy and confidentiality. Students will learn to conduct unbiased peer-review, conduct research and report on an independent examination of a case of research misconduct or other ethical issue, and participate in oral scientific and ethical discussions.

MLS 6245. Current Topics in Medical Laboratory Science. 3 Credits.
Novel findings within each area of the medical laboratory science field, including hematology and hemostasis, immunology and serology, clinical microbiology, immunohematology, clinical chemistry, molecular diagnostics, and laboratory operations and management. The course is designed to enhance critical thinking and problem solving skills. Current topics are integrated into the development of a project proposal for the capstone research project that the student completes the following semester.

MLS 6246. Capstone Project. 3 Credits.
This course will allow students to apply the knowledge gained throughout the program through the completion of an independent, mentored project. A proposal for the capstone project will have been developed by the student as a component of the Current Topics course during the previous semester.

MICROBIOLOGY, IMMUNOLOGY, AND TROPICAL MEDICINE (MICR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MICR 6220. Biology of Parasitism: Parasite Strategies of Infection, Survival, and Transmission. 2 Credits.
A comprehensive course examining the strategies parasites use to infect their hosts, how they survive and thrive within their host, and the developmental adaptations they use to ensure transmission of their offspring to the next host. Prerequisite: BISC 2339 or permission of instructor.

MICR 6236. Fdmntls/Geonomics&Proteomics I. 2-3 Credits.
Same as Bioc 6236.

MICR 6237. Fdmntls/Geonomics&ProteomicsII. 2 Credits.
Same as Bioc 6237.

MICR 6258. Microbial Genetics. 2 Credits.

MICR 6277. Seminar: Microbiology. 1 Credit.

MICR 6278. Seminar: Microbiology. 1 Credit.

MICR 6283. Virology. 1-12 Credits.

MICR 6292. Tropical Infectious Diseases. 2 Credits.
Lecture course. Pathogenesis, natural history, and epidemiology of the major infectious diseases that occur in developing countries.

MICR 6293. Special Topics. 1-12 Credits.
Selected topics in microbiology. May be repeated for credit provided the topic differs.

MICR 6294. Research-Clinical Microbiology. 3 Credits.

MICR 6295. Research. 1-12 Credits.

MICR 8210. Infection and Immunity. 3 Credits.
An introduction to the fields of virology, bacteriology, and parasitology, as well as the main concepts of immune response.

MICR 8230. Molecular and Cellular Immunology. 3 Credits.
Major aspects of immunology, including T and B cell effector function, innate immune cell function, mucosal immunology, and immune regulation. Prerequisites: MICR 8210 or other similar introductory immunology course or with approval of staff.

MICR 8270. Advanced Topics in Immunology. 3 Credits.
Seminar series on topics chosen jointly by students and faculty; students present and critique original manuscripts. May be repeated for credit. Prerequisite: MICR 8210, MICR 8230, or approval of staff.

MICR 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

MICR 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

MOLECULAR MEDICINE (MMED)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MMED 8214. Molecular Medicine Seminar. 2 Credits.
Research topics in molecular medicine, including oncology, cellular and behavioral neuroscience, pharmacology, physiology, and pathophysiology. May be repeated for credit. Prerequisite: BMSC 8210, BMSC 8212, and consent of instructor.

MMED 8221. The Basic Science of Oncology. 3 Credits.
Epidemiology, genetics, viruses, oncogenes, chemical carcinogenesis, radiation carcinogenesis, tumor growth, metastasis, biochemistry of cancer cells, tumor markers, hormones and cancer, cancer immunobiology, radiotherapy, chemotherapy and immunotherapy.

MMED 8222. Molecular Oncology. 3 Credits.
Seminar course dealing with molecular basis for the topics introduced in MMED 8221. Prerequisites: MMED 8221.

MMED 8281. Molecular Pharmacology and Neurobiology of Excitable Tissues. 3 Credits.
The purpose of this course is to teach graduate students in the biological sciences the basic principles of molecular pharmacology and neurobiology of excitable tissues, and the methods used in these disciplines. The initial sessions are suitable for students with little previous exposure to the subject.

MMED 8282. Neural Development and Neurodevelopmental Disorders. 3 Credits.
Basic concepts of neural development, especially of the cerebral cortex, and their relevance to understanding the pathophysiology of neurodevelopmental disorders.

MMED 8283. Current Topics in Neuroscience. 2 Credits.

MMED 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

MMED 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

MUSEUM STUDIES (MSTD)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MSTD 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details. Restricted to First-year students in CCAS.

MSTD 6101. Museum Management. 3 Credits.
Overall operation of the museum: legal status of the museum and its obligations to the public; governance, staffing, policymaking as a nonprofit organization. Theory applied to practical situations.

MSTD 6102. NonProfit Fiscal Management. 3 Credits.
Basic concepts of general accounting; fund accounting for nonprofit organizations; budgets and budget systems; use of the budget as a management tool; long-range planning; income sources; other financial management concepts.

MSTD 6103. Leading Change. 3 Credits.
Leadership challenges and styles as they relate to organizational change efforts. Case studies of museums undergoing change; best practices in leadership at all levels of the museum.

MSTD 6104. Managing People and Projects. 3 Credits.
Organizational development and modern management concepts as applied to museums. Managing people in the organization; the importance of project management systems to museum administration.

MSTD 6105. Museum Fundraising. 3 Credits.
Introductory topics in museum fundraising, including sources of funds, best practices and approaches, annual funds and capital campaigns, and the internal management of the fundraising effort. Restricted to graduate students.

MSTD 6201. Introduction to Museum Collections. 3 Credits.
Establishing collection management policies. Laws, regulations, conventions, and codes that affect acquisitions; deaccessions, loans, and collection care; accountability; and access problems.

MSTD 6202. Museum Collections Management. 3 Credits.
The implementation of collections policies: establishing and managing collections, management procedures and systems, documentation of collections, records preservation, collections access and storage, handling, packing and shipping, and inventory control.

MSTD 6203. Preventive Conservation Concepts. 3 Credits.
Historical development of preventive conservation in museums, conservation ethics, team approaches to conservation, interactions of various materials with agents of deterioration. Basics of materials testing, preparation of condition reports, choosing museum storage and exhibition materials, and risk assessment. Same as ANTH 6203 and AH 6286.

MSTD 6204. Preventive Conservation Techniques. 3 Credits.
Practical applications of preventive conservation of materials, monitoring environmental conditions, conducting risk assessments, evaluation of exhibit and storage areas; developing plans, policies, and procedures for collections care; grant proposal preparation for collections care initiatives. Same as ANTH 6204 and AH 6287.

MSTD 6205. Archival Practice. 3 Credits.
An introduction for museum professionals to the core ideas and practices of archivists and archival institutions. Restricted to graduate students.

MSTD 6301. Museum Exhibitions: Curatorial Research. 3 Credits.
Museum research from a curatorial point of view, with emphasis on exhibit theory and practice. Research techniques, information sources, and script production.

MSTD 6302. Museum Exhibition Design. 3 Credits.
The processes of research, conceptualization, planning, and evaluation from a designer's point of view. Focus is on individual projects with some group collaboration. The designer's vocabulary, visual thinking, design documentation, and specifications.

MSTD 6303. Advanced Exhibition Design. 3 Credits.
The processes of research, conceptualization, planning, and evaluation from a designer's point of view. Focus is on individual projects with some group collaboration. The designer's vocabulary, visual thinking, design documentation, and specifications.

MSTD 6304. MuseumExhibitDevelopment. 3 Credits.
Research techniques; information sources; script production from a content perspective.

MSTD 6305. Visitor Perspectives: Museum Evaluation in Exhibitions. 3 Credits.
Theory and practice of museum evaluation, especially as related to exhibition development. (Same as EDUC 6706).

MSTD 6306. Race, Gender, Sexuality, and the Museum. 3 Credits.
Exploration of the role that museums play in the construction, reification, and representation of ideas about race and gender. Restricted to graduate students.

MSTD 6403. Museums and Digital Technology. 3 Credits.
The history and impact of digital technology in modern museum practice; variety of uses and functions of digital technology in modern museums; effects of culture on technology adoption; basic digital strategy and user experience skills. Restricted to graduate students.

MSTD 6501. Museum Internship. 1-3 Credits.
Individual work experience in museums of the Washington area and possibly elsewhere. Each student should make arrangements with the Museum Studies Program staff. Museum internships are supervised by one or more members of the cooperating museum staff in the areas of museum management, object care and conservation, and exhibiting.

MSTD 6502. Directed Research. 3 Credits.
Individual research on special topics in the museum field. Topics must be approved by the director of the Museum Studies Program. May be repeated for credit.

MSTD 6601. Special Topics. 3 Credits.
May be repeated for credit provided the topic differs.

MSTD 6701. MuseumHist&Theory. 3 Credits.
Museums viewed from historical, philosophical, and practical perspectives. Examination and comparison of types of collecting organizations. Analysis of contemporary studies on the status of museums and their public programs.

MSTD 6702. Museums and the Public: Exhibiting Culture. 3 Credits.
An introduction to the wide range of problems, possibilities, and choices that are part of the cultural landscape of how museums interact with their audiences through public programs. (Same as ANTH 6202).

MUSIC (MUS)

Explanation of Course Numbers

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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MUS 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

MUS 1061. Instrumental Ensemble. 1 Credit.
Chamber ensemble groups are approved by audition. Section numbers are .11 guitar ensemble, .12 percussion ensemble, .13 jazz combo, .14 keyboard ensemble, .15 string ensemble, .16 woodwind ensemble, .17 brass ensemble, .18 Baroque ensemble, .19 Latin band, .20 blues band.

MUS 1071. Jazz Band. 1 Credit.
Preparation and performance of classic and contemporary "big band" literature. Prerequisite: audition before director.

MUS 1081. Orchestra. 0-1 Credits.
Preparation and performance of orchestral literature. Prerequisite: audition before director.

MUS 1083. University Band. 0-1 Credits.
Consisting of two ensembles: The University Symphonic Band and GW Colonial Brass. See schedule of classes for section information. Audition before director required.

MUS 1091. University Singers. 0-1 Credits.
Preparation and performance of choral literature. Prerequisite: audition before director. Section .10 is University Singers; Section .11 is Chamber Choir.

MUS 1093. University Singers/Chamber Choir. 1 Credit.
Preparation and performance of choral literature.Section .10 is University Singers; Section .11 is Chamber Choir. Prerequisite: audition before director.

MUS 1095. Vocal Theater Workshop. 1 Credit.
Development of body awareness for the stage, acting improvisations, and character development. Scenes chosen from the opera, operetta, and musical theater repertoire. Musical coaching, use of makeup, and audition preparation.

MUS 1101. Elements of Music Theory. 2 Credits.
Notation, scales, keys, intervals, terms, rhythms, and chord structure and progression. Introduction to music literature, with emphasis on rudimentary aural analysis.

MUS 1102. Comprehensive Musicianship I. 3 Credits.
Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard. Prerequisite: MUS 1101, MUS 1051.

MUS 1103. Music in the Western World. 3 Credits.
Introductory history of musical styles, related to listening; study of music materials and media. Not open to music majors.

MUS 1104. Topics in Music. 3 Credits.
A rotating set of classes; topics may include: American music, a composer, the opera, and musical life in Washington, D.C.

MUS 1105. Introduction to Musical Thought and Practice. 3 Credits.
Introduction to concepts, methods, and practices that guide the study and performance of music. Old and new paradigms of musical thought are subject to discussion and critical investigation.

MUS 1106. Introduction to Musical Performance and Experience. 3 Credits.
Through discussion, writing, and performance, students engage with issues such as the putative transcendent character of music, the false divisions between interpretation, improvisation, and composition, and the impact of modernity on expressive culture. Placing their own processes of musical decision making within these conceptual frames allows students to interrogate and develop their performative and social selves. Restricted to Register for this course in the Music department.

MUS 1107. Music of the World. 3 Credits.
Introduction to music in culture through comparative study of music from a variety of cultures worldwide.

MUS 1108. History of Jazz. 3 Credits.
Introduction to the styles, composers, and performers of jazz music from its origins to the present.

MUS 1151. Conducting. 3 Credits.
Technique of conducting, score reading, rehearsal procedures, analysis, and interpretation of selected musical literature; practice in conducting. Prerequisite: MUS 2101.

MUS 1511. Piano. 1 Credit.

MUS 1512. Piano. 2 Credits.

MUS 1513. Voice. 1 Credit.

MUS 1514. Voice. 2 Credits.

MUS 1515. Organ. 1 Credit.

MUS 1516. Organ. 2 Credits.

MUS 1517. Classical Guitar. 1 Credit.

MUS 1518. Classical Guitar. 2 Credits.

MUS 1519. Violin. 1 Credit.

MUS 1520. Violin. 2 Credits.

MUS 1521. Viola. 1 Credit.

MUS 1522. Viola. 2 Credits.

MUS 1523. Cello. 1 Credit.

MUS 1524. Cello. 2 Credits.

MUS 1525. Bass. 1 Credit.

MUS 1526. Bass. 2 Credits.

MUS 1527. Flute. 1 Credit.

MUS 1528. Flute. 2 Credits.

MUS 1529. Recorder. 1 Credit.

MUS 1530. Recorder. 2 Credits.

MUS 1531. Oboe. 1 Credit.

MUS 1532. Oboe. 2 Credits.

MUS 1533. Clarinet. 1 Credit.

MUS 1534. Clarinet. 2 Credits.

MUS 1535. Saxophone. 1 Credit.

MUS 1536. Saxophone. 2 Credits.

MUS 1537. Bassoon. 1 Credit.

MUS 1538. Bassoon. 2 Credits.

MUS 1539. French Horn. 1 Credit.

MUS 1540. French Horn. 2 Credits.

MUS 1541. Trumpet. 1 Credit.

MUS 1542. Trumpet. 2 Credits.

MUS 1543. Trombone. 1 Credit.

MUS 1544. Trombone. 2 Credits.

MUS 1545. Tuba. 1 Credit.

MUS 1546. Tuba. 2 Credits.

MUS 1547. Harp. 1 Credit.

MUS 1548. Harp. 2 Credits.

MUS 1549. Percussion. 1 Credit.

MUS 1550. Percussion. 2 Credits.

MUS 1555. Lute. 1 Credit.

MUS 1556. Lute. 2 Credits.

MUS 1557. Harpsichord. 1 Credit.

MUS 1558. Harpsichord. 2 Credits.

MUS 1571. Jazz Perf. Tech. 1 Credit.

MUS 1572. Jazz Performance Techniques. 2 Credits.

MUS 2012. Piano. 2 Credits.
Prerequisite: Open by examination.

MUS 2014. Voice. 2 Credits.
Prerequisite: Open by examination.

MUS 2016. Organ. 2 Credits.
Prerequisite: Open by examination.

MUS 2018. Classical Guitar. 2 Credits.
Prerequisite: Open by examination.

MUS 2020. Violin. 2 Credits.
Prerequisite: Open by examination.

MUS 2022. Viola. 2 Credits.
Prerequisite: Open by examination.

MUS 2024. Cello. 2 Credits.
Prerequisite: Open by examination.

MUS 2026. Bass. 2 Credits.
Prerequisite: Open by examination.

MUS 2028. Flute. 2 Credits.
Prerequisite: Open by examination.

MUS 2030. Recorder. 2 Credits.
Prerequisite: Open by examination.

MUS 2032. Oboe. 2 Credits.
Prerequisite: Open by examination.

MUS 2034. Clarinet. 2 Credits.
Prerequisite: Open by examination.

MUS 2036. Saxophone. 2 Credits.
Prerequisite: Open by examination.

MUS 2038. Bassoon. 2 Credits.
Prerequisite: Open by examination.

MUS 2040. French Horn. 2 Credits.
Prerequisite: Open by examination.

MUS 2042. Trumpet. 2 Credits.
Prerequisite: Open by examination.

MUS 2044. Trombone. 2 Credits.
Prerequisite: Open by examination.

MUS 2046. Tuba. 2 Credits.
Prerequisite: Open by examination.

MUS 2048. Harp. 2 Credits.
Prerequisite: Open by examination.

MUS 2050. Percussion. 2 Credits.
Prerequisite: Open by examination.

MUS 2058. Harpsichord. 2 Credits.
Prerequisite: Open by examination.

MUS 2071. Jazz Performance Techniques. 1-3 Credits.

MUS 2072. Jazz Performance Techniques. 2 Credits.
Prerequisite: Open by examination.

MUS 2101. Harmony. 3 Credits.
Study of tonal harmonic practice from Baroque, Classical, Romantic, and 20th-century repertoires. Concurrent registration in the weekly keyboard lab is required. Prerequisite: MUS 1102.

MUS 2102. Comprehensive Musicianship II. 3 Credits.
Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard. Prerequisite: MUS 2101.

MUS 2105. Introduction to Ethnomusicology. 3 Credits.
Models of understanding music as a cultural endeavor. Application and critique of models in the design and execution of student independent field research. Same as ANTH 2505. Prerequisite: MUS 1101 or ANTH 1002 or ANTH 1004 or permission of instructor.

MUS 2105W. Introduction to Ethnomusicology. 3 Credits.
Models of understanding music as a cultural endeavor. Application and critique of models in the design and execution of student independent field research. Same as ANTH 2505. Prerequisite: MUS 1101 or ANTH 1002 or ANTH 1004 or permission of instructor.

MUS 2106. Music History III: 20th-Century Art Traditions. 3 Credits.
Western musical traditions and styles since Romanticism and approaches to music as art in contemporary society. Prerequisite: MUS 1101.

MUS 2122. Music in the US. 3 Credits.
History of music and musical life in the United States, emphasizing relationships among traditions of diverse origin. Prerequisite: MUS 1101 or permission of instructor.

MUS 2122W. Music in the US. 3 Credits.
History of music and musical life in the United States, emphasizing relationships among traditions of diverse origin. Prerequisite: MUS 1101 or permission of instructor. Same as MUS 2122.

MUS 2123. Musical Cultures of Black Americans. 3 Credits.
Musical genres and styles developed by African Americans since Reconstruction in their historical and cultural contexts. Emphasis on black musical contributions to the cultural life of Washington, D.C.

MUS 2134. Composition. 3 Credits.
Introduction to 21st-century compositional practice; concepts of post-tonal analysis; emphasis on style studies and original student works. May be repeated for credit. Prerequisite: MUS 2101.

MUS 2140. Pedagogy. 3 Credits.
Principles, materials, and methods of teaching in selected areas. Prerequisite: permission of instructor.

MUS 2173. Comprehensive Musicianship for Jazz. 2 Credits.
Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard, with emphasis given to skills associated with jazz performance. Prerequisite: MUS 1102.

MUS 2174. Introduction to Jazz Harmony. 3 Credits.
Analysis and composition of tunes in jazz/pop styles. Study of rhythmic characteristics, voice-leading, and chord/scale relationships within a jazz context. Prerequisite: MUS 1102.

MUS 2318. Orchestral Instrument. 2 Credits.
Prerequisite: Open by examination.

MUS 2661. Electronic and Computer Music I. 3 Credits.
Fundamental electronic and computer music concepts. Analog and digital sound synthesis techniques and theory, MIDI, studio recording techniques, signal processing, properties of sound, acoustics and psycho-acoustics, history and aesthetics. Laboratory fee.

MUS 2662. Electronic and Computer Music II. 3 Credits.
Continuation of MUS 2661. Fundamental electronic and computer music concepts. Analog and digital sound synthesis techniques and theory, MIDI, studio recording techniques, signal processing, properties of sound, acoustics and psycho-acoustics, history and aesthetics. Laboratory fee. MUS 2661 is prerequisite to MUS 2662.

MUS 3126. Music History I: Antiquity through Early Baroque. 3 Credits.
The development of Western European music from its earliest traceable roots to the end of the early, experimental Baroque period. Prerequisite: MUS 1102 and sophomore standing.

MUS 3127. Music History II: The Tonal Era. 3 Credits.
Styles, structures, social foundations and aesthetic change in European music of the late 17th through the late 19th centuries. Prerequisite: MUS 1102.

MUS 3127W. Music History II: Tonal Era. 3 Credits.
Styles, structures, social foundations and aesthetic change in European music of the late 17th through the late 19th centuries. Prerequisite: MUS 1102.

MUS 3139. Form and Analysis. 3 Credits.
Analysis of musical forms in representative musical literature. Prerequisite: MUS 2101 .

MUS 3139W. Form and Analysis. 3 Credits.
Analysis of musical forms in representative musical literature. Prerequisite: MUS 2101 .

MUS 3174. Topics in Music Theory and Composition. 3 Credits.
A seminar on variable topics in the discipline of music theory, analysis, and composition. Topics may include analysis of post-tonal music, advanced jazz arranging, analysis of 14th-century vocal music, developments in extended instrumental techniques since 1950. Prerequisites depend on the topic; consult the department.

MUS 3175. Topics in Music History and Literature. 3 Credits.
A seminar on variable topics in music history and literature in all traditions and styles. Topics may include German musical Romanticism, introduction to critical musicology, the music of Josquin des Prez, and vernacular music in Washington, D.C. Prerequisites depend on the topic; consult the department.

MUS 3175W. Topics in Music History & Lit. 3 Credits.
A seminar on variable topics in music history and literature in all traditions and styles. Topics may include German musical Romanticism, introduction to critical musicology, the music of Josquin des Prez, and vernacular music in Washington, D.C. Prerequisites depend on the topic; consult the department.

MUS 4085. Advanced Performance Study. 3 Credits.
Prerequisite: Open by examination.

MUS 4184. Advanced Composition. 3 Credits.
Private instruction in composition in tutorial format. Prerequisite: MUS 2134.

MUS 4198. Senior Seminar. 1 Credit.
Restricted to music majors in their final spring semester. Presentations of required senior projects in process; readings and discussion to place the projects in a broader musical and intellectual context. Corequisite: MUS 4199 or any upper-division private performance study course.

MUS 4199. Independent Research. 1-4 Credits.
Under the guidance of an assigned instructor. May be repeated for credit. Majors in their senior year take MUS 4198 as a corequisite.

MUS 4199W. Independent Research. 1-4 Credits.
Under the guidance of an assigned instructor. May be repeated for credit. Majors in their senior year take MUS 4198 as a corequisite.

NAVAL SCIENCE (NSC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

NSC 1051. Introduction to Naval Science. 3 Credits.
Introduction to the naval profession and to concepts of sea power. The mission, organization, and warfare components of the U.S. Navy and Marine Corps. Overview of officer and enlisted ranks and rates, training and education, and career patterns. Naval courtesy and customs, military justice, leadership, and nomenclature. Professional competencies required to become a naval officer.

NSC 1052. Naval Ships Systems 1(Engrng). 3 Credits.
A detailed study of ship characteristics and types, including ship design and control, propulsion, hydrodynamic forces, stability, compartmentation, and electrical and auxiliary systems. Included are basic concepts of the theory and design of steam, gas turbine, and nuclear propulsion.

NSC 2125. Naval Ships Systems 2(Weapons). 3 Credits.
Theory and employment of weapons systems, including the processes of detection, evaluation, threat analysis, weapon selection, delivery, guidance, and explosives. Fire control systems and major weapon types, including capabilities and limitations. Physical aspects of radar and underwater sound. Facets of command, control, and communications as means of weapons system integration.

NSC 2126. Sea Power and Maritime Affairs. 3 Credits.
A survey of the U.S. naval history. Naval aspects of U.S. conflicts from the American Revolution to the global war on terror. The influence of technological innovation, domestic politics, and foreign policy on the development and execution of naval doctrine and tactics.

NSC 2150. Navigation. 3 Credits.
Development of practical skills in naval piloting procedures. Charts, visual and electronic aids, and magnetic and gyro compasses; inland and international rules of the nautical road. The celestial coordinate system, including spherical trigonometry and how celestial information can be applied to navigation at sea. Environmental factors affecting naval operations.

NSC 2151. Naval Operations and Seamanship. 3 Credits.
Relative motion vector analysis theory, formation tactics, and ship employment; practical skills in relative motion problems. Controllable and noncontrollable forces in shiphandling, ship behavior, and maneuvering characteristics; various methods of visual communication, including flaghoist, flashing light, and semaphore.

NSC 2160. Evolution of Warfare. 3 Credits.
This course traces the development of warfare, from earliest recorded history to the present, with focus on the impact of major military theorists, strategists, tacticians, and technological developments. The student acquires a basic sense of strategy and develops an understanding of military alternatives and the impact of historical precedent on military thought and actions.

NSC 2175. Leadership & Management 1. 3 Credits.
Organizational behavior, management, and leadership principles in the context of naval organization. The management functions of planning, organizing, leading, and controlling; individual and group behavior in organizations; motivation and leadership. Decision making, communication, responsibility, authority, and accountability.

NSC 2180. Amphibious Warfare. 3 Credits.
A historical survey of the development of amphibious doctrine and the conduct of amphibious operations. The evolution of amphibious warfare in the 20th century, especially during World War II. Present-day potential and limitations on amphibious operations, including the concept of rapid deployment force.

NSC 4176. Leadership and Ethics. 3 Credits.
A capstone course that completes the NROTC preparations for midshipmen commissioning as Ensigns and Second Lieutenants. Application of Western moral traditions and ethical philosophy to issues involving military leadership, core values, the Uniform Code of Military Justice, and Navy regulations.

NSC 4176W. Leadership and Ethics. 3 Credits.

NURSING (NURS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

NURS 3101. Ethical Foundations of Nursing. 3 Credits.
Theories and principles related to common ethical and moral dilemmas faced by nursing professionals in their clinical practice. Methods of analyzing and resolving moral dilemmas using clinical decision making frameworks; methods for increasing awareness by examining and understanding the impact of the nurse's own value system.

NURS 3102. Nutrition for Health Professionals. 3 Credits.
Fundamentals of human nutrition and their scientific foundations. Nutritional requirements related to changing individual and family needs; food choices, health behaviors, food safety, prevention of chronic disease, and nutrition-related public health in the United States and globally.

NURS 3103. Human Anatomy and Physiology I. 4 Credits.
Designed for students entering the allied health professions. Fundamental structures and functions as they relate to the human body, including homeostasis, anatomical language and body organization, tissues and histology, integumentary; and skeletal, muscular, nervous and endocrine systems. Requires a basic background in introductory cell/molecular biology; an equivalent course with a minimum grade of C may be substituted for the prerequisite. Prerequisite: BISC 1111.

NURS 3104. Human Anatomy and Physiology II. 4 Credits.
Continuation of NURS 3103. Fundamental structures and functions as they relate to the human body, including homeostasis, anatomical language and body organization, tissues and histology; and cardiovascular, lymphatic, respiratory, digestive, urinary, and reproductive systems. Requires a basic background in introductory cell/molecular biology. Prerequisite: NURS 3103.

NURS 3110. Transition into the Nursing Profession. 2 Credits.
Historical and evolutionary perspectives in nursing in the context of current issues and trends in health care delivery and professional nursing. Values and characteristics of professional nursing practice by examining legal, regulatory, ethical issues, critical reasoning, evidence-based practice, and nursing self-care. Same as NURS 3110W.

NURS 3110W. Transition: Nursing Profession. 2 Credits.
Historical and evolutionary perspectives in nursing considered in the context of current issues and trends in health care delivery and professional nursing. The values and characteristics of professional nursing practice are examined in terms of legal, regulatory, and ethical issues as well as critical reasoning, evidence-based practice, and nursing self-care.

NURS 3111. Foundations of Health Assessment. 3 Credits.
Development of the knowledge and skills necessary for conducting comprehensive and need-specific health assessments for individuals in the context of their family and community; determining areas in which health promotion activities should be implemented or reinforced. Students use structured interviews to elicit health histories and health practices and perform physical examinations in a systematic manner. Identification of a broad range of normal variations through practice with peers in the laboratory setting. Nursing practice in the laboratory setting, including physical mobility, safety, infection control, drug calculation, medication administration, and other health technologies.

NURS 3112. Nursing Practice and Clinical Reasoning 1: Adult and Aging Acute and Chronic Illness. 3 Credits.
The values, knowledge and competencies at the foundation of safe, evidence-based, professional holistic nursing care of adults with common medical and surgical needs; essentials of the nursing process and disease process; expected outcomes and effects of nursing interventions with adults experiencing selected health conditions at multiple levels of care.

NURS 3113. Clinical Skills Lab: Adult Medical-Surgical 1. 6 Credits.
Foundational values, knowledge, skills, and competencies for safe, evidence-based, professional, and holistic nursing care of adults with common medical and surgical needs, and using critical thinking and effective communication skills to deliver such care in clinical and laboratory environments.

NURS 3114. Nursing Practice and Clinical Reasoning 2: Advanced Adult Medical-Surgical. 3 Credits.
Builds upon the basic concepts introduced in NURS 3112 by introducing complex, multi-system disease processes requiring a higher level of critical thinking. Safe, evidence-based, professional, and holistic nursing care related to the management of clients with advanced medical and surgical needs; knowledge, skills, and competencies for assessing and managing clients/patients in a hospital environment. Prerequisites: NURS 3110, NURS 3111, NURS 3112, NURS 3113 and NURS 3118.

NURS 3115. Clinical Skills Lab: Adult Medical-Surgical 2. 4 Credits.
Builds upon the basic concepts introduced in NURS 3113 by introducing complex, multi-system disease processes requiring a higher level of critical thinking. Safe, evidence-based, professional, and holistic nursing care related to the management of clients with advanced medical and surgical needs; knowledge, skills, and competencies for assessing and managing clients/patients in a hospital environment. Prerequisites: NURS 3110, NURS 3111, NURS 3112, NURS 3113 and NURS 3118.

NURS 3116. Nursing Practice and Clinical Reasoning 3: Psychiatric Mental Health. 3 Credits.
Theoretical principles, concepts, and skills applicable to the provision of safe and effective nursing interventions to clients across the lifespan who are experiencing psychiatric and mental health conditions. Application of scientific principles; assessing, planning, and evaluating nursing interventions; developing therapeutic communication, critical reasoning, analytical skills. Practical learning for promoting wellness of clients in acute and/or community-based psychiatric health care settings. Prerequisites: NURS 3110, NURS 3111, NURS 3112, NURS 3113 and NURS 3118.

NURS 3117. NCPR: 4 Maternity/Women Hlth. 3 Credits.

NURS 3118. Pharmacology 1. 2 Credits.
The underlying principles of pharmacology and medication administration; historical perspective on pharmacotherapy, legal/ethical responsibilities of the nurse in drug administration, regulatory (FDA) drug approval process, major drug classifications, and nursing management required for drug therapy; basic principles of pharmacokinetics, pharmacodynamics, pharmacotherapeutics, medication calculations, drug-drug interactions, contraindications/precautions, and adverse effects; the nursing process and patient teaching principles as they relate to pharmacologic concepts.

NURS 3119. Pathophysiology. 3 Credits.
Pathophysiology of common disease conditions affecting human beings across the lifespan; regulatory and compensatory mechanisms related to commonly occurring diseases; pathophysiologic bases of common human health alterations, associated clinical manifestations, and diagnostic assessments for each disease process.

NURS 4099. Variable Topics. 1-6 Credits.
Assigned topics determined by the School of Nursing. Restricted to students with prior permission of the undergraduate division of the School of Nursing.

NURS 4116. NPCR 5: Children & Families. 3 Credits.

NURS 4117. NPCR 6:Epidemiology&CommHealth. 3 Credits.

NURS 4118. Pharmacology 2. 1 Credit.
Principles of pharmacology and mechanisms of action of drug prototypes used in clinical practice; drug interactions, side effects, and contraindications as the foundation for clinical judgment and management of patients across the lifespan; dosage calculations for oral and parenteral medications and their safe administration; common pathophysiological disorders and the specific drug classes used in their management; educating patients and families concerning safe medication administration and other topics.

NURS 4119. PatientSafety&HlthCareQuality. 3 Credits.

NURS 4120. Capstone:Transitn to Practice. 6 Credits.

NURS 4121. Nursing Advancement Portfolio. 0-15 Credits.
Upon admission to one of the Associate's Degree in Nursing Pathway to Bachelor of Science in Nursing/Master of Science in Nursing programs, a student's professional portfolio is evaluated and between 0-15 credits are awarded as part of the total credits required for the bachelor's degree. If fewer than 15 credits are awarded, completion of one or more of the following courses may be required, as determined by the program director: NURS 3112, NURS 3113, and NURS 3118. In lieu of tuition, a $500 portfolio evaluation fee is charged for this course.

NURS 4418. Pharmacology 2. 1 Credit.

NURS 6180. Dimensions of Prof. Nursing. 3 Credits.

NURS 6202. Concepts in Population Health. 3 Credits.
Graduate-level nurses integrate and synthesize concepts associated with quality, health promotion, disease prevention, and chronic health problems with communities, the general population, and specific population groups. Issues related to culturally diverse and vulnerable populations.

NURS 6203. Nursing Leadership. 3 Credits.
Evidence-based leadership skills as a core competency in nursing to improve quality in patient care and strengthen nursing as a profession. Emphasis on theories of leadership, personal leadership, skill building, team-building techniques, change, conflict resolution, motivation, and communication skills.

NURS 6204. Health Information and Technology. 3 Credits.
Key issues and concepts related to the use of technology and information management to support the provision of high quality health care and outcomes.

NURS 6205. HealthPolicy,Quality,Political. 3 Credits.
The health policy process and analysis relevant to the three main thrusts of policy: cost, quality and access. Political, social, economic, and population factors that influence this process. Comparisons to health systems in other countries as appropriate. Quality science and informatics in the context of interdisciplinary, coordinated, and ethical health care delivery.

NURS 6207. Evidence-Based Practice for Health Care Researchers. 3 Credits.
The methodological issues of health care research. Appraisal and synthesis of research results and evidence-based methods. Identification and use of appropriate inquiry methodologies; ethical implications of research and translational scholarship.

NURS 6208. Biostatistics for Health Care Research. 3 Credits.
Introduction to the basic ideas and modeling approaches used in biostatistics through the use of health care research data. Descriptive and inferential statistics; identification of appropriate statistical procedures and estimation of appropriate sample size. Application of univariate, bivariate, and multivariate statistical procedures.

NURS 6209. Transitional Care. 3 Credits.
Transitional care planning and implementation, including pertinent health care policy, transitional care models, inter-professional collaboration, quality outcomes, multifaceted interventions, and the patient engagement dynamics that influence patient-centered care transitions in the current health care environment. Recommended background: BSN.

NURS 6210. Building a Quality Culture. 3 Credits.

NURS 6211. Health Care Quality Landscape. 3 Credits.

NURS 6212. Quality Improvement Science. 3 Credits.

NURS 6213. Health Care Quality Analysis. 3 Credits.

NURS 6214. Patient Safety Systems. 3 Credits.

NURS 6220. Advanced Physiology and Pathophysiology. 3 Credits.
System-focused advanced physiology and pathophysiology for analysis of health deviations across the life span. Interpretation of changes in normal function that result in symptoms indicative of illness. This systematic assessment is foundational to clinical decision making and management of health deviations.

NURS 6222. Advanced Health Assessment and Diagnostic Reasoning. 4 Credits.
Nurse Practitioner and nurse-midwifery students will acquire the knowledge, skills and clinical foundation for advanced health assessment and diagnostic reasoning in the ambulatory health care setting. This course is a prerequisite to all other clinical courses and includes a fifteen-week online didactic course, a 75-hour clinical practicum and a three day, on-campus skills training session.

NURS 6224. Adult/Gerontology Primary Care Nurse Practitioner 1, Practice Introduction. 4 Credits.
Theoretical and practical foundations of common primary care conditions in the adult patient. Assessment, diagnosis, and management of culturally diverse adults. Advanced decision making and clinical judgment, evidence-based practice, health promotion and disease prevention. Concurrent clinical practicum in a primary care setting under the supervision of preceptors and faculty. Prerequisites: NURS 6220, NURS 6222, NURS 6234.

NURS 6225. Adult/Gerontology Primary Care Nurse Practitioner 2, Adolescent & Adult. 8 Credits.
Theoretical and practical foundations of primary care of culturally diverse adolescents, adults, and older adults with chronic health problems. Synthesis and integration of advanced decision-making skills, including diagnostic reasoning and clinical judgment, health assessment, health promotion, technology, and evidence-based practice. Concurrent clinical practicum in which students manage patients in a primary care setting under the supervision of preceptors and faculty. A two- to three-day on-campus session is required. Prerequisites: Nurs 6224.

NURS 6226. Primary Care of the Family. 5 Credits.
The theoretical and practical foundations of family primary care.

NURS 6227. Family Nurse Practitioner Clinical Practicum. 1-7 Credits.
Clinical experiences focused on the primary care needs of women, adults, older adults, children, and childbearing families. Students complete a total of 7 credits in this course as their clinical experience.

NURS 6228. Advanced Family Primary Care. 5 Credits.
Seminar and clinical practicum focusing on the integration of the family nurse practitioner role through the application of family theory and evidenced-based practice in primary care settings.

NURS 6229. Adult/Gerontology Primary Care Nurse Practitioner 3, Adult, Older/Frail. 8 Credits.
Theoretical and evidence-based practice foundations for assessment and management of patients across the aging continuum. The physiologic, psychological, socioeconomic, emotional, cultural, and spiritual dimensions of the older adult in relationship to self, family, care-givers, and the health-care system are emphasized. Concurrent clinical practicum in which the student manages patients across the older-age spectrum under the supervision of preceptors and faculty. An on-campus visit is required in which students participate in a Standardized Patient final examination test-out. Prerequisites: Nurs 6225.

NURS 6230. Family Nurse Practitioner 1, Lifespan Primary Care/Diagnosis/Management. 4 Credits.
First clinically based course for family nurse practitioner students. Didactic and clinical experiences in primary care, focusing on prevention and common/chronic health problems across the lifespan. Prerequisites: NURS 6220 Advanced Pathophysiology, NURS 6222 Advanced Health Assessment, NURS 6234 Advanced Pharmacology.

NURS 6231. Family Nurse Practitioner 2, Lifespan Primary Care/Diagnosis/Management. 8 Credits.
Second clinically based course for family nurse practitioner students. Didactic and clinical experiences in family nurse practitioner care, focusing on prevention and common/chronic health problems across the lifespan. Prerequisites: N6220 Advanced Pathophysiology, N6222 Advanced Health Assessment, N6234 Advanced Pharmacology, N6230 FNP I.

NURS 6232. Family Nurse Practitioner 3, Professional Issues/Diagnosis/Management. 8 Credits.
Third course for family nurse practitioner students. Didactic and clinical experiences in primary care, focusing on prevention and common/chronic health problems across the lifespan. Consideration of professional issues for FNPs: Role development, certification, ethical issues in practice, inter-professional collaboration, and health care reimbursement issues are discussed and related to current clinical experiences. Prerequisites: Nurs 6220 Advanced Pathophysiology, Nurs 6222 Advanced Health Assessment, Nurs 6234 Pharmacology, Nurs 6230 FNP I, Nurs 6231 FNP 2.

NURS 6233. Genetics for Healthcare Providers. 3 Credits.
Basic scientific principles of genetics and their clinical applications.

NURS 6234. Advanced Pharm for Nursing. 3 Credits.
This course will cover an introduction to pharmacotherapeutics as it primarily applied to Advanced practice Nurses in Primary Care settins. The course will briefly review key pathophysiologic points, and then will discuss the pharmocotherapeutic interventions that may be considered in the treatment of disease. The course will begin with a general introduction to the foundations for professional practice and the concepts of pharmacoeconomics, pharmacokinetics, pharmacodynamics, and pharmacogenetics will be introduced. Issues surrounding community practices in pharmacotherapeutics will be explored. The course will then focus on pharmacological interventions in the spectrum of disease states seen in primary care practices involving the Nervous system, Immune System, Cardiovascular system, Hematologic system, Genitourinary system, Gastrointestinal system, Respiratory system, Endocrine system, Sensory systems, and the Skin.

NURS 6235. Adult-Gerontology Acute Care Nurse Practitioner 1: Introduction to Practice. 4 Credits.
The second clinical practicum course for adult-gerontology acute care nurse practitioner students. The scientific underpinnings and practical management of complex acute and chronic conditions across a spectrum of care delivery situations from subacute rehabilitation, to urgent care, emergency department, hospital-based care, and critical care; advanced decision making and clinical judgment in the application of evidence-based practice, health promotion, and disease prevention; acute and chronic conditions most commonly encountered across the spectrum of care delivery settings; theoretical, academic, and political elements involved in the evolution of the AGACNP role. In the required clinical practicum students manage patients' acute, chronic, and critical conditions under the supervision of preceptors and faculty. Recommended background: prior completion of NURS 6220, NURS 6234 and NURS 6222.

NURS 6236. Adult-Gerontology Acute Care Nurse Practitioner 2: Complex and Acute Illness. 8 Credits.
The second clinical practicum course for adult-gerontology acute care nurse practitioner students. Management of complex, acute stable and unstable conditions experienced by a variety of age groups from adolescents to middle-aged adults, to the elderly; application of advanced assessment techniques and technology for the diagnosis and management of patients. Both clinical and simulation experiences provide students with opportunities to provide advanced evidence-based interventions. Prerequisites: NURS 6235. Recommended background: prior completion of NURS 6220, NURS 6234 and NURS 6222.

NURS 6237. Adult-Gerontology Acute Care Nurse Practitioner 3: Complex and Chronic Disease Mgt Adolesc/Elderly. 8 Credits.
The third clinical practicum course for adult-gerontology acute care nurse practitioner students. The scientific underpinnings and the practical management of complex acute and chronic conditions across a spectrum of care delivery situations from subacute rehabilitation, to urgent care, emergency department, hospital-based care, and critical care; the scope of practice of the AGACNP is not setting specific; rather, it is based on the needs of patients. Special issues for adolescents and the frail elderly and evaluation of care for adolescents, adults, and the elderly. Prerequisites: NURS 6235 and NURS 6236. Recommended background: prior completion of NURS 6220, NURS 6234 and NURS 6222.

NURS 6239. Bridge to Nurse Midwifery. 1 Credit.

NURS 6241. The Health Care Enterprise. 3 Credits.
Overview of general management business principles related to health care systems. Management of patient-centered care delivery; strategic health care leadership; organizational, marketing, and fiscal management principles. Same as HSCI 6241.

NURS 6242. Psychopharmacology. 3 Credits.
Essential theoretical foundations of neurobiology and psychopharmacology for nurse practitioners to provide safe behavioral health care across the lifespan. Prerequisites: NURS 6220, NURS 6222 and NURS 6234.

NURS 6243. Addiction and Change. 3 Credits.
Principles of addiction and change with a focus on correlating how changes in behavior lead to recovery in addictions. Models of addiction and change, the neurobiology of addiction, behavior change theories and models, and treating addictions through behavioral mechanisms.

NURS 6244. Foundations for Psychiatric-Mental Health Nurse Practitioners. 3 Credits.
The nurse practitioner's role in providing behavioral health care in various health care systems across the lifespan; theoretical foundations for managing all phases of therapeutic relationships; psychosocial and risk assessment that meets clinical standards of care. Prerequisites: NURS 6220, NURS 6222 and NURS 6234.

NURS 6245. Mental Health Diagnostic Assessment Across the Lifespan. 3 Credits.
Assessment framework for formulating accurate diagnoses of mental health disorders across the lifespan using criteria outlined in the Diagnostic and Statistical Manual of Mental Health Disorders-5 (DSM-5). Prerequisites: NURS 6220, NURS 6222 and NURS 6234.

NURS 6246. Psychiatric Mental Health Nurse Practitioner (PMHNP) Clinical Practicum 1. 2 Credits.
Designed to build beginning level psychiatric mental health nurse practitioner skills with patients across the lifespan and in a variety of clinical settings. Students integrate knowledge from didactic and clinical course work to provide safe and competent behavioral healthcare. Prerequisites: NURS 6220, NURS 6222 and NURS 6234.

NURS 6247. Psychiatric Mental Health Nurse Practitioner (PMHNP) Clinical Practicum 2. 2 Credits.
Designed to build psychiatric mental health nurse practitioner skills in a variety of clinical settings. Students integrate foundational knowledge from course work to provide safe and competent behavioral healthcare to individuals across the lifespan. Prerequisites: Nurs 6220, Nurs 6222, Nurs 6234 and NURS 6246.

NURS 6248. Psychiatric Mental Health Nurse Practitioner (PMHNP) Clinical Practicum 3. 3 Credits.
Developing competency in the PMHNP role. Students integrate foundational knowledge from coursework to provide safe and competent behavioral healthcare to individuals across the lifespan. Prerequisites: NURS 6220, NURS 6222, NURS 6234, NURS 6244, NURS 6245, NURS 6246 and NURS 6247.

NURS 6249. Psychotherapeutic Treatment Modalities. 3 Credits.
Evidence-based psychotherapeutic treatment modalities used by the nurse practitioner in providing behavioral health care across the lifespan. Theoretical foundations for selecting and using psychotherapeutic interventions as part of the treatment plan. Prerequisites: NURS 6220, NURS 6222, NURS 6234, NURS 6242, NURS 6243, NURS 6244, NURS 6245, NURS 6246 and NURS 6247.

NURS 6256. Intro to Palliative Care. 3 Credits.

NURS 6258. Leadership Capstone Pract I. 3 Credits.
Nursing 6258 is the first of a two-semester capstone course designed to provide a mentored practicum that offers the opportunity to apply leadership content and refine leadership abilities in a setting and practice area mutually agreed upon by the student and course faculty.

NURS 6259. Leadership Capstone Pract II. 3 Credits.
Nursing 6259 is a continuation of NURS 6258 and is designed to provide a mentored internship practicum, the opportunity to apply leadership content, and refine leadership abilities.

NURS 6260. Foundations of Coaching. 3 Credits.
Nurse coaching methodology and competencies. Leadership and therapeutic relationship skills and the theory and meta-science fundamental to each skill. Assessing readiness for change, building trust and warmth, obtaining and holding the clients agenda, visioning, awareness raising techniques, brainstorming, and goal setting.

NURS 6261. Advanced Coaching Skills. 3 Credits.
Builds on concepts introduced in NURS 6260. Multidisciplinary and nursing theories foundational to nurse coaching. Advanced coaching techniques and common coaching topics and contexts such as weight loss, stress and time management, and executive coaching. Prerequisites: NURS 6260.

NURS 6262. Leadership Coaching in Nursing. 3 Credits.
Theoretical foundations and evidence for leadership coaching in nursing; the different applications of coaching in nursing management. Executive coaching, team coaching, peer coaching, and personal career coaching. Application and evaluation of multiple models, competencies, and methodologies for nursing leadership coaching through learning activities and live demonstration. Creation of a complete evidence-based coaching strategy for a case study.

NURS 6272. HumanResrcDev/HlthProfPractice. 3 Credits.

NURS 6273. Health Info Quality & Outcomes. 3 Credits.

NURS 6274. Health Economics & Finance. 3 Credits.

NURS 6275. Leadership &Change/Health Care. 3 Credits.

NURS 6276. Foundations of Palliative Care. 3 Credits.

NURS 6277. Pain and Suffering. 3 Credits.

NURS 6278. PalliativeCare:Chronic Illness. 3 Credits.

NURS 6279. Palliative Care Practicum I. 1-4 Credits.

NURS 6280. Palliative Care Practicum II. 1-4 Credits.

NURS 6281. PC Leadership and Management. 2 Credits.

NURS 6291. AdvTopics. 1-9 Credits.

NURS 6292. Teachw/Tech.inHealthProfession. 3 Credits.

NURS 6293. Health Ed.for Indiv&Community. 3 Credits.

NURS 6294. SpirtlBelief&Pract/HlthCare. 3 Credits.

NURS 6295. Health Care Quality Process. 3 Credits.

NURS 6296. Ped Health Assess & Pharm. 1 Credit.

NURS 6297. Independent Study. 1-9 Credits.

NURS 6298. NP Clinical Completion. 1-5 Credits.

NURS 8401. Org Concepts in Nursing. 3 Credits.

NURS 8402. Knowledge Managemnt in Nursing. 3 Credits.

NURS 8403. Translating Research into Prac. 3 Credits.

NURS 8404. Research & Policy for Nursing. 3 Credits.

NURS 8405. Healthcare Quality Improvement. 3 Credits.

NURS 8406. Field Exp Adv Nursing Practice. 3 Credits.

NURS 8407. Grant Writing. 3 Credits.

NURS 8408. Topics Pharmacology. 3 Credits.

NURS 8409. Healthcare Quality Practicum. 3 Credits.
Application of quality improvement processes and patient safety theories, models, methods, and tools in health care settings to conceive and execute a quality improvement (QI) project in an organizational setting. The final deliverable is a comprehensive QI project report.

NURS 8410. Executive Presence I. 2 Credits.

NURS 8411. Executive Presence II. 2 Credits.
This is a continuation of Executive Presence I. In this course, the student will examine power shifts in leadership, revisit change as a stimulus for innovation, participate in an interactive session for individuals who can practice communicating their practicum proposals and receiving friendly feedback and constructive input from their peers, and re-evaluate the leadership development plan designed in Executive Presence I.

NURS 8412. HC Finance for Nurse Leaders. 3 Credits.

NURS 8413. Adult-Gerontology Acute Care Nurse Practitioner: Advanced Role Immersion. 3 Credits.
Students develop and integrate bedside with systems and population level competencies; role development, leadership, interdisciplinary collaboration, systems management, and evidenced-based practice are discussed and applied to concurrent clinical experiences; independent practice skills in the context of interdisciplinary teams. Prerequisites: NURS 6235, NURS 6236 and NURS 6237. Recommended background: prior enrollment in NURS 6220, NURS 6234 and NURS 6222.

NURS 8414. DNP Residency. 3 Credits.

NURS 8498. Research Project Proposal. 3 Credits.

NURS 8499. Clinical Research Project. 3 Credits.

ORGANIZATIONAL SCIENCES (ORSC)

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ORSC 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

ORSC 1109. Introduction to Organizational Sciences. 3 Credits.
The evolution of organizations in terms of social context and the present-day systems environment. Emerging roles of leadership, communication, and employer–employee relationships. Organizational models are used to develop strategic thinking about career and life roles.

ORSC 2046. Global Organizations. 3 Credits.
The globalization of organizations as the engine for the global movement of talented and skilled professionals; the increasing focus of organizations on attracting, utilizing, and developing such individuals. Issues related to the formulation of global strategy and the leadership of global talent. Prerequisites: ORSC 1109.

ORSC 2116. Leading Change. 3 Credits.
An in-depth introduction to and analysis of concepts and techniques of leadership, including motivation, goal alignment, incentives, teamwork, and communication. Conceptual and empirical background of the management of change. Prerequisites: ORSC 1109.

ORSC 2123. Negotiation and Conflict Resolution. 3 Credits.
Theories in psychology, management, and communication as applied to individual-, group-, and organizational-level contexts of negotiation and conflict resolution. Prerequisites: ORSC 1109.

ORSC 2143. Leadership and Performance. 3 Credits.
Leadership from an organization system perspective. Theory, research, and applications pertaining to how leaders can reduce uncertainty through appropriate adaptive change. Prerequisites: ORSC 1109.

ORSC 2544. Industrial/Organizational Psychology. 3 Credits.
Psychological concepts and methods applied to problems of personnel management, employee motivation and productivity, supervisory leadership, and organizational development. Prerequisites: ORSC 1109 or PSYC 1001. (Same as PSYC 2544).

ORSC 2560. Group Dynamics. 3 Credits.
Relationship of the individual to groups, collectivities, and larger social systems. Theory, research, and applications of group and organizational processes. Prerequisites: ORSC 1109 or PSYC 1001.

ORSC 3141. Strategy in Organizations. 3 Credits.
Processes and theories of strategic management in the profit and nonprofit sectors. Analysis of behavioral, sociopolitical, and economic forces underlying strategy formulation. Strategic competitive advantage; corporate diversification; multinational corporations; evaluation and choice; and implementation of functional and corporate strategies. Prerequisites: ORSC 1109.

ORSC 3159. Extreme Decisions. 3 Credits.
Processes in organizational decision making and group behavior. Topics include group and individual decision-making approaches, decision aids and support systems, performance and decision effectiveness, and risk analysis. Prerequisites: ORC 1109.

ORSC 3165. Organizational Network Analysis. 3 Credits.
A relational view of organizations, emphasizing the ways in which business, non-profit, public, and governmental entities engage with a multitude of actors in pursuit of their goals. Organizational embeddedness and how an organization's position in a web of relations helps or hinders it. Prerequisites: ORSC 1109.

ORSC 3190. Special Topics. 1-3 Credits.
Topics to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Prerequisites: ORSC 1109.

ORSC 4161. Research Methods in Organizational Sciences. 3 Credits.
Fundamentals of qualitative, correlational, quasi-experimental, and experimental research design in organizational settings. Defining a research question, designing a research study, conducting and interpreting statistical analyses, and communicating results of a variety of research efforts. Prerequisite: STAT 1053 and ORSC 1109. Restricted to organizational science majors.

ORSC 4195. Independent Study. 1-3 Credits.
Opportunity for work on individual research projects. Open to qualified students by permission; arrangements must be made with the sponsoring faculty member prior to registration. A list of participating faculty members and their research specialties is available from the department. Prerequisites: ORSC 1109.

ORSC 4197. Senior Research Seminar. 3 Credits.
Capstone course limited to organizational sciences majors in their senior year. Real world applications of organizational research. Students work on an individually designed research project with results presented in a major paper. Restricted to Limited to ORSC majors in their senior year. Prerequisites: ORSC 1109 ORSC 4161.

ORSC 4197W. Senior Research Seminar. 3 Credits.
Capstone course limited to organizational sciences majors in their senior year. Real world applications of organizational research. Students work on an individually designed research project with results presented in a major paper. Prerequisites: ORSC 1109 and ORSC 4161.

ORSC 6104. Statistics in Management, Administration, and Policy Studies. 3 Credits.
Introductory study of statistical techniques for research problems. Restricted to graduate students in fields other than statistics who have no previous statistics training.

ORSC 6165. Organizational and Communication Networks. 3 Credits.
The application of tools of social network analysis to organizational settings and behavior as well as communication processes, both within and among organizations. Restricted to graduate students. (Same as COMM 6165).

ORSC 6209. Management Systems. 3 Credits.
An overview of theoretical frameworks, evolution, concepts, and methods of complex organizational systems. Modern organization theory using systems thinking and concepts. Organizational and management systems paradigm shifts. Problem solving and decision making, stakeholder theory, organizational environments, organizational effectiveness.

ORSC 6212. Current Issues in Personnel Testing and Selection. 3 Credits.
Psychometric, legal, and organizational issues in personnel employment testing and selection, reliability and validity of selection instruments, and the utility of selection systems. The legal environment, including test fairness in selection, adverse impact, and statistical models of test fairness and specific selection techniques. Prerequisite: STAT 2104.

ORSC 6214. Personnel Training and Performance Appraisal Systems. 3 Credits.
Management training programs and training evaluation techniques. Performance appraisal techniques, appraisal systems, relationship of rewards to performance and the appraisal interview. Training and rating systems that satisfy legal requirements and stimulate employee productivity.

ORSC 6216. Theories and Management of Planned Change. 3 Credits.
A systems view of organizational change and development, including intervention strategies, data collection, diagnosis, and the integration and management of system-wide organizational change.

ORSC 6217. Productivity and Human Performance. 3 Credits.
Definitions and measurement of individual, team, and organizational productivity, effectiveness, and efficiency. Models for the analysis of organizational and individual productivity and productivity growth in industrialized nations. Techniques for increasing productivity.

ORSC 6219. Managerial Economics. 3 Credits.
Intermediate microeconomic theory; production and costs, market structure and pricing, risk analysis, and investment theory and capital budgeting. Students who receive credit for this course can receive credit for only one of ECON 6217 or ECON 6219. Restricted to graduate students.

ORSC 6222. Theory and Practice of Compensation Management. 3 Credits.
Analysis of contemporary compensation systems from both theoretical and practical perspectives, including the latest decisions of courts and regulatory agencies. Examination of motivational theories of pay, determinants and effects of salary structures on performance, incentive plans, performance-based compensation, and managerial compensation systems.

ORSC 6223. Collective Bargaining. 3 Credits.
Analysis of federal and state employee relations laws and regulations. Topics include the bargaining environment, wage and benefit issues in arbitration, arbitration of grievances, employee relations in non-union organizations, and behavioral theories of labor negotiations.

ORSC 6224. Persuasion & Negotiation. 3 Credits.
Theories drawn from the psychology, management, and communication literature pertaining to core concepts of social influence, persuasion, and negotiation. Critical assessment of proposals within organizations that use these strategies.

ORSC 6241. Strategic Management and Policy Formation. 3 Credits.
Processes and theories of strategic management in the profit and not-for-profit sectors. Analysis of behavioral, sociopolitical, and economic forces underlying strategy formulation. Issues of strategic competitive advantage; corporate diversification; multinational corporations; evaluation and choice; and implementation of functional and corporate strategies.

ORSC 6242. Organizational Communication and Conflict Management. 3 Credits.
Theories drawn from the communication psychology and management literature pertaining to core concepts of social influence, persuasion, and negotiation. Critical assessment of proposals within organizations that use these strategies.

ORSC 6243. Sem:Leadership-Complex Organzt. 3 Credits.
The view of leadership taken in this seminar extends theories beyond the interpersonal, near-immediate time frame toward an organizational perspective in which cause-and-effect linkages are traced. The leadership role as an attribute of a system. How effective leaders reduce uncertainty through appropriate adaptive change.

ORSC 6245. Seminar: Organizational Behavior. 3 Credits.
Analysis of organizational behavior; emphasis on motivation and productivity. Recent research on employee attitudes, primary group, supervisory leadership, formal and informal organization, job design. Restricted to graduate students.

ORSC 6246. Comparative Management. 3 Credits.
International dimensions of management over a broad spectrum of topics, including cross-national transfer and management practices in a global economy; cross-cultural interaction; business–government relations; expatriation and repatriation processes; international strategic management; technology transfer; globalization of human resources management.

ORSC 6248. Strategic Human Resource Planning. 3 Credits.
Overview of the principles of human resource planning. Model for determining human resource requirements, including forecasting, goal setting, human resource auditing, and environmental scanning. Analysis of the interfaces between human resource planning and personnel selection, job design, training, compensation, and related functions.

ORSC 6250. Leadership Coaching: Principles and Practices. 3 Credits.
An introduction to leadership coaching, including behavioral sciences roots: communication and conflict resolution skills, motivation, personality and performance assessments. Coaching vs. related practice areas; business coaching vs. personal coaching. Professional and ethical standards.

ORSC 6251. Team Coaching and Facilitation. 3 Credits.
Application of the fundamentals and governing values of leadership coaching to the development of productive work groups and communities. The art and practice of facilitation as applied to team learning and the encouragement of breakthrough thinking and team problem solving. Prerequisite: ORSC 6242, ORSC 6250.

ORSC 6259. Psychology of Individual and Group Decision Making. 3 Credits.
Examination of processes in organizational decision making and group behavior. Topics include group and individual decision-making approaches, decision aids and support systems, performance and decision effectiveness, and risk analysis. Restricted to graduate students.

ORSC 6261. Research Methods in Org Scienc. 3 Credits.
Fundamentals of qualitative, correlational, quasi-experimental, and experimental research designs. Defining a research question, designing a research study, conducting and interpreting statistical analyses, and communicating research results.

ORSC 6262. Action Research. 3 Credits.
A qualitative approach to action research problems. Students work with a client on an action research project and produce a research report.

ORSC 6295. Directed Research. 1-12 Credits.
Supervised research in selected fields within organizational sciences. Admission by prior permission of faculty advisor and instructor.

ORSC 6297. Special Topics. 3 Credits.
Special topics in human resource strategic planning, computer-based learning, human–computer interaction, management information technology, knowledge management, coaching, and organizational design.

ORSC 6298. Directed Readings. 1-12 Credits.
Supervised readings in selected fields within organizational sciences. Admission by prior permission of faculty advisor and instructor.

ORSC 8261. Research Methods in Organizational Sciences. 3 Credits.
Fundamentals of qualitative, correlational, quasi-experimental, and experimental research designs. Defining a research question, designing a research study, conducting and interpreting statistical analyses, and communicating research results.

OCCUPATIONAL THERAPY (OT)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

OT 8214. Evidence-Based Occupational Therapy Practice. 3 Credits.
Principles of evidence-based practice applied to clinical questions in the field of occupational therapy. Restricted to Majors only.

OT 8215. Quality Improvement through Translational Practices. 3 Credits.
Concepts in quality improvement and its connection with evidence-based practice and translational science. The development and validation of quality indicators, including both process and outcome indicators; tracking and monitoring quality improvement projects. Recommended background: Occupational therapy majors.

OT 8220. Measurement of Human Function and Learning. 3 Credits.
Selection, implementation, and evaluation of assessment tools. Changes in performance that occur in clinical environments, in adult educational settings, and in research programs. Levels and purposes of measurement; proximity of the measure to the "intervention;" utility, including reliability and validity; precision, including range, targeting, and sensitivity to change; efficiency and practicality. Recommended background: Occupational therapy majors.

OT 8261. Foundations in Team Science and Clinical and Translational Research. 3 Credits.
Overview and analysis of the translational research principles and practice through the application of basic, clinical, community health, and health services research concepts. Recommended background: Occupational therapy majors. (Same as HSCI 6261).

OT 8272. Mixed Methods in Translational Health Sciences. 3 Credits.
An introduction to mixed methods as a legitimate design tradition, with a unique set of procedures for data collection, analysis, and strategies to assure rigor and accuracy. Students design a mixed methods study to address a translational research question. Recommended background: occupational therapy majors.

OT 8274. Program Theory and Health Innovations. 3 Credits.
Program theory as the basis for designing health and educational innovations that can be tested using scientific methods, replicated in practice, and inform policy. Recommended background: occupational therapy majors.

OT 8275. Doctoral Capstone Preparation. 3 Credits.
Through a combination of didactic information, peer discussion, and advisor discussions, students are trained to communicate more effectively the purpose, rationale/theory, and design of their proposed doctoral capstone. Prerequisite: OT 8274. Restricted to occupational therapy majors.

OT 8276. Doctoral Capstone. 3 Credits.
The culminating seminar for the post-professional occupational therapy degree, building on work initiated in previous courses. Development of an independent, mentored doctoral project that demonstrates syntheses, integration, and application of course work into a consequential project. Restricted to occupational therapy majors with permission of the instructor. Prerequisite: OT 6274.

OT 8448. Neurocognitive Disorders. 3 Credits.
Multifactorial etiology of neurocognitive disorders, including a range of diagnostic subtypes such as Alzheimer's disease, frontotemporal dementia, Lewy bodies dementia, vascular dementia, and Parkinson's disease dementia; effects on the biopsychosocial and occupational health of individuals with neurocognitive disorders and their families. Recommended background: Occupational therapy majors.

OT 8450. Cognition and Cognitive Rehabilitation. 3 Credits.
Advanced principles and theories of cognitive rehabilitation, emphasizing the latest research in information processing. Analysis of cognitive assessment instruments. Cognitive impairments are considered in terms of intervention for persons with stroke, traumatic brain injury, schizophrenia, substance abuse, and related conditions. Recommended background: Occupational therapy majors.

PATENT PRACTICE (PATN)

Explanation of Course Numbers

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PATN 6201. The American Legal System. 3 Credits.

PATN 6202. Legal Research. 3 Credits.

PATN 6203. Patent Processes and Policies. 3 Credits.

PATN 6204. The IP Ecosystem. 3 Credits.

PATN 6205. Patent Practice and Procedure. 3 Credits.

PATN 6206. Advanced Patent Practice. 3 Credits.

PATN 6207. Patent Decisions. 3 Credits.

PEACE STUDIES (PSTD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSTD 1010. Introduction to Peace Studies and Conflict Resolution. 3 Credits.
Major thinkers and themes in the field of peace studies and conflict resolution. Focus on philosophical and religious foundations of peace and justice movements in the 20th century. Examination of peace and conflict through an interdisciplinary lens and on personal, local, and international levels.

PSTD 3190. Capstone Seminar. 3 Credits.
Capstone seminar for peace studies majors and minors in their junior or senior year. Taken concurrently with a relevant internship or as part of a long-term research project to probe the relationship between peace studies and conflict resolution in practice and in theory.

PSTD 3191. Special Topics Peace Studies. 1-3 Credits.
Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

PSTD 3999. Independent Study. 1-3 Credits.
Tutorial designed by an undergraduate student under the guidance of a faculty member to pursue an academic topic in the area of Peace Studies and Conflict Resolution outside available course offerings.

PERSIAN (PERS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PERS 1001. Beginning Persian I. 0-4 Credits.
Fundamentals of speaking, understanding, reading, and writing of Modern Standard Persian. Laboratory fee.

PERS 1002. Beginning Persian II. 0-4 Credits.
Continuation of PERS 1001. Fundamentals of speaking, understanding, reading, and writing of Modern Standard Persian. Laboratory fee.

PERS 2001. Intermediate Persian I. 4 Credits.
Continuation of PERS 1001– PERS 1002. Further development of speaking, understanding, reading, and writing skills of Modern Standard Persian. Prerequisite: PERS 1001– PERS 1002 . Laboratory fee.

PERS 2002. Intermediate Persian II. 4 Credits.
Continuation of PERS 2001. Further development of speaking, understanding, reading, and writing skills of Modern Standard Persian. Prerequisite: PERS 1001– PERS 1002 . Laboratory fee.

PERS 3001. Advanced Persian. 3 Credits.
Development of writing, reading, speaking, and listening skills at the advanced level of proficiency. Prerequisite: PERS 2001– PERS 2002 . Laboratory fee.

PERS 3002. Media Persian. 3 Credits.
Critical analysis of authentic news through the study of a variety of media sources, such as print, radio, and television.

PERS 3002W. Media Persian. 3 Credits.
Critical analysis of authentic news through the study of a variety of media sources, such as print, radio, and television. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PERS 3001.

PERS 3502. Post-Revolutionary Iranian Cinema. 3 Credits.
Study of social, political, and cultural issues in contemporary Iran through an examination of the country's post-revolutionary cinema; gender dynamics, challenges faced by youth, and the role of art in society. This course is taught in English.

PERS 3502W. Post-Revolutionary Iranian Cinema. 3 Credits.
Study of social, political, and cultural issues in contemporary Iran through an examination of the country's post-revolutionary cinema; gender dynamics, challenges faced by youth, and the role of art in society. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. This course is taught in English.

PERS 3901. Directed Project. 1-3 Credits.
Individual advanced reading or research, to be arranged with a member of the faculty. May be repeated for credit. Admission by permission of the instructor and department.

PHARMACOGENOMICS (PHRG)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PHRG 2141. Mol. Bio for Pharmacogenomics. 4 Credits.

PHRG 2142. Mol. Tech for Pharmacogenomics. 2 Credits.

PHRG 4151. Introduction to the Pharmacy Profession. 1.5 Credit.
The evolving role of the pharmacist in the healthcare system. Attributes, attitudes, and ethical standards expected of the profession. Concepts of patient-centered care, collaborative care, and the pharmacist as an advocate, educator and health promoter. Pharmacy career paths.

PHRG 4152. Pharmaceutics I. 2 Credits.

PHRG 4153. Pharmaceutics II. 4 Credits.
The legal, practical, and scientific bases of drug products and pharmaceutical delivery systems. Physiochemical theories, terminology, pharmaceutical skills, and interpretation of the formulation and performance of pharmaceutical products. Laboratory component PHRG 4173.

PHRG 4154. Biomedical Sciences I. 2 Credits.
Advanced biomedical science topics, including biochemistry, molecular biology, and cell biology. Serves as a foundation for study of immunology, medical microbiology, pathophysiology, toxicology, pharmacogenomics, pharmacology, and pharmacotherapeutics.

PHRG 4155. Biomedical Sciences II. 3 Credits.
Advanced topics, including immunology, oncology, and medical microbiology. Serves as a foundation for the study of pathophysiology, toxicology, pharmacogenomics, pharmacology, and pharmacotherapeutics.

PHRG 4156. Integrated Pathophysiology I. 3 Credits.
Pathophysiology of the endocrine, nervous, GI, and musculoskeletal systems. Serves as a foundation for the study of pharmacology, therapeutics, and pharmacogenomics.

PHRG 4157. Integrated Pathophysiology II. 3 Credits.
The pathophysiology of the cardiovascular, renal, respiratory, and reproductive systems. Serves as a foundation for the study of pathophysiology, therapeutics, and pharmacogenomics.

PHRG 4160. Introduction to Physical Assessment. 1 Credit.
How pharmacists use physical assessment in the patient care process. The fundamentals of physical assessment necessary for the practice of pharmacy. Medical terminology, medical abbreviations, documentation of physical assessment findings, and wellness and preventive health. Taken as part of the sequence PHRG 4160-PHRG 4161.

PHRG 4161. Physical Assessment Lab. 1 Credit.
Practical experience in laboratory activities designed to introduce physical assessment and critical thinking skills necessary for the practice of pharmacy. Taken as part of the sequence PHRG 4160-PHRG 4161.

PHRG 4163. Pharmacogenomics Essentials. 2 Credits.

PHRG 4165. Communication in Pharmacy Practice. 2.5 Credits.
Students develop and apply the communication, interpersonal, and psychosocial skills needed to interact effectively in a changing healthcare environment. Communicating with patients and healthcare providers. Cultural issues, psychological and sociological challenges, and healthcare disparities that affect communication with patients.

PHRG 4167. Intro. Pharm. Pract. Exp. I. 2 Credits.

PHRG 4168. Intro. Pharm. Pract. Exp. II. 2 Credits.

PHRG 4169. Nonprescription Products. 3 Credits.

PHRG 4170. Out. Pharm. Prac. Lab. 1 Credit.

PHRG 4171. Sterile Compounding Lab. 1 Credit.

PHRG 4172. Clin. Drug Info. Skils. 1 Credit.

PHRG 4173. Pharmaceutical Sciences II Laboratory. 1 Credit.
Laboratory course to accompany PHRG 4153 Pharmaceutics II.

PHARMACOLOGY (PHAR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PHAR 6116. Pharmacogenomics and Personalized Medicine. 3 Credits.
Relationships between human genetic variability and drug responsiveness, susceptibility to disease, and disease severity. Scientific, clinical, legal, and ethical challenges in applying pharmacogenomics to drug discovery and clinical development. Professionals from such disciplines as human genetics, pharmacology, pharmaceutical sciences, genomic medicine, clinical and translational sciences, law, and regulatory affairs provide an integrative view of the application of pharmacogenomics to personalized medicine. Restricted to Graduate students enrolled in the Biomedical Sciences Program or Year 2 of the Anatomical and Translational Sciences Program; Instructor permission required. Prerequisites: PHAR 6205. Recommended background: Students who have not completed PHAR 6205 or its equivalent are required to complete a pharmacology preparatory primer prior to the start of PHAR 6116; Equivalency will be determined by the instructor; The primer provides foundational concepts of drug biodisposition, dose response, and pharmacodynamics.

PHAR 6205. Pharmacology. 5 Credits.
Basic principles of pharmacology, including receptor mechanisms, drug distribution and metabolism, and pharmacokinetics. Lectures, laboratories, and tutorials on the interactions of drugs and biological systems as a basis for rational disease therapy. Prerequisites: BMSC 8210 and BMSC 8212, or permission of instructor. Recommended background: Enrollment in PhD or Master's program in medical-related sciences.

PHAR 6206. Advanced Pharmacology. 5 Credits.
Lectures on the interactions of drugs and specific organ systems. Tutorials on current research in pharmacology and toxicology. Prerequisite: PHAR 6205. Recommended background: Enrollment in Master's or PhD program in medical-related science program.

PHAR 6207. Basic Principles of Pharmacol.. 2 Credits.
Drug disposition. Autonomic nervous system, cardiovascular and gastrointestinal drugs. Psychopharmacology. Analgesics, sedatives, anticonvulsants. Chemotherapy, toxicology, endocrinology.

PHAR 6208. Pharm in Dis. Pathophysiology. 2 Credits.
The pharmacology of disease management.

PHAR 6501. Readings in Pharmacology. 1-12 Credits.
Readings, discussions, and/or preparation of report. Student can choose to work with one or more faculty members in the department on a topic of mutual interest.

PHAR 6502. Clinical Use of Drugs. 3 Credits.
Discussion of the rational use of drugs in the treatment of disease. Independent reading and study.

PHILOSOPHY (PHIL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PHIL 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details. Restricted to First-year students in CCAS.

PHIL 1051. Introduction to Philosophy. 3 Credits.
Readings from major philosophers and study of their positions on the most basic questions of human life. Topics include such issues as: What is justice? What is knowledge? What is reality? Does God exist? What is the mind? Do humans have free will?.

PHIL 1062. Philosophy and Film. 3 Credits.
Philosophical problems and theories of perception, meaning, personal identity, and moral agency and their illustration in the context of cinema. Cinema and its derivatives (TV, video) as prime routes to experience of the natural and social worlds in an age of communication. Readings in classical and contemporary philosophy and in film theory; screening of a series of films.

PHIL 1153. The Meaning of Mind. 3 Credits.
Introductory course for students with no background in philosophy or the sciences of the mind. The central questions, assumptions, and hypotheses about the human mind. The nature of thought, consciousness, and self; knowledge of other minds; implications of the sciences of the mind for freedom of the will and responsibility; and the relationship between the mind and the brain.

PHIL 1193. Introduction to Existentialism. 3 Credits.
The philosophical themes of selfhood, mortality, authenticity, and ethical responsibility from an existentialist perspective, including the writings of Kierkegaard, Heidegger, Nietzsche, Camus, and Sartre. The place of existentialism in the history of philosophy.

PHIL 2045. Introduction to Logic. 3 Credits.
Introduction to informal logic, scientific argument, and formal logic. The informal logic component focuses on fallacies of reasoning and practical applications of logic. The formal logic component focuses on translation from English into propositional logic, truth tables, and proofs in propositional logic.

PHIL 2111. History of Ancient Philosophy. 3 Credits.
History of Western philosophy from the Pre-Socratics to the Stoics (6th century BCE to 1st century CE). Major emphasis on the writings of Plato and Aristotle. Among themes to be covered: knowledge and reality, political and moral philosophy.

PHIL 2111W. History of Ancient Philosophy. 3 Credits.
History of Western philosophy from the Pre-Socratics to the Stoics (6th century BCE to 1st century CE). Major emphasis on the writings of Plato and Aristotle. Among themes to be covered: knowledge and reality, political and moral philosophy.

PHIL 2112. History of Modern Philosophy. 3 Credits.
History of Western philosophy of the 16th through 18th centuries; Continental Rationalism and British Empiricism from the scientific revolution through the Enlightenment; major emphasis on Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume, and Kant. Prerequisite: PHIL 1051 .

PHIL 2124. Philosophies of Disability. 3 Credits.
Disability presents an intense and interesting challenge to traditional philosophical presuppositions and principles. This course examines various philosophical approaches to disability —historical, individual, and medical paradigms as well as those that rely on frameworks of social or human rights.

PHIL 2124W. Philosophies of Disability. 3 Credits.
Disability presents an intense and interesting challenge to traditional philosophical presuppositions and principles. This course examines various philosophical approaches to disability —historical, individual, and medical paradigms as well as those that rely on frameworks of social or human rights.

PHIL 2125. Philosophy of Race and Gender. 3 Credits.
A theoretical examination of the bodily, social, discursive, and political effects of patriarchy, racism, and classism.

PHIL 2125W. Philosophy of Race and Gender. 3 Credits.
A theoretical examination of the bodily, social, discursive, and political effects of patriarchy, racism, and classism.

PHIL 2131. Ethics: Theory and Applications. 3 Credits.
Examination of leading ethical theories (e.g., utilitarianism, deontology, virtue ethics), and methodology in ethics. Engagement with contemporary problems.

PHIL 2132. Social and Political Philosophy. 3 Credits.
Philosophical theories about how economic, political, legal, and cultural institutions should be arranged. Topics include the meaning and significance of liberty, the legitimate functions of government, the nature of rights, the moral significance of social inequality, and the meaning of democracy.

PHIL 2132W. Social and Political Philosophy. 3 Credits.
Philosophical theories about how economic, political, legal, and cultural institutions should be arranged. Topics include the meaning and significance of liberty, the legitimate functions of government, the nature of rights, the moral significance of social inequality, and the meaning of democracy.

PHIL 2133. Philosophy and Nonviolence. 3 Credits.
Violence and nonviolence in the personal and social struggle for meaningful, just, and peaceful existence; philosophical foundations of pacifism and nonviolent resistance in the thought of Tolstoy, Gandhi, King, and others; philosophical inquiry into war, terrorism, genocide, and ethnic conflict, as well as human rights, humanitarian intervention, and just war theory.

PHIL 2134. Philosophy of Human Rights. 3 Credits.
Conceptual, ethical, and theoretical analyses of human rights with emphasis on the justification of human rights, the debate over cultural relativism, and the application of human rights norms in domestic and global contexts.

PHIL 2135. Ethics in Business and the Professions. 3 Credits.
Ethical theories and basic concepts for analysis of moral issues arising in business and in professional practice.

PHIL 2136. Contemporary Issues in Ethics. 3 Credits.
Introduction to a range of debates in applied ethics, including both classic debates concerning topics such as the permissibility of abortion, animal treatment, and suicide as well as more current debates concerning our interactions with the environment and our obligations to the poor in a global context.

PHIL 2281. Philosophy of the Environment. 3 Credits.
Three models of environmental sustainability: the current paradigm in economic and cultural thinking (neoclassical economics); redistribution of resources toward greater global equity (a macroeconomic perspective); and de-growth in the developed economies (ecological economics). The models offer different perspectives on what environmental sustainability means and how it can impact the cultural, religious, moral, metaphysical, and existential situation.

PHIL 3100. Selected Topics. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

PHIL 3100W. Selected Topics. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

PHIL 3113. 19th-Century Philosophy. 3 Credits.
European philosophy of the 19th century, with major emphasis on Kant, Hegel, Schopenhauer, Kierkegaard, and Nietzsche. Prerequisite: PHIL 1051 .

PHIL 3121. Symbolic Logic. 3 Credits.
Analysis and assessment of deductive arguments, using propositional, predicate, and other logics; philosophical basis and implications of logical analysis; metatheory of logic; modal and non-standard logics. Prerequisite: Phil 1045 or permission of instructor.

PHIL 3142. Philosophy of Law. 3 Credits.
Systematic examination of fundamental concepts of law and jurisprudence; special emphasis on the relationship between law and morality.

PHIL 3142W. Philosophy of Law. 3 Credits.
Systematic examination of fundamental concepts of law and jurisprudence; special emphasis on the relationship between law and morality.

PHIL 3151. Philosophy and Science. 3 Credits.
Analysis of the structure and meaning of science, including scientific progress and theory change, objectivity in science, the drive for a unified science, and ways science relates to everyday understandings of the world. Attention given to various sciences, including physics, biology, and neuroscience. Prerequisite: PHIL 1051 or a 2000-level philosophy course.

PHIL 3151W. Philosophy and Science. 3 Credits.
Analysis of the structure and meaning of science, including scientific progress and theory change, objectivity in science, the drive for a unified science, and ways science relates to everyday understandings of the world. Attention given to various sciences, including physics, biology, and neuroscience. Prerequisite: PHIL 1051 or two semesters of college-level science.

PHIL 3152. Theory of Knowledge. 3 Credits.
Inquiry into the basis and structure of knowledge, the problems of skepticism and justification, the relations between subjectivity and objectivity, and the contributions of reason, sense experience, and language. Prerequisite: PHIL 1051 ; PHIL 2112 also recommended.

PHIL 3153. Mind, Brain, and Artificial Intelligence. 3 Credits.
Investigation of the nature of mind from a variety of perspectives, including neuroscience, cognitive psychology, and artificial intelligence, as well as traditional philosophy of mind. Possible additional topics include consciousness, mental disorders, animal minds, and the nature and meaning of dreams. Prerequisites: PHIL 1051 or PHIL 1153 or PHIL 2112 or permission of the instructor.

PHIL 3161. Philosophy and Literature. 3 Credits.
Critical investigation of the sociopolitical commitments that inform the practices of reading and writing as discussed by Sartre, Barthes, Foucault, and others. Focus on the development of existentialist themes, including authenticity, freedom, temporality, and death in the work of Kafka, Tolstoy, Mann, Woolf, and others.

PHIL 3162. Philosophy of Art. 3 Credits.
The problem of artistic representation and the nature of aesthetic experience as related to the creation, appreciation, and criticism of art. Special emphasis on nonrepresentational works of art and their interpretation. Prerequisite: PHIL 1051 or PHIL 2111 or PHIL 2112 or PHIL 3113.

PHIL 3162W. Philosophy of Art. 3 Credits.
The problem of artistic representation and the nature of aesthetic experience as related to the creation, appreciation, and criticism of art. Special emphasis on nonrepresentational works of art and their interpretation. Prerequisite: PHIL 1051 or PHIL 2111 or PHIL 2112 or PHIL 3113.

PHIL 3172. American Philosophy. 3 Credits.
A survey of American philosophical thought, focusing on the late 19th through mid-20th centuries. Covers American Pragmatism (Peirce, James, Dewey) in depth; other authors may include Thoreau, Emerson, Royce, Santayana, Mead, Quine, and Rorty.

PHIL 3172W. American Philosophy. 3 Credits.
A survey of American philosophical thought, focusing on the late 19th through mid-20th centuries. Covers American Pragmatism (Peirce, James, Dewey) in depth; other authors may include Thoreau, Emerson, Royce, Santayana, Mead, Quine, and Rorty.

PHIL 3251. Philosophy of Biology. 3 Credits.
An introduction to conceptual and methodological issues raised by contemporary biology, including teleology, reductionism, units of selection, the structure of evolutionary theory, genetics, taxonomy, and the nature of scientific explanation. Other issues may include the nature–nurture debate, creationism/intelligent design, the evolution of altruism, and the relevance of evolutionary theory to ethical questions.

PHIL 4192. Analytical Philosophy. 3 Credits.
The dominant movements of 20th-century Anglo-American philosophy, including logical positivism, British ordinary language philosophy, and neopragmatism, as represented by Russell, G.E. Moore, Wittgenstein, Ayer, Quine, Kripke, et al. Prerequisite: one other upper-division philosophy course (PHIL 2112 and PHIL 3121 recommended).

PHIL 4193. 20th-Century Continental Philosophy. 3 Credits.
An intensive, systematic introduction to the phenomenological and hermeneutic traditions in philosophy through some of their best-known representatives: Husserl, Heidegger, Gadamer, Sartre, Beauvoir, and Merleau-Ponty. Central topics of discussion include consciousness, anguish/anxiety, discourse, interpretation, the Other, death, and ambiguity. Prerequisite: PHIL 2112 or PHIL 3113.

PHIL 4193W. 20th-Century Continental Philosophy. 3 Credits.
An intensive, systematic introduction to the phenomenological and hermeneutic traditions in philosophy through some of their best-known representatives: Husserl, Heidegger, Gadamer, Sartre, Beauvoir, and Merleau-Ponty. Central topics of discussion include consciousness, anguish/anxiety, discourse, interpretation, the Other, death, and ambiguity. Prerequisites: PHIL 2112 or PHIL 3113.

PHIL 4195. Topics in Value Theory. 3 Credits.
Variable topics in ethics, political philosophy, aesthetics, and other subfields in normative philosophy. Prerequisite: one upper-division course on related subject matter or permission of the instructor.

PHIL 4195W. Topics in Value Theory. 3 Credits.
Various topics in ethics, political philosophy, aesthetics, and other subfields in normative philosophy, such as contemporary philosophy of religion. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

PHIL 4196. Topics in Theory of Knowledge. 3 Credits.
Variable topics in epistemology, philosophy of science and mathematics, philosophy of mind, and similar subfields. Prerequisite: one upper-division course on related subject matter or permission of the instructor.

PHIL 4198. Proseminar. 3 Credits.
Variable topics; preparation and presentation of a major research paper. Open only to philosophy majors in the junior and senior year as approved by major advisor. May be repeated for credit. Restricted to philosophy juniors and seniors only.

PHIL 4198W. Proseminar in Philosophy. 3 Credits.
Preparation and presentation of a major research paper. Open only to philosophy majors in the junior and senior year as approved by major advisor. May be repeated for credit provided the topic differs. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to philosophy juniors and seniors only.

PHIL 4199. Readings and Research. 1-3 Credits.
Independent study to be arranged with a faculty sponsor. Restricted to Departmental approval required.

PHIL 6201. Readings and Research. 3 Credits.
Advanced readings and reports. Investigation of special problems.

PHIL 6202. Readings and Research. 3 Credits.
Advanced readings and reports. Investigation of special problems.

PHIL 6211. Topics in the History of Ancient Philosophy. 3 Credits.
Topic announced in the Schedule of Classes. Restricted to For graduate students only.

PHIL 6212. Topics in the History of Modern Philosophy. 3 Credits.
Topic announced in the Schedule of Classes. Restricted to For graduate students only.

PHIL 6221. Advanced Logic. 3 Credits.
Intensive reading of a difficult text in an advanced logical system or a series of logical systems. Focus on analyzing reasoning under partial information, using the formal system to analyze fallacies of reasoning and analyzing quantum phenomena using the formal system. Restricted to For graduate students only. Recommended background: Good formal training in logic - propositional logic: natural deduction, tables and trees; first-order logic: language (translation from English), trees and natural deduction; some limitative results, eg, decidability, compactness, completeness, Lovenheim-Skolem properties, soundness, etc.

PHIL 6222. Philosophy of Mathematics. 3 Credits.
Examination of several philosophies of mathematics, with in-depth concentration on Field's "fictionalism." A fictionalist believes that all of the ontology of mathematics is favorably compared to a fictional object, so it does not literally exist. Students develop reactions to Field's philosophical position using the resources of alternative philosophical positions. Restricted to For graduate students only. Recommended background: Basic understanding of first-order logic.

PHIL 6223. Philosophy of Logic. 3 Credits.
Central concepts in the philosophy of logic, including truth, reasoning, inference, deduction, induction, judgment, assertion, warrant, proof, demonstration, meaning, semantics, syntax, paradox, mathematical models, and the relationship between a formal representation of logical reasoning and the philosophical ideal of the practice of reasoning. Recommended background: Some grounding in first-order logic will be presupposed.

PHIL 6225. Queer(ing) Philosophy. 3 Credits.
Examination of how queer theory, which emerged as a field in its own right in the early 1990s, has posed significant challenges to traditional, taken-for-granted understandings of time, space, the body, race, sexuality, normality, culture, violence, and disability. Restricted to For graduate students only.

PHIL 6230. Ethical Issues in Policy Arguments. 3 Credits.
Critical analysis of ethical foundations of public policy arguments, e.g., about protection of the environment or health and safety, equality of opportunity. Case studies of appeals to "welfare improvements," to norms of duty, to "the social contract," and to rights–claims. Attention to historical contexts and biases. Open to undergraduates only with permission of instructor.

PHIL 6231. Seminar: Economic Justice. 3 Credits.
Ethical and economic analysis of equity and efficiency of current U.S. income distribution patterns. Theories of justice; economic theories of distribution; assessment of redistribution policies. Open to undergraduates only with permission of instructor.

PHIL 6232. Topics in Contemporary Political Philosophy. 3 Credits.
Topic announced in the Schedule of Classes. Restricted to For graduate students only.

PHIL 6233. Contemporary Moral Philosophy. 3 Credits.
Investigation of contemporary debates in normative ethics and/or metaethics. Topics may include the virtue ethics revival in the 20th century, the distinction between the right and the good, or important metaethical positions such as fictionalism, expressivism, and constitutivist accounts of moral principles. Restricted to For graduate students only.

PHIL 6234. Consequentialism and Its Critics. 3 Credits.
An overview of the debate over consequentialism, culminating in discussion of recent literature. Forms of consequentialism (act, rule, motive, cooperative); direct versus indirect; classic objections and replies; partiality; friendship; agent-relative considerations; doctrine of doing and allowing; doctrine of double effect. Restricted to For graduate students only.

PHIL 6236. Moral Status. 3 Credits.
Examination of the question of what sorts of beings matter morally in their own right and how much they matter. While the paradigm bearers of moral status are persons, the course considers competing ways of thinking about the possible moral status of human nonpersons, nonhuman persons, great apes, dolphins, other sentient animals, nonsentient lifeforms, the environment, future people, and advanced forms of artificial intelligence. Restricted to For graduate students only.

PHIL 6237. Animal Ethics. 3 Credits.
The moral status of animals and the ethics of human use of animals. Major topics include models of moral status, animals' mental life, and specific ethical issues associated with the eating of animal products, the use of animals in research, and the keeping of animals in homes and zoos. Restricted to For graduate students only.

PHIL 6238. Feminist Ethics and Policy Implications. 3 Credits.
Feminist critiques of traditional ethical reasoning; alternative feminist ethical frameworks examined and applied to contemporary social problems (e.g., respecting cultural differences, dependency, disability). Same as WSTU 6238. Prerequisite: PHIL 2125 or PHIL 2131 or permission of instructor.

PHIL 6239. Virtue Ethics. 3 Credits.
Historical and/or contemporary approaches to virtue ethics and key readings in the virtue ethical tradition. Topics include empirical work on virtue in philosophy and psychology, the divide between "radical" virtue ethics and contemporary virtue ethics, "hybrid" approaches to virtue ethics (e.g., consequentialist virtue ethics), and meta-ethical issues relevant to the study of virtue. Restricted to For graduate students only.

PHIL 6242. Philosophy, Law, and Social Policy. 3 Credits.
Consideration of the relationship between legal interpretation and policy goals. Theories concerning the role of the judiciary in a constitutional democracy and methods of constitutional and statutory interpretation. Representative policy topics include capital punishment, pornography, affirmative action, welfare, property rights, racial gerrymandering, gun control.

PHIL 6245. Biomedical Ethics. 3 Credits.
An in-depth introduction to the field of biomedical ethics. Following a brief review of ethical theory, the course proceeds to several central topics in biomedical ethics before ending with students' presentations of their original research. The emphasis is on normative ethical reasoning, with considerable attention to the empirical assumptions underlying particular ethical judgments and to policy dimensions of several of the central topics.

PHIL 6250. Topics in Health Policy. 3 Credits.
Topics in health policy from the perspective of philosophical ethics, including human and animal research, the enhancement of human traits, justice and health care allocation.

PHIL 6251. Advanced Introduction to Philosophy of Mind. 3 Credits.
Critical examination of classical philosophical arguments pertaining to the mind/body problem, the problem of consciousness, the problem of intentionality, the problem of freedom of the will, and the problem of personal identity. Focus on careful analysis of classical philosophical writings on these topics. Restricted to For graduate students only.

PHIL 6252. Advanced Introduction to Philosophy of Cognitive Science. 3 Credits.
The emergence of cognitive phenomena in phylogeny and ontogeny, social cognition, nativist vs. empiricist approaches to cognition, models of reasoning and decision-making, representationalist vs. embodied/embedded/enactive approaches to cognition, and theories of perception, memory, and concepts. Restricted to For graduate students only.

PHIL 6253. Cognitive Science and Public Policy. 3 Credits.
The cognitive sciences are providing new insights into the nature of human decision making at an accelerating pace. Cognitive psychology, cognitive neuroscience, neuroeconomics, evolutionary psychology, and developmental and comparative psychology are rewriting theories about human nature with significant implications for public policy. The course examines recent work in the cognitive sciences with the intent of drawing out its public policy implications.

PHIL 6254. Mental Representation. 3 Credits.
Thoughts are like pictures of the world in that they represent the world. But thoughts sometimes represent the world in ways that don't correspond to the way it actually is. How do thoughts come to have representational content? Why do we have thoughts? Such questions are considered through the careful reading of recent work on the subject. Restricted to For graduate students only.

PHIL 6257. The Nature of Animal Minds. 3 Credits.
Do nonhuman animals have minds? If so, what are they like? How are they similar and how are they different from our minds? What might count as evidence that an animal has a mind? Consideration of some of the questions philosophers and scientists have been asking and issues these questions raise when we think about the possibility that nonhuman animals are thinking creatures. Restricted to For graduate students only.

PHIL 6262. Normative Issues in Foreign Policy. 3 Credits.
Selected issues on foreign policy from a normative perspective; emphasis on human rights, economic globalization, global poverty, sustainable development, and the ethics of military intervention.

PHIL 6281. Environmental Philosophy and Policy. 3 Credits.
Examination of philosophical frameworks for assessing policy approaches to environmental problems. Representative topics include duties to future generations, environmental justice, legal rights for natural objects, critiques of cost–benefit analysis, sustainability, risk measurement, the intrinsic value of nature.

PHIL 6290. Special Topics in Public Policy. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

PHIL 6293. Contemporary Continental Philosophy. 3 Credits.
Focus on several powerful philosophical concepts introduced by late 20th/early 21st-century continental scholars. Through a close reading of selected works, the influence these scholars have had upon one another is traced. Critical examination of the theoretical resources the works provide in articulating some of the most urgent ethical, social, and political demands of contemporary human existence. Restricted to For graduate students only.

PHIL 6294. Special Topics in Continental Philosophy. 3 Credits.
Topic announced in the Schedule of Classes. Restricted to For graduate students only.

PHIL 6998. Thesis Research. 3 Credits.

PHIL 6999. Thesis Research. 3 Credits.

PHYSICAL THERAPY (PT)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PT 8201. Functional Anatomy. 5 Credits.
Human gross anatomy with cadaveric dissection. Clinical correlations. Normal structure and functional relationships. Common pathologies and individual and age-related differences examined.

PT 8202. Applied Physiology. 4 Credits.
Normal function of major organ systems of the human body and related rehabilitation concepts. Exercise testing, prescription, progression and expected outcomes examined. Effects of exercise in healthy individuals across the lifespan and in special populations.

PT 8203. Neuroscience in Rehabilitation I. 3 Credits.
Normal structure and function of the nervous system across the life span. Injury to neural structures and response to injury examined. Application of principles of neuroplasticity to clinical practice. Clinical correlations.

PT 8204. Movement Science I. 2 Credits.
Normal human movement, structure and function examined using biomechanics and kinesiology principles. Biomechanical function of musculoskeletal tissues explored with special emphasis on articular systems.

PT 8205. Movement Science II. 3 Credits.
Kinematics and kinetics of movement. Normal and pathological mechanics of functional movement, including deficits in musculoskeletal system, posture, and gait. Examination of complex activities such as locomotion.

PT 8206. Neuroscience in Rehabilitation II. 2 Credits.
Neurologic mechanisms of normal and impaired posture, mobility and extremity function examined. Application of motor learning and skill acquisition principles applied. Neurological examination using case studies and clinical correlates.

PT 8207. Clinical Medicine and Pharmacology. 4 Credits.
Systems approach to diseases requiring physical therapy. Pharmacological principles and impacts of certain pharmacological agents on physical therapy intervention. Drug interactions, systems review, and "red flags" requiring physician referral addressed.

PT 8208. Medical Imaging. 1 Credit.
Principles of medical imaging related to physical therapy management, including diagnosis and intervention planning.

PT 8271. Research in Practice. 3 Credits.
Critical appraisal of the literature related to the validity of research methods and interpretation of statistical results. Application of evidence to clinical practice as it relates to physical therapy examination, diagnosis, intervention, and prognosis.

PT 8272. Research Seminar. 3 Credits.
Evidence based analysis of physical therapy literature with application of principles of research design, data analysis and synthesis to evaluate outcomes within the context of patient management. Ethical considerations are addressed.

PT 8311. Foundations of Examination. 4 Credits.
Examination within the patient/client management model of physical therapy. Development of proficiency in basic systems review, selection and administration of tests and measurements, and diagnostic classifications.

PT 8312. Foundations of Interventions. 4 Credits.
Intervention within the patient/client management model of physical therapy. Development of proficiency in basic patient care skills and selection and administration of therapeutic exercise.

PT 8313. Therapeutic Modalities. 2 Credits.
Administration of physical, thermal, mechanical, and electrical interventions consistent with patient diagnosis and prognosis. Critical appraisal of the literature to apply best evidence to practice and clinical decision making.

PT 8314. Management of Cardiopulmonary Dysfunction. 4 Credits.
Physiology and pathophysiology of the cardiopulmonary system as basis for management of the patient/client with cardiopulmonary dysfunction. Examination, evaluation, diagnosis, prognosis and implementation of evidence-based interventions in all care settings. Focus on health promotion and wellness.

PT 8315. Management of Musculoskeletal Dysfunction I. 4 Credits.
Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for patients/clients with musculoskeletal dysfunction related to the extremities.

PT 8316. Management of Musculoskeletal Dysfunction II. 4 Credits.
Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for patients/clients with musculoskeletal dysfunction related to spinal dysfunction. Ergonomic principles used to address industrial health related issues.

PT 8317. Management of Integumentary Dysfunction. 1 Credit.
Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for patients/clients with integumentary impairments and functional limitations as well as peripheral vascular, metabolic, and immune system impairments.

PT 8318. Management of Neuromotor Dysfunction. 4 Credits.
Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for adults with neuromotor impairments and functional limitations.

PT 8320. Management of the Pediatric Client. 4 Credits.
Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions for the pediatric client. Selection and administration of outcome measures for children with neuromuscular and musculoskeletal dysfunction. Psychosocial, ethical and legal factors specific to the pediatric client.

PT 8321. Women's Health. 1 Credit.
Physical therapy for issues related to women's health within the patient/client management model.

PT 8322. Management of the Aging Adult. 2 Credits.
Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for the geriatric population. Typical age-related changes in function. Outcome measures for neuromotor, musculoskeletal, and cardiopulmonary dysfunction in the aging population. Comorbidities, psychosocial, ethical, and legal factors.

PT 8323. Prosthetics & Orthotics. 2 Credits.
Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for persons with functional limitations in need of assistive technology that enhances functional capacity of persons with functional limitations. Prescription, fabrication, and fitting of prosthetic and orthotic devices.

PT 8351. Professional Issues in Physical Therapy Health Care Management I. 4 Credits.
Professional practice expectations including legal and regulatory boundaries. Interdisciplinary healthcare team examined and significance of effective communication. Ethical issues related to physical therapy within the context of professional core values. Patient management models introduced along with evidence based practice.

PT 8352. Teaching in Physical Therapy Practice. 2 Credits.
Principles and strategies for effective teaching in academic and clinical environments. Patient/client, peer, and professional presentations.

PT 8355. Professional Issues in Physical Therapy Health Care Management II. 3 Credits.
Administration and practice management, including marketing, fiscal management, billing, reimbursement, and administrative procedures related to physical therapy practice. Introduction to health care policy as related to the profession of physical therapy. Policy development, macro and micro health policy and patient advocacy.

PT 8356. Health Promotion and Wellness. 1 Credit.
The role of the physical therapist in health promotion and disease prevention across the life span. Focus on screening, client education, and traditional and nontraditional strategies for the promotion of healthy lifestyles.

PT 8357. Capstone Seminar. 1 Credit.
Exploration of professional practice issues, including lifelong learning. Professional electronic portfolios presented. Assessment of educational experiences focusing on quality improvement and professional development.

PT 8361. Clinical Conference I. 1 Credit.
Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional practice expectations and practice management issues.

PT 8362. Clinical Conference II. 1 Credit.
Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional practice expectations and practice management issues.

PT 8363. Clinical Conference III. 1 Credit.
Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional practice expectations and practice management issues.

PT 8364. Clinical Conference IV. 1 Credit.
Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional practice expectations and practice management issues.

PT 8365. Clinical Conference V. 1 Credit.
Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional practice expectations and practice management issues.

PT 8366. Clinical Conference VI. 1 Credit.
Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional practice expectations and practice management issues.

PT 8383. Prosthetics & Orthotics. 2 Credits.
Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for persons with functional limitations in need of assistive technology that enhances functional capacity of persons with functional limitations. Prescription, fabrication, and fitting of prosthetic and orthotic devices.

PT 8402. Exercise Physiology. 2 Credits.
Lecture/laboratory. Effects of exercise in healthy individuals and special populations, including aged and immobilized patients and those with neuromusculoskeletal de?cits.

PT 8403. Functional Anatomy. 5 Credits.
Lecture/laboratory. Human gross anatomy with cadaveric dissection. Clinical correlations. Normal structures and functional relationships. Common abnormalities and individual and age-related differences.

PT 8404. Kinesiology. 4 Credits.
Kinematics and kinetics of movement. Normal and pathological mechanics of functional movement, including de?cits in musculoskeletal system, posture, and gait. Interventions and functional outcomes.

PT 8407. Medical Imaging. 1 Credit.
Principles of medical imaging related to physical therapy management, including diagnosis and intervention planning.

PT 8416. Mgt/Musculoskeletal Dysfunc II. 3 Credits.
Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for patients/clients with musculoskeletal dysfunction related to spinal dysfunction.

PT 8417. Mgt/ Integumentary Dysfunction. 1 Credit.
Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for patients/clients with integumentary impairments and functional limitations as well as peripheral vascul.

PT 8420. Pediatrics. 4 Credits.
Lecture/laboratory. Development issues related to pediatric impairments and functional limitations. Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for chi.

PT 8421. Women's Health. 1 Credit.
Lecture/laboratory. Physical therapy for issues related to women's health within the patient/client management model.

PT 8422. Geriatrics. 2 Credits.
Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for the geriatric population. Typical age-related changes in function. Outcome measures for neuromotor, mus.

PT 8423. Prosthetics and Orthotics. 2 Credits.
Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for persons with functional limitations in need of assistive technology that enhances functional capacity (.

PT 8454. Health Promotion and Wellness. 1 Credit.
The role of the physical therapist in health promotion and disease prevention across the life span. Focus on screening, client education, and traditional and nontraditional strategies for the promotion of healthy lifestyles.

PT 8455. Admin&Mgt/PhysTherapyPractice. 2 Credits.
Administration and practice management, including marketing, ?scal management, billing, reimbursement, and administrative procedures related to physical therapy practice.

PT 8456. Health Policy and Advocacy. 1 Credit.
Introduction to health care policy as related to the profession of physical therapy. Policy development, macro and micro health policy.

PT 8457. Capstone Seminar. 1 Credit.
Exploration of professional practice issues, including lifelong learning. Professional electronic portfolios presented. Assessment of educational experiences focusing on quality improvement and professional development.

PT 8462. Clinical Conference II. 1 Credit.
Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional pract.

PT 8463. Clinical Conference III. 1 Credit.
Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional pract.

PT 8464. Clinical Conference IV. 1 Credit.
Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional pract.

PT 8465. Clinical Conference V. 1 Credit.
Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional pract.

PT 8466. Clinical Conference VI. 1 Credit.
Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional pract.

PT 8481. Interprofessional Community Practicum. 1 Credit.
Students explore the concepts of community health, health prevention/wellness, cultural competence, continuous quality improvement, and team building through active participation in a university community health service learning project.

PT 8483. Integrated Clinical Experience I. 1 Credit.
Part-time physical therapy clinical experiences in a range of clinical settings. Supervised integration and implementation of components of the patient/client management model and professional practice expectations.

PT 8484. Integrated Clinical Experience II. 1 Credit.
Part-time physical therapy clinical experiences in a range of clinical settings. Supervised integration and implementation of components of the patient/client management model and professional practice expectations in preparation for full-time clinical in.

PT 8487. Clinical Internship I. 4 Credits.
Full-time physical therapy clinical experiences in a range of clinical settings. Integration and implementation of all aspects of patient/client management, professional practice expectations, and professional management expectations. Progress from close.

PT 8488. Clinical Internship II. 6 Credits.
Full-time physical therapy clinical experiences in a range of clinical settings. Integration and implementation of all aspects of patient/client management, professional practice expectations, and professional management expectations. Progress from close.

PT 8489. Clinical Internship III. 7 Credits.
Full-time physical therapy clinical experiences in a range of clinical settings. Integration and implementation of all aspects of patient/client management, professional practice expectations, and professional management expectations. Progress from close.

PT 8490. Externship Elective. 0-8 Credits.
Interested students can apply for consideration of an externship in advanced clinical practice, teaching, research, or governmental affairs. Credit varies based on the length of stay and demands of the externship.

PT 8491. Clinical Internship I. 5 Credits.
Full-time physical therapy clinical experience in a range of clinical settings. Integration and implementation of all aspects of patient/client management, professional practice expectations, and professional management expectations. Progress from advanced beginner to entry-level performance in the management of patients with non-complex and complex problems across the life span.

PT 8492. Clinical Internship II. 8 Credits.
Full-time physical therapy clinical experience in a range of clinical settings. Integration and implementation of all aspects of patient/client management, professional practice expectations, and professional management expectations. Progress from advanced beginner to entry-level performance in the management of patients with non-complex and complex problems across the life span.

PT 8493. Clinical Internship III. 9 Credits.
Full-time physical therapy clinical experience in a range of clinical settings. Integration and implementation of all aspects of patient/client management, professional practice expectations, and professional management expectations. Progress from advanced beginner to entry-level performance in the management of patients with non-complex and complex problems across the life span.

PHYSICIAN ASSISTANT (PA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PA 2116. Medical Terminology. 0 Credits.

PA 6101. Clinical Assessment I. 4 Credits.
Foundations of comprehensive history taking, physical exam assessments, and the proper documentation of these components in the medical record. Integrates concepts of effective communication and basic knowledge of human anatomy and physiology.

PA 6102. Clinical Assessment II. 1 Credit.
Builds upon Clinical Assessment I. Integration of effective communication and knowledge of human anatomy, physiology, clinical medicine, and pharmacology. Introduction to techniques to assess common abnormal physical exam findings. Development critical thinking skills in the areas of differential diagnoses and development of treatment plans.

PA 6103. Clinical Assessment III. 1 Credit.
Further development of clinical decision making skills and refinement of techniques involved in history taking and physical examinations. Integration of effective communication and knowledge of human anatomy, physiology, clinical medicine, and pharmacology.

PA 6104. Integration into Clinical Concepts I. 2 Credits.
Application of knowledge gained in concurrent didactic courses to clinical problems and to clinical decision making. The course is conducted by faculty facilitators in a small-group discussion format.

PA 6105. Integration into Clinical Concepts II. 2 Credits.
Application of knowledge gained in concurrent didactic courses to clinical problems and to clinical decision making. Builds upon skills learned in Clinical Concepts I. The course is conducted by faculty facilitators in a small-group discussion format.

PA 6106. Integration into Clinical Concepts III. 2 Credits.
Application of knowledge gained in concurrent didactic courses to clinical problems and to clinical decision making. Builds upon skills learned in Clinical Concepts I and II. The course is conducted by faculty facilitators in a small-group discussion format.

PA 6109. Foundations of Medicine. 5 Credits.
The Foundations of Medicine course is designed to provide the first year physician assistant student with a baseline level of knowledge of the basic sciences (biochemistry, pathology, medical microbiology, genetics, and laboratory medicine) to the study of health and disease upon which studies in medicine will further build.

PA 6110. Evidence Based Practice for PA Students. 3 Credits.
Introduction to research including methodology, statistical analyses, formulating research questions, and evaluating research designs with an emphasis on studies assessing therapeutic interventions, diagnostic testing, and prognostic indicators of health and disease as part of evidence-based clinical practice.

PA 6111. Evidence Based Practice for PA/MPH Students. 1 Credit.
Advanced application of research-, statistical-, and evidence-based medicine concepts presented in public health courses. Emphasis on studies assessing therapeutic interventions, diagnostic testing, and prognostic indicators of health and disease.

PA 6112. Clinical Medicine I. 7 Credits.
A systematic review and discussion of the epidemiology, pathophysiology, clinical manifestations, diagnosis, and management of the most common diseases in humans.

PA 6113. Clinical Medicine II. 7 Credits.
This course is a systematic review and discussion of the epidemiology, pathophysiology, clinical manifestations, diagnosis and management of the most common diseases in humans. It builds upon the foundation of basic science knowledge and clinical assessment skills.

PA 6116. Clinical Skills I. 2 Credits.
Development of diagnostic and therapeutic skills essential to clinical practice. Fundamentals of electrocardiography and interpretation of basic EKG patterns. Effects of drugs and electrolyte imbalance on EKG patterns. Interpretation of radiologic films.

PA 6117. Clinical Skills II. 1 Credit.
Development of diagnostic and therapeutic skills essential to clinical practice. Fundamentals of electrocardiography and interpretation of basic EKG patterns. Effects of drugs and electrolyte imbalance on EKG patterns. Interpretation of radiologic films.

PA 6118. Health, Justice, and Society I. 2 Credits.
Presentation and discussion of issues including social determinants of health, cultural competency, ethical principles, epidemiology, and patient safety. A related community service component is included in PA 6119.

PA 6119. Health, Justice, and Society II. 1 Credit.
Continuation of PA 6118. Students interact with community clinicians and/or members of communities with vulnerable populations, developing communication and team practice skills through participation in team projects. Prerequisites: PA 6118 for MSHS PA students; PUBH 6007 for joint degree PA/MPH students.

PA 6120. Human Behavior. 2 Credits.
Basic knowledge of psychiatry needed to enter clinical practice. Mental status examination as a tool of clinical assessment. Approaches to understanding and working with patients with mental health conditions.

PA 6121. Clinical Specialties. 6 Credits.
Foundations of patient management in surgical, pediatric, and emergency medicine.

PA 6122. Role of PA in American Health Care. 2 Credits.
The history, development, and current status of the physician assistant profession within the context of the U.S. health system, such as practice roles, legal issues, and economic aspects of the profession.

PA 6210. Health, Justice & Society I. 2 Credits.
Presentation and discussion of issues including social determinants of health, cultural competency, ethical principles, epidemiology, and patient safety. Community service component in 6211.

PA 6211. Health, Justice & Society II. 1 Credit.
Presentation and discussion of issues including social determinants of health, cultural competency, ethical principles, epidemiology, and patient safety. Community service component in 6211.

PA 6215. Community Service Curriculum. 3 Credits.

PA 6219. Role of PA in Amer Health Care. 2 Credits.
The history, development, and current status of the physician assistant profession within the context of the U.S. health system, such as practice roles, legal issues, and economic aspects of the profession.

PA 6225. Clinical Medicine. 3 Credits.
Interdisciplinary course in the theory of medicine using an organ system approach. Clinical ?ndings and pathophysiology for a wide spectrum of diseases. Diagnosis and management of diseases in a variety of medical and surgical specialties.

PA 6226. Clinical Medicine II. 10 Credits.
Interdisciplinary course in the theory of medicine using an organ system approach. Clinical ?ndings and pathophysiology for a wide spectrum of diseases. Diagnosis and management of diseases in a variety of medical and surgical specialties.

PA 6229. Human Behavior. 2 Credits.
Basic knowledge of psychiatry needed to enter clinical practice. Mental status examination as a tool of clinical assessment. Approaches to understanding and working with patients with mental health conditions.

PA 6230. Clinical Skills I. 2 Credits.
Fundamentals of electrocardiography and interpretation of basic EKG patterns. Effects of drugs and electrolyte imbalance on EKG patterns. Interpretation of radiologic films. Development of clinical skills including suturing, gowning and gloving, CPR and A.

PA 6231. Clinical Skills II. 1 Credit.
Fundamentals of electrocardiography and interpretation of basic EKG patterns. Effects of drugs and electrolyte imbalance on EKG patterns. Interpretation of radiologic films. Development of clinical skills including suturing, gowning and gloving, CPR and A.

PA 6234. Clinical Assessment. 4 Credits.
Development of patient interviewing, documentation and physical examination skills.

PA 6237. Med Microbiology & Infect Dise. 4 Credits.
Knowledge and understanding of microorganisms including bacteria, viruses, fungi and parasites causing infectious diseases in human beings and impact on the immune system.

PA 6240. Integration Clin Concepts I. 2 Credits.
Integration and clinical application of basic science courses, clinical assessment and clinical medicine using clinical cases with faculty facilitation. Development of clinical decision making skills including selection of appropriate pharmacological and.

PA 6241. Integration Clin Concepts II. 2 Credits.
Integration and clinical application of basic science courses, clinical assessment and clinical medicine using clinical cases with faculty facilitation. Development of clinical decision making skills including selection of appropriate pharmacological and.

PA 6242. Integration Clin Concepts III. 2 Credits.
Integration and clinical application of basic science courses, clinical assessment and clinical medicine using clinical cases with faculty facilitation. Development of clinical decision making skills including selection of appropriate pharmacological and.

PA 6245. Introduction to Primary Care. 2 Credits.

PA 6246. Clinical Applications. 3 Credits.

PA 6248. Intro to Electrocardiography. 1 Credit.

PA 6259. Introduction to Clinical Education. 2 Credits.
Practical learning that simulates the diversity of health care disciplines and services encountered during clinical training. Through lectures, role playing, and small group activities focused on scope of practice, roles and responsibilities, ethical decision making, and clinical problem solving, physician assistant students gain knowledge and skills that facilitate the transition from the academic to clinical environment and promote high quality clinical education experiences.

PA 6261. Inpatient Med Clinical Practic. 5 Credits.
This is a six-week required clinical rotation for second year PA students which focuses on the role of the physician assistant in a hospital based inpatient setting. The student will actively engage in applying the medical knowledge and clinical skills gained during the didactic year while continuing to develop clinical reasoning through an evidence-based approach to the evaluation and management of problems commonly encountered in inpatient settings. Students will also work to incorporate health promotion and disease prevention as well as advocacy for healthy lifestyles, preventive medicine practices, and patient support.

PA 6262. Primary Care. 5 Credits.
The Ambulatory Care Clinical Practicum is a six-week, required clinical rotation for second-year PA students, which focuses on the role of the physician assistant in an ambulatory care setting (clinic or private practice). The student will actively engage in applying the medical knowledge and clinical skills gained during the didactic year while continuing to develop clinical reasoning through an evidence-based approach to the evaluation and management of primary care problems encountered in ambulatory care settings. Students will also work to incorporate health promotion and disease prevention into patient care and advocate for healthy lifestyles.

PA 6263. Surg Inpatient Clinical Practi. 5 Credits.
This is a six-week, required clinical rotation for second year PA students, which focuses on inpatient care of the surgical patient and the role of the physician assistant on the surgical patient management team.

PA 6264. Women's Health Clin Pract. 5 Credits.
This is a six-week required clinical rotation for second year PA students, which focuses on the role of the physician assistant in women's health. The student will actively engage in applying the medical knowledge and clinical skills gained during the didactic year, along with continuing to develop clinical reasoning through an evidence-based approach to the evaluation and management of health care issues commonly encountered in women's health. Students will also work to incorporate health promotion and disease prevention as well as advocacy for healthy lifestyles and preventive medicine practices and patient support.

PA 6265. Pediatrics Clinical Practicum. 5 Credits.
This is a six-week required clinical rotation for second year PA students which focuses on the role of the physician assistant in a pediatric care setting. The student will actively engage in applying the medical knowledge and clinical skills gained during the didactic year, along with continuing to develop clinical reasoning through an evidence-based approach to the evaluation and management of common medical problems and issues encountered in the pediatric medicine. Students will also work to incorporate health promotion and disease prevention as well as advocacy for healthy lifestyles and preventive medicine practices and patient support.

PA 6266. Emergency Medicine Clinical Pr. 5 Credits.
This is a six-week required clinical practicum for second year PA students, which focuses on the role of the physician assistant in the emergency department setting. The student will actively engage in applying the medical knowledge and clinical skills gained during the didactic year while continuing to develop clinical reasoning through an evidence-based approach to the evaluation and management of common problems encountered in emergency medicine.

PA 6267. Behav Med Clin Pract. 5 Credits.
This is a six-week required clinical rotation for second year PA students, which focuses on the role of the physician assistant in psychiatric and/or behavioral medicine. The student will actively engage in applying the medical knowledge and clinical skills gained and continue to develop clinical reasoning through an evidence-based approach to the evaluation and management of common problems in patients with psychiatric, emotional and behavioral disturbances. Students will also work to adapt the standard medical history, physical examination, diagnostic and treatment plans to the psychiatric patient.

PA 6268. Elective Clinical Practicum I. 5 Credits.
This is a six-week required clinical rotation in a medical or surgical specialty of the student's choosing and offers the student an opportunity to explore a specialty practice in greater detail.

PA 6269. Final Clinical Practicum. 4 Credits.
This clinical practicum is the final four-week required clinical rotation for second-year PA students that represents a culmination of all previously completed rotations and focuses on the student working most closely at the level of a graduate clinician. The student will actively engage in applying the medical knowledge and clinical skills gained during both the didactic and clinical year in continuing to develop clinical reasoning through an evidence-based approach to the evaluation and management of medical/surgical diseases, illnesses, conditions and/or problems encountered in the practice of medicine.

PA 6271. Clin Apps Evidence Base Prac. 2 Credits.
Advanced application of research, statistical and evidence-based medicine with emphasis on evaluation of therapeutic, diagnostic and prognostic studies and their applicability to the clinical setting.

PA 6275. Elective Clinical Practicum II. 2 Credits.

PA 6280. Surgical Specialty Practice. 2 Credits.
Advanced techniques and management of selected conditions encountered in general surgery and surgical subspecialty settings.

PA 6281. Surgical Skills Lab. 2 Credits.
Surgical techniques covered include advanced knot tying, placement of central lines and chest tubes, thoracocentesis, and arterial cannulation Emphasis on laparoscopic surgery techniques.

PA 6299. Independent Study. 1-12 Credits.
Faculty approved didactic or clinical course work primarily used for remediation purposes.

PA 6300. Introduction to Professional Practice. 2 Credits.
Examination of contemporary issues in physician assistant practice as the student transitions to a professional role. By emphasizing continuous professional development; career trajectories; professional practice issues such as ethics, regulatory issues, credentialing, privileging, and malpractice; and maintenance of certification, the students is prepared to manage their emerging professional role and responsibilities.

PA 6529. Intro to Clinical Education. 2 Credits.

PHYSICS (PHYS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PHYS 0801W. Dean's Seminar. 3 Credits.

PHYS 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

PHYS 1003. Physics for Future Presidents. 0-4 Credits.
A serious but accessible presentation of topics important for leaders to know—energy, global climate, high-tech devices, space travel, nuclear weapons, etc. Students possessing any level of scientific background are equipped with the concepts and analytical tools needed to make informed decisions and to argue their view persuasively. Laboratory fee.

PHYS 1003W. Physics for Future Presidents. 0-4 Credits.

PHYS 1005. How Things Work. 4 Credits.
Primarily for non-science majors. Physical principles are introduced through a study of everyday objects to see what makes them tick. This unconventional approach is primarily conceptual in nature and intended for students seeking a connection between science and the world in which they live. Prerequisite: high school algebra and trigonometry. Laboratory fee.

PHYS 1007. Music and Physics. 4 Credits.
Primarily for non-science majors. A comparative study of music and physics, showing parallels in the history of the two fields and emphasizing those topics in physics related to the theory of music and the production of sound by musical instruments, particularly classical mechanics and wave motion. Prerequisite: high school algebra and geometry. Laboratory fee.

PHYS 1007W. Music and Physics. 4 Credits.
Primarily for non-science majors. A comparative study of music and physics, showing parallels in the history of the two fields and emphasizing those topics in physics related to the theory of music and the production of sound by musical instruments, particularly classical mechanics and wave motion. Prerequisite: high school algebra and geometry. Laboratory fee.

PHYS 1008. Origin and Evolution of Ideas in Physics. 4 Credits.
Primarily for non-science majors. The evolution of ideas and their historical continuity in the search for basic physical theories. By presenting the world-views of great physicists of the past, the division of physics into many sub-disciplines is avoided and a humanistic approach is achieved. Prerequisite: high school algebra. Laboratory fee.

PHYS 1008W. Origin and Evolution of Ideas in Physics. 4 Credits.
Primarily for non-science majors. The evolution of ideas and their historical continuity in the search for basic physical theories. By presenting the world-views of great physicists of the past, the division of physics into many sub-disciplines is avoided and a humanistic approach is achieved. Prerequisite: high school algebra. Laboratory fee.

PHYS 1011. General Physics I. 4 Credits.
Classical physics. Mechanics, including Newton's laws of motion, force, gravitation, equilibrium, work and energy, momentum, and rotational motion; periodic motion, waves, and sound; heat and thermodynamics. Prerequisite: high school trigonometry. Laboratory fee.

PHYS 1012. General Physics II. 4 Credits.
Classical and modern physics. Electrostatics, electromagnetism, direct and alternating current circuits, and electromagnetic radiation; geometrical and physical optics; special relativity; quantum theory; atomic physics; nuclear physics; particle physics; astrophysics and cosmology. Prerequisite: PHYS 1011. Laboratory fee.

PHYS 1021. University Physics I. 4 Credits.
Classical mechanics and thermodynamics using calculus. Newtonian mechanics: force, momentum, work and energy, mechanical equilibrium, linear, and rotational motion. Gravitation and fields. Atoms, physical properties of matter. Energy transfer and waves, sound. Laboratory fee. Credit cannot be earned for both PHYS 1021 and PHYS 1025. Prerequisite: MATH 1231.

PHYS 1022. University Physics II. 4 Credits.
Periodic motion, waves, and classical electromagnetism using calculus. Waves and sound. Electrostatics, Gauss's law, capacitance. Electric resistance, electric current. Magnetism. Electrodynamics and electromagnetic induction. Maxwell's theory and electromagnetic radiation. Geometric and physical optics. Prerequisites: PHYS 1021 or PHYS 1025.

PHYS 1022W. University Physics 2. 4 Credits.
Periodic motion, waves, and classical electromagnetism using calculus. Waves and sound. Electrostatics, Gauss's law, capacitance. Electric resistance, electric current. Magnetism. Electrodynamics and electromagnetic induction. Maxwell's theory and electromagnetic radiation. Geometric and physical optics. Prerequisite: PHYS 1021. Laboratory fee.

PHYS 1023W. Modern Physics. 3 Credits.
Modern physics using calculus. Relativity. Wave–particle duality, quantum mechanics. The hydrogen atom, Pauli principle. Quantum statistics and radiation. Quantum theory of the condensed state, superconductivity. Nuclear physics. Applications to astrophysics and nucleosynthesis. General relativity. The big bang theory. Prerequisite: PHYS 1022, MATH 2233.

PHYS 1025. University Physics I with Biological Applications. 4 Credits.
Classical mechanics and thermodynamics using calculus; Newtonian mechanics (force, momentum, work and energy, mechanical equilibrium, linear and rotational motion, fluids); energy transfer, statistical models, and entropy. Credit cannot be earned for both PHYS 1025 and PHYS 1021. Laboratory fee. Prerequisite: MATH 1021. Corequisite: Math 1232. Same as PHYS 1021.

PHYS 1026. University Physics II with Biological Applications. 4 Credits.
Periodic motion waves, and classical electromagnetism using calculus. Waves and sound. Electrostatics, Gauss's law, capacitance. Electric resistance, electric current. Magnetism. Electrostatics in ionic solutions and cells, circuit models for nerves and ion channels. Geometric and physical optics. Physics principles and problem solving will be taught with examples and problems from the life sciences. Prerequisite: PHYS 1021 or 1025, MATH 1232. Laboratory fee. Credit cannot be earned for both PHYS 1022 and 1026.

PHYS 2023. Modern Physics. 3 Credits.
Modern physics using calculus. Relativity. Wave–particle duality, quantum mechanics. The hydrogen atom, Pauli principle. Quantum statistics and radiation. Quantum theory of the condensed state, superconductivity. Nuclear physics. Applications to astrophysics and nucleosynthesis. General relativity. The big bang theory. Prerequisites: PHYS 1022 or PHYS 1022W or PHYS 1026; and MATH 2233.

PHYS 2151. Intermediate Laboratory I: Techniques and Methods. 3 Credits.
Experiments in electromagnetism, classical and quantum mechanics, atomic and nuclear physics with emphasis on experimental methods. Corequisite: PHYS 1023. Laboratory fee.

PHYS 2151W. Intermediate Laboratory I: Techniques and Methods. 3 Credits.
Experiments in electromagnetism, classical and quantum mechanics, atomic and nuclear physics with emphasis on experimental methods. Corequisite: PHYS 1023. Laboratory fee.

PHYS 2152. Intermediate Laboratory II: Instrumentation. 3 Credits.
Elementary electric and electronic analog and digital circuits. Topics include passive and active components in DC and AC circuits and operational amplifiers, with emphasis on measurement techniques. Laboratory fee.

PHYS 2163. Physical and Quantum Optics. 3 Credits.
Wave motion, electromagnetic aspects of light, dispersion of light in media, geometrical optics, polarization and optical properties of crystals, interference, diffraction, lasers, holography. Mathematical tools, including Fourier methods, developed as needed. The quantum description of light complements the classical description. Prerequisite: PHYS 1023 or PHYS 2023; and MATH 2233.

PHYS 2182. Computational Electricity/Magn. 3 Credits.

PHYS 2183. Computational Modern Physics. 3 Credits.

PHYS 3127. Biophysics: Macroscopic Physics in the Life Sciences. 3 Credits.
Physical principles applied to biological systems and medicine; blood flow, ultrasonics, spectroscopy, radiation biology, bioenergetics, ordering theory, and neural networks. Prerequisites: PHYS 1012 or PHYS 1022 or PHYS 1022W; MATH 2233. (Same as PHYS 2127).

PHYS 3128. Biophysics: Microscopic Physics in the Life Sciences. 3 Credits.
Physical principles applied to biological systems on the nanometer scale; intermolecular forces, statistical principles applied to biological microstates, determining protein and nucleic acid structures, operation of protein motors and transport systems, and nanotechnology and instrumentation. Prerequisites: PHYS 1012 or PHYS 1022 or PHYS 1022W; MATH 2233. (Same as PHYS 2128).

PHYS 3161. Mechanics. 3 Credits.
Mechanics of mass points and rigid bodies. Newton's laws, conservation laws, Euler's equations, inertia tensor, small vibrations, and elements of Lagrange's and Hamilton's equations. Prerequisites: PHYS 1023 or PHYS 1023W and MATH 2184 and MATH 2233. Recommended background: MATH 3342 or equivalent.

PHYS 3163. Physical and Quantum Optics. 3 Credits.
Wave motion, electromagnetic aspects of light, dispersion of light in media, geometrical optics, polarization and optical properties of crystals, interference, diffraction, lasers, holography. Mathematical tools, including Fourier methods, developed as needed. The quantum description of light complements the classical description. Prerequisites: MATH 2233, MATH 2184 and MATH 3342; and PHYS 1023 or PHYS 1023W; for MATH 3342 an equivalent course may be substituted at the discretion of the instructor.

PHYS 3164. Thermal and Statistical Physics. 3 Credits.
Principles and application of thermodynamics to reversible and irreversible processes, with derivation from statistical postulates applied to the microscopic behavior of large systems at or near equilibrium. Topics include equilibrium thermodynamics, statistical mechanics, and kinetic theory of gases. Prerequisites: PHYS 1023 or PHYS 1023W; and MATH 2184 and MATH 3342; or permission of the instructor.

PHYS 3165. Electromagnetic Theory I. 3 Credits.
Electrostatics and magnetostatics, electric and magnetic fields in matter, scalar and vector potentials, electromagnetic induction. Maxwell's equations. The methods of vector and tensor calculus are developed as needed, as are the method of images, Fourier series, and some computational methods. Prerequisites: MATH 2184, MATH 2233, MATH 3342 and PHYS 2023; or permission of the instructor. Recommended background: MATH 3343 or equivalent.

PHYS 3166. Electromagnetic Theory II. 3 Credits.
Conservation laws, electromagnetic waves, radiation, relativistic formulation of electrodynamics and potential fields. Prerequisites: PHYS 2023, PHYS 3165, MATH 2184, MATH 3342 and MATH 3343; or by permission of the instructor.

PHYS 3167. Principles of Quantum Physics. 3 Credits.
The conceptual framework and mathematical formalism of quantum mechanics. Wave–particle duality, wave functions, and eigenvalues. Schrödinger Equation and one-dimensional potential problems. Angular momentum, central potentials, and the hydrogen atom. Identical particles and spin. Scattering theory. Perturbation theory. Prerequisites: MATH 2184, MATH 2233, MATH 3342 and PHYS 2023; or permission of the instructor. Recommended background: MATH 3343 or equivalent.

PHYS 3181. Computational Physics. 3 Credits.
Numerical methods with physics, math, and engineering applications; numerical integration, ODE, PDE, Monte-Carlo methods, linear algebra, and other relevant numerical techniques. In addition to the course prerequisites students must be familiar with a programming language. Laboratory fee. Prerequisites: MATH 2233 and PHYS 3161.

PHYS 4170. Solid-State Physics. 3 Credits.
Structure of solids, lattices and lattice defects, deformation, vibrational and electronic contribution to specific heats, binding energies, electronic states in metals and semiconductors, magnetic properties of solids, superconductivity Prerequisites: PHYS 3165, PHYS 3167, MATH 3342 and MATH 3343; course equivalents for MATH 3342 and MATH 3343 may be substituted at the instructor's discretion.

PHYS 4175. Nuclear Physics. 3 Credits.
Application of quantum physics to the description of nuclei and their interactions. Properties of nuclei, nuclear models, nuclear forces, and nuclear reactions are considered. Specific topics include the deuteron, n-p scattering, the optical model, the shell model, the liquid-drop model, beta decay, fission, and fusion. Prerequisite: MATH 3342, MATH 3343, PHYS 3165 and PHYS 3167; or permission of the instructor.

PHYS 4190. Special Topics. 1-4 Credits.
Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details.

PHYS 4192. Independent Study. 1-3 Credits.
Independent readings or directed study under the supervision of a faculty member. Credit varies, depending upon the nature of the work. May be repeated once for credit. Same as PHYS 2192.

PHYS 4195. Physics Capstone. 3 Credits.
Culmination of physics undergraduate studies. Communicating physics concepts and research orally and in writing; ethical conduct of research; careers in physics. Preparation for writing papers on senior research project and presenting the results in a departmental seminar. May be repeated for credit. Restricted to physics majors with senior standing. Recommended background: Recommended that students have started their senior research projects.

PHYS 4196. Undergraduate Research in Biophysics. 3 Credits.
Research on problems in biophysics approved by the faculty. May be repeated once for credit.

PHYS 4197. Undergraduate Research in Nuclear Physics. 3 Credits.
Research on problems in nuclear physics approved by the faculty. May be repeated once for credit.

PHYS 5701. Selected Topics. 0-4 Credits.

PHYS 6110. Mathematical Methods of Theoretical Physics. 4 Credits.
Calculus of variations. Group theory. Tensor calculus. Review of techniques of linear algebra. Hilbert spaces and operator theory. Special functions and expansion in complete orthogonal sets of functions. Solutions of partial differential equations, Green's functions method and boundary-value problems. Integral equations. Complex analysis and theory of analytic functions. Prerequisite: Consent of a departmental graduate advisor. Corequisite: PHYS 6130.

PHYS 6120. Advanced Mechanics. 4 Credits.
Analytic methods of mechanics as a basis for modern theory. Variational principles. Lagrange's equations. Hamiltonian formulation. Canonical transformations. Classical perturbation theory. Nonlinear systems. Special relativity. Prerequisite: Consent of a departmental graduate advisor. Corequisite: PHYS 6130.

PHYS 6130. Computational Physics I. 1 Credit.
Taken in conjunction with PHYS 6110 and PHYS 6120.

PHYS 6210. Electrodynamics and Classical Field Theory. 4 Credits.
Principles of electro- and magneto-statics. Classical field theory. Maxwell's equations, least-action and symmetry principles. Time-varying fields and plane–wave propagation. Radiating systems and scattering of radiation, including multipole fields. Dynamics of relativistic particles and radiation from moving charges. Electrodynamics in media: relation between microscopic parameters and macroscopic observables. Prerequisite: Consent of a departmental graduate advisor. Corequisite: PHYS 6230.

PHYS 6220. Quantum Mechanics I. 4 Credits.
General aspects of quantum mechanics with emphasis upon the developmental principles involved. Operators, representations, transformation theory. Schroedinger and Heisenberg pictures, angular momentum, perturbation and scattering theory. Introduction to relativistic quantum field theory, first-order electromagnetic processes. Many-body theory. Prerequisite: Consent of a departmental graduate advisor. Corequisite to PHYS 6220: PHYS 6230; to PHYS 6320: PHYS 6330.

PHYS 6230. Computational Physics II. 1 Credit.

PHYS 6310. Statistical Mechanics. 4 Credits.
Classical and quantum statistics. Gibbs paradox, microscopic origins of entropy and other thermodynamic variables, fluctuations, ensemble theory, partition functions, distribution functions, density matrices. Applications include the harmonic oscillator, magnetic systems, ideal Fermi–Dirac and Bose–Einstein systems, blackbody radiation, phonons. Renormalization group, phase transitions and critical phenomena. Prerequisite: Consent of a departmental graduate advisor. Corequisite: PHYS 6330.

PHYS 6320. Quantum Mechanics II. 4 Credits.

PHYS 6330. Computational Physics III. 1 Credit.

PHYS 6510. Communications in Physics. 0-3 Credits.
Student presentations on advanced topics in physics. Prerequisite: Consent of a departmental graduate advisor.

PHYS 6590. Seminar. 0-1 Credits.
Lectures on current topics in physics. May be repeated for credit. Prerequisite: Consent of a departmental graduate advisor.

PHYS 6599. Advanced Study. 3 Credits.
For students who have completed three semesters of course work in the core graduate physics curriculum. Problem sets aimed at development of a deeper and more advanced understanding of physics.

PHYS 6610. Nuclear and Particle Physics I. 3 Credits.
Theory and experiment of the standard model of elementary particle physics of strong and electro-weak interactions. Emergence of nuclear interactions and pion physics. Effective field theory, non-perturbative methods, lattice simulations, nuclear models, nuclear reactions. Path integral, gauge fields, S-matrix theory, dispersion relations, renormalization program. Prerequisite: PHYS 6320 and permission of the graduate advisor.

PHYS 6620. Biophysics I. 3 Credits.
Topics include molecular biophysics, modern simulation methodologies and experimental methodologies for probing biological systems.

PHYS 6630. Astrophysics I. 3 Credits.
Astrophysical examination of stellar evolution, including properties of stellar matter, equations of state, nucleosynthesis, red giants, supernovae, white dwarfs, close binary stellar systems, gamma-ray bursts. Overview of observational techniques, including photometry; IR, UV, X-ray observation, gamma-ray frequencies; astrophysical data analysis; evidence for stellar and cosmological models. Prerequisite: Consent of a departmental graduate advisor.

PHYS 6710. Nuclear and Particle Physics II. 3 Credits.
Theory and experiment of the standard model of elementary particle physics of strong and electro-weak interactions. Emergence of nuclear interactions and pion physics. Effective field theory, non-perturbative methods, lattice simulations, nuclear models, nuclear reactions. Path integral, gauge fields, S-matrix theory, dispersion relations, renormalization program. Prerequisite: Phys 6320. (Academic year).

PHYS 6720. Biophysics II. 3 Credits.
Phys 6720: Topics include theoretical and computational methods for genes, proteins, and bionetworks; models of biological complexity; applications of non-equilibrium statistical mechanics and combinatorial optimization. Prerequisite: Phys 6310. This course may be taken repeatedly for credit to a maximum of 15 credits.

PHYS 6730. Astrophysics II. 3 Credits.

PHYS 6810. Applied Statistics and Data Analysis in Physics. 3 Credits.

PHYS 6998. Thesis Research. 3 Credits.

PHYS 6999. Thesis Research. 3 Credits.

PHYS 8110. Selected Topics in Theoretical Nuclear Physics. 3 Credits.
Prerequisite: Consent of a departmental graduate advisor. May be repeated once for credit with permission of graduate advisor.

PHYS 8120. Selected Topics in Experimental Nuclear Physics. 3 Credits.
Prerequisite: Consent of a departmental graduate advisor. May be repeated once for credit with permission of graduate advisor.

PHYS 8130. Selected Topics in Theoretical Biophysics. 3 Credits.
Prerequisite: Consent of a departmental graduate advisor. May be repeated once for credit with permission of graduate advisor.

PHYS 8140. Selected Topics in Experimental Biophysics. 3 Credits.
Prerequisite: Consent of a departmental graduate advisor. May be repeated once for credit with permission of graduate advisor.

PHYS 8150. Selected Topics in Astrophysics. 3 Credits.
Prerequisite: Consent of a departmental graduate advisor. May be repeated once for credit with permission of graduate advisor.

PHYS 8998. Advanced Reading and Research. 1-4 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated once for credit.

PHYS 8999. Dissertation Research. 1-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

PHYSIOLOGY (PHYL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PHYL 2111. Phyl for Health Sci Students. 4 Credits.

PHYL 6201. Physiology. 6 Credits.
Required for medical students, open to graduate students. Cellular, organ system, and applied human physiology. Prerequisite for graduate students: Anat 201 or Phyl 191, or equivalent; Bioc 221 or Phyl 205, or consent of department chair. Concurrent regis.

PHYL 6205. Regulatory Cell Biology. 2 Credits.

PHYL 6211. Physiology for Health Sciences Students. 3 Credits.
Functional processes, including cellular, muscular, cardiovascular, renal, pulmonary, gastrointestinal, endocrine, and nervous systems.

PHYL 6253. Phyl-Fluid Bal & H Ion Regultn. 2 Credits.

PHYL 6269. Topics-Neuro/Psychophysiology. 2 Credits.

PHYL 6282. Experimental Physiology. 1-12 Credits.

PHYL 6290. Extramural Physiology Elective. 1-12 Credits.

PHYL 6291. Extramural Physiology Elective. 1-12 Credits.

PHYL 6295. Research. 1-12 Credits.
By special arrangement with individual staff members. Approximately four hours per week in the laboratory for each credit hour of credit. May be repeated for credit.

PHYL 6298. Comprehensive Physiology. 5 Credits.

PHYL 6502. Biomed Sci/Clin Corr inDisease. 1-12 Credits.

PHYL 8800. Summer Remedial: Physiology. 8 Credits.

POLITICAL MANAGEMENT (PMGT)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PMGT 1000. Dean's Seminar. 3 Credits.

PMGT 4101. Electoral&LegislativeProcesses. 3,4 Credits.

PMGT 4107. Practicum in Political Mgt. 3,4 Credits.

PMGT 4187. Professional Internship. 3-4 Credits.

PMGT 4192. Tutorial-Amer Elect& PolMvmnts. 3-4 Credits.

PMGT 6401. Fundamentals of Political Management. 3 Credits.
Main concepts, arenas, developments, roles, and practices in the field of political management. Assess rhetorical situations, write strategy memos, create and critique campaign messages, and engage citizens, professional colleagues and decision-makers. Taken in first semester of program. (Professors M. Cornfield and TBD.).

PMGT 6402. Applied Political Communications. 3 Credits.
Models and methods by which professionals plan, produce, and adjust strategic communication messages in democratic politics. Use a variety of communication forms and media, such as, fact sheets, blog posts, video releases, and public addresses, under typical constraints of time, money, information, reputation, talent, audience attentiveness, and institutional procedure. Students to enroll by their sixth course in the program. Core requirement; Must be completed before a student reaches 18 credit hours.

PMGT 6403. Political Data and Analytics. 3 Credits.
Introduction to the uses of quantitative data and statistics in politics. Learn to evaluate research designs, statistical associations, causal reasoning, methods for hypothesis testing, multivariate regression analyses, and data analytics. Consume and critique data and statistics for strategic purposes. Students to enroll by their sixth course in the program. Core requirement. Must be completed before a student reaches 18 credit hours.

PMGT 6404. Principled Political Leadership. 3 Credits.
Theory and practice of ethically grounded political leadership. Consideration of the recurrent dilemmas, philosophical principles, management techniques, codes of conduct, and professional norms in the political management field. Application through self-assessment exercises, case study analysis, and individual and group simulations. Students to enroll by their sixth course in the program. Core requirement. Must be completed before a student reaches 18 credit hours.

PMGT 6410. Grassroots Engagement. 3 Credits.
Strategies and techniques to build advocacy support among and across general civic populations. Identification of potential supporters through database targeting and individual outreach. Motivation and training of interested supporters for grassroots action in campaigns, at public forums, and before decision-makers. Coalition and protest options; analytics of ongoing efforts. (Professors E. Grefe, S. Gagen).

PMGT 6412. Issues Management. 3 Credits.
Track, influence, and alter politically significant issue-related discourses and policy developments. Legislative, executive, and judicial venues and processes for policymaking; state referendum, initiative, and recall ballot opportunities; organizational structures, including digital procedures, for issue management. (Professors M. Edwards, E. Grefe).

PMGT 6414. Lobbying. 3 Credits.
Survey of and training for lobbying in the U.S. federal system. Students design a detailed lobbying plan for implementation and practice a variety of influence techniques, including those associated with digital media and communications technologies. Legal compliance, organizational and public accountability, professional standards and practices. (Professor J. Hobson).

PMGT 6416. International Lobbying. 3 Credits.
Survey of international lobbying practices, analysis of strategic models and best practices in a variety of different countries and political systems (e.g., EU, China, Brazil, and Turkey). Trends and innovations in lobbying techniques and communications technologies. Investigation and application of appropriate research to improve practice. (Professor TBD by AGE program) (Same as PSAD 6240).

PMGT 6418. Budget Politics. 3 Credits.
Politics of the budget process, including formal and informal mechanisms of appropriating U.S. federal funds. Lobbying strategies and tactics employed by private and public organizations seeking to influence budgetary agenda-setting in the White House; decision-making in Congress; and funding negotiations within and between executive agencies. (Professor M. Edwards).

PMGT 6420. Corporate Public Affairs. 3 Credits.
Exploration of major functional areas in corporate public affairs with a focus on the political and policy dynamics operating in the United States and other democracies. Development and deployment of appropriate strategies, research, and tactics for corporations managing the complexities related to a global economy and shifting political alliances.

PMGT 6422. State and Intergovernmental Politics. 3 Credits.
Examination of the electoral pressures on state and local legislators. Methods and techniques for advocacy in various state capitals. The governing responsibilities of constitutionally-delegated to states and the ever-changing historical relationship between states and the federal government. (Professors C. Shank).

PMGT 6430. Campaign Strategy. 3 Credits.
Orientation to the basic systems and technologies that must be created and managed to produce electoral victory. The campaign plan and campaign budget as the foundation for management of campaigns. Focus on development of a campaign plan. (Professor M. Meissner).

PMGT 6432. Managing Campaigns. 3 Credits.
Understanding the role of a campaign manager in staffing and running a campaign, while executing the campaign plan. Candidate handling, fundraising, website and technology, geographic and demographic targeting, field organization, canvassing, get-out-the-vote, press operations, budget control, and liaison with the party and interest groups. (Professors TBD) Prerequisites: PMGT 6430.

PMGT 6434. Running for Office. 3 Credits.
Electoral politics from the perspective of the candidate, strategic and personal factors involved in the decision to run and the consequences of victory or defeat. (Professor R. Faucheux).

PMGT 6436. National Campaign Dynamics. 3 Credits.
Examination of the historical and systematic patterns in national elections. Differences between presidential and midterm elections; House and Senate contests; party nomination races and general elections; primaries and caucuses; Democratic and Republican party delegate selection rules; causes for "wave" elections; effect of the economy on election outcomes; and standard vice presidential selection models. The political and partisan structural conditions that exist before any of the candidates or the campaigns get involved.

PMGT 6438. State and Local Campaigns. 3 Credits.
Application of campaign strategy and management principles to electoral races at the state and local levels. Staffing, budgeting, and strategic challenges for what are typically lower-visibility contests that involve state and local candidates. Coordinated campaigns and the impact of the national party's reputation on these down-ballot races. (Professor TBD).

PMGT 6440. Targeting and Voter Contact. 3 Credits.
How to find voters for electoral and advocacy campaigns and tailor communications to them. Database analytics, list management, questionnaire design, target weighting, predictive modeling. Review of randomized and natural experiments in light of theoretic principles and findings from public opinion research. Skill development in use of spreadsheets and basic statistical packages. Lab fee. (Professors B. Russell, A. Strauss) Prerequisites: PMGT 6403.

PMGT 6442. Campaigns Around the World. 3 Credits.
Comparative examination of national-level campaigns in democratic countries outside of the United States. Strategies, techniques, and practices used in multi-party and/or parliamentary systems. Professional conduct, consulting rules and norms.

PMGT 6450. Rules, Laws, and Strategy. 3 Credits.
U.S. federal and state laws and regulations governing recognition of political parties and political organizations, campaign finance, political broadcasting and cablecasting, lobbying registration. Ballot access and voter registration. Ethical and strategic considerations (opportunities and constraints; benefits and drawbacks) related to rule construction. (Professor M. Braden).

PMGT 6452. Digital Strategy. 3 Credits.
Development of an integrated digital strategy for use in advocacy and electoral campaigns. Introduction to the theoretical concepts, distinctive technologies, applied skills, and managerial challenges associated with digital campaigning. Search engine optimization, GPS, online payment systems, customizing back- and front-end systems to meet strategic goals and budget parameters, working with IT vendors and distance volunteers, legal and cultural considerations in US and other regimes, site rollout and scaling, security and privacy. (Professor TBD).

PMGT 6454. Fundraising and Budgeting. 3 Credits.
Raising and spending money in political campaigns, referenda contests, issue advocacy, and lobbying efforts. Budgeting process, standard controls to check expenditures, accounting procedures, and general strategies for use in effective fundraising. (Professor N. Bocskor).

PMGT 6456. Speechcraft. 3 Credits.
Analysis and techniques used in speechwriting and presentations for public officials and candidates. Managing the political optics and understanding a speech's visual context and non-verbal communication capabilities (Rose Garden, Oval Office, campaign stump speech, ceremonial occasion, congressional testimony). Modulating speaker style, tone, and pacing, and staging the speech for effect. (Professors D. McGroarty, R. Lehrman).

PMGT 6458. Crisis Management. 3 Credits.
Management of crisis situations and defining moments in electoral, legislative, and public policy campaigns. Exploration of the causes and consequences of political scandals. Professional responsibilities and ethical considerations of crisis management and rapid response decisions. (Professor M. Edwards).

PMGT 6460. Audience Research. 3 Credits.
Processes by which citizens acquire political information and make decisions in politics. Survey research uses in electoral campaigns and issue advocacy. Designing and drawing samples, constructing and pretesting questionnaires, modes of interviewing, financial implications, practical problems in selecting and monitoring polling organizations, and interpretation of data. Focus groups and small-sample interviews; relationship between qualitative and quantitative research; reliability and validity. (Professors R. Johnson, D. Cantor, B. Tringali, M. Ward) Prerequisites: PMGT 6403.

PMGT 6462. Opposition Research. 3 Credits.
Practices and techniques associated with investigative opposition research. Public document and website searches, candidate tracking, and methods for information dissemination. Changes in practice as a result of technological innovations and a changing media environment. Professional responsibilities and ethics expected from opposition researchers.

PMGT 6464. Influencing the Media. 3 Credits.
Organization, practices, and norms of the major media; media coverage of public officials, political campaigns, legislative battles, interest groups, and issues of public policy. Formulation of strategies for getting favorable news coverage for the issue or candidate and for ending a media crisis. (Professor L. Ellenbogen).

PMGT 6466. Political Advertising. 3 Credits.
Strategies and techniques for using the various media (print, radio, television, cable, Internet) in political and advocacy campaigns, with emphasis on the use of television. Impact and uses of paid advertising; development of campaign messages; production, timing, and placement of television advertising; explanation of media markets. Students design print ads and brochures and produce a 30-second television spot. (Professor P. Fenn).

PMGT 6468. Digital Advertising and Action. 3 Credits.
Strategies and techniques for developing and leveraging digital advertising for mobilization. Manage an effective online ad campaign from initial concept to creation and from targeting to measuring the results. Prepare, design, and launch a variety of online ad types, including search, social, display, and video. Analyze success or failure based on analytics and benchmarking. Prerequisites: PMGT 6452: Digital Strategy.

PMGT 6470. Digital Content Creation. 3 Credits.
Developing and creating effective digital content that promotes campaign narratives and furthers strategic messages. Construct portfolios of original and aggregated digital media content. Skill development in infographics, video, GPS, photo collage, page and site architecture, and texts from 140 characters to blog posts and file attachments. Versioning for different communities, functionalities, and channels including mobile applications. Prerequisites: PMGT 6452: Digital Strategy.

PMGT 6472. Maximizing Social Media. 3 Credits.
Creating and integrating owned digital platforms and social media assets for political persuasion and action. Cultivation of online political communities, moderating and curating outside-generated content, integration and alignment with campaign message; event, reputation and crisis management. Review of constraints and potentials intrinsic to specific social media sites (e.g. Facebook, Google, LinkedIn, Twitter). Prerequisites: PMGT 6452: Digital Strategy.

PMGT 6474. Stereotypes and Political Strategy. 3 Credits.
Accounting for psychological constructs, social stereotypes, media framing, and the impression formation process in developing a political strategy. Review of empirical research; investigation of effective techniques or postures for overcoming biases; self-assessment of perceptual assumptions.

PMGT 6476. Political Consulting. 3 Credits.
Management principles, technical procedures, and legal requirements for starting and running a political consulting business. Effective practices for gaining a positive reputation, sustaining profitability across the variable political environment, and engaging on the international front. Start-up funding, mergers and acquisitions, exit strategies. (Professors G. Nordlinger, L. Purpuro, M. Meissner).

PMGT 6480. Washington Residency. 3 Credits.
Capstone experience equivalent to PMgt 6495 for students in the online Political Management program. Exposure to and interaction with political consultants, advocacy specialists, elected officials, and applied researchers in Washington, D.C. Integration of program curriculum toward an understanding of the federal political ecosystem and development of a robust political network. Restricted to Taken by PMGT online students in last or penultimate term, or with approval by instructor.

PMGT 6482. Applied Research Project. 3 Credits.
A research option for students in the online Political Management program. Development of a campaign-relevant research report and related communications on behalf of a mock political client. The report will describe the status quo of a political situation, analyze the factors and actors sustaining that status quo, identify what and who is potentially moveable in the direction the client seeks to go, and outline practical first steps a campaign can take in that direction. Restricted to For students in the PMGT online program; taken either in the penultimate or last term in the program.

PMGT 6490. Special Topics. 3 Credits.
Topic to be announced in the Schedule of Classes.

PMGT 6495. Political Power & Practice. 3 Credits.
Capstone seminar that develops and integrates knowledge of political strategies, tactics, and situational considerations, and applies that knowledge to advanced political problems. Topics include: gaining and wielding power, the complexity associated with making democracy work, conflict resolution, negotiation and bargaining skills, grappling with the consequences of winning and losing. Students to enroll during their last or penultimate term. (Professor L. Brown).

PMGT 6496. Independent Study. 0-3 Credits.
Independent research with a Political Management faculty member. Registration must be approved in advance by the supervising faculty member and the director of the political management program.

PMGT 6497. Graduate Internship. 0 Credits.
Limited to Political Management M.P.S. degree candidates. Experience at an organization focused on applied politics.

PMGT 6498. Thesis I. 3 Credits.
Master's degree candidates must apply to the program committee for thesis approval and have completed 24 credit hours with a 3.3 GPA.

PMGT 6499. Thesis II. 3 Credits.
Master's degree candidates must apply to the program committee for thesis approval and have completed 24 credit hours with a 3.3 GPA. Prerequisites: PMGT 6498.

PMGT 6501. Politics and Public Policy. 3 Credits.
Examination of political processes that influence policy formulation, policy implementation, and the uses of policy analysis. Topics include political and policy decision making, actors, and process.

PMGT 6502. ConfrontManag&AllianceBldg. 3 Credits.

PMGT 6503. Communication Strategy. 3 Credits.
Formulation of political communications strategies. Elements necessary to create, introduce, and maintain an effective political profile in issue advocacy campaigns, candidate elections, and legislative advocacy campaigns. Application of principles of research, advertising, and marketing to the political landscape.

PMGT 6504. PolMgt & StrategicGovernance. 3 Credits.

PMGT 6505. Politica de bases. 3 Credits.
Use of microtargeting and database-layering technology to identify potential advocates. Motivational techniques to mobilize volunteers for political campaigns, lobbying efforts, and community advocacy. Techniques used by grassroots organizers to help corporations, unions, civic and nonprofit organizations, and special interest groups achieve strategic goals.

PMGT 6506. Practicum. 3 Credits.

PMGT 6507. Democracia y elecciones en LA. 3 Credits.
This course will focus on the recent history of Latin America, underscoring the struggle to establish and consolidate democracy and the preeminence of elections as the legitimate process to select and replace authorities at the national, regional and local levels. The course will provide the student with concepts to understand the different types of democratic settings that exist in the region, that is the coexistence of fairly established and solid democracies, with low intensity democracies, and semi-authoritarian regimes, all of which utilize electoral processes to select public authorities. The main message of this course is that campaign designers need to understand and take a strategic advantage of the political context and the rules governing the political competition in order to obtain the most effective results.

PMGT 6508. Estrategia de campana LA. 3 Credits.
Organization of political campaigns. Strategic decisionmaking. Formulation of political communications strategies. Aspects necessary to introduce and maintain an effective political profile in the electoral campaigns in Latin America, including the specialized forms of communication which political professionals use to win support for their candidates. This course will be taught entirely in Spanish.

PMGT 6509. Las encuestas-America Latina. 3 Credits.
The use of survey research in campaigns. Quantitative and qualitative survey research for political management in Latin America. The proper use of polls; methodology and survey design; reviewing poll results; drawing conclusions and recommendations from polls; and the practical problems of administering and interpreting survey data of public opinion in Latin America. PMGT 6509 will be taught entirely in Spanish.

PMGT 6510. Organizacion y ejecucion-LA. 3 Credits.
Organizational choices facing campaign management teams in Latin America as they attempt to combine the resources and activities of a modern campaign into a winning effort.

PMGT 6511. Propoganda politica, La campan. 3 Credits.
The strategies, techniques, design and impact of paid political communications directed toward target audiences in Latin America, focusing upon the role of political advertising in a campaign, including radio, direct mail, print and internet, but with specific emphasis on television commercials.

PMGT 6512. Los medios, la politica-LA. 3 Credits.
The role of the media in the politics of Latin America. Who the media are, how they make their decisions, and how they influence outcomes in campaigns and other political situations. Strategic planning in dealing with the media as well as the particular dynamics that surround electronic, print, and the new media. Effective practices of media engagement. This course will be taught entirely in Spanish.

PMGT 6513. Comunicacion Politica,Gobernon. 3 Credits.
The course builds upon the Practicum course of the Certificate in Governance and integrates the two processes of politics: campaigning and governing. PMGT 6513 will be taught entirely in Spanish.

PMGT 6514. Manejo de Crisis. 3 Credits.
Manejo de Crisis. Management of crisis situations and defining moments in electoral, legislative, and public policy campaigns. Exploration of the causes and consequences of political scandals. Professional responsibilities and ethical considerations of crisis management and rapid response decisions.

POLITICAL PSYCHOLOGY (PPSY)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PPSY 6101. Fundamentals of Political Psychology. 3 Credits.
A review of the interdisciplinary field of political psychology; examination of psychological influences on political behavior at the level of the individual and small group; the psychology of leader–follower relationships; crisis decision making.

PPSY 6102. Political Psychology Research Methods. 3 Credits.
Major research methods of political psychology, using classic articles in the field. Both quantitative methods, such as survey research and content analysis, and qualitative methods, such as personality profiling and comparative case studies, are considered. Prerequisite: PPSY 6101.

PPSY 6103. Political Violence and Terrorism. 3 Credits.
The origins and the sociopolitical and behavioral dynamics of political violence and terrorism. Major types of terrorism are differentiated. Implications for antiterrorist policy. The psychology of hostages.

PPSY 6104. Independent Study and Research. 1-3 Credits.
Supervised research in a special topic in political psychology. Preparation of major research paper. Prerequisite: PPSY 6101, PPSY 6102.

POLITICAL SCIENCE (PSC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSC 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

PSC 1001. Introduction to Comparative Politics. 3 Credits.
Concepts and principles of comparative analysis, with an examination of politics and government in selected countries.

PSC 1001W. Intro to Comparative Politics. 0-3 Credits.
Concepts and principles of comparative analysis, with an examination of politics and government in selected countries.

PSC 1002. Introduction to American Politics and Government. 3 Credits.
Structure, powers, and processes of the American political system and the impact on public policy.

PSC 1002W. Intro-American Politics & Govt. 3 Credits.
Structure, powers, and processes of the American political system and the impact on public policy.

PSC 1003. Introduction to International Politics. 3 Credits.
Analysis of world politics, focusing on the role of nation-states and international organizations and on selected foreign policy issues.

PSC 1011. Introduction to Politics I. 6 Credits.
Role of personal and social values in politics. Problems in the Western (especially American) tradition of political science. Admission by special selection process.

PSC 1012W. Introduction to Politics II. 6 Credits.
Continuation of PSC 1011. Role of personal and social values in politics. Thinking outside the Western state: culture, nationalism, ethnic conflict, democratization, international conflict. Admission by special selection process.

PSC 2000. Sophomore Colloquium. 3 Credits.
The Sophomore Colloquia are small seminar-style courses limited to second-year students in Columbian College. These courses engage students deeply in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects of the students. Topics vary by semester. Consult the schedule of classes for more details. Restricted to Registration by instructor approval.

PSC 2101. Scope and Methods of Political Science. 3 Credits.
Nature of political inquiry, approaches to the study of politics and government, empirical methods of research.

PSC 2102. Visualizing and Modeling Politics. 3 Credits.
The class builds on PSC 2101, Scope and Methods of Political Science, with emphasis on working with data to examine political questions. Prerequisites: PSC 2101 or STAT 1051 or STAT 1053 or STAT 1111.

PSC 2105. Major Issues of Western Political Thought I. 3 Credits.
Foundations of Western political thought—Plato to Aquinas.

PSC 2106. Major Issues of Western Political Thought II. 3 Credits.
History of political thought from the 16th through the late 19th century, as set forth in the works of representative thinkers.

PSC 2106W. Major Issues of Western Political Thought II. 3 Credits.
History of political thought from the 16th through the late 19th century, as set forth in the works of representative thinkers. Writing intensive.

PSC 2107. 20th-Century Political Thought. 3 Credits.
Recent Western political thought; analysis and critique of the legacies of modern political theories and ideologies.

PSC 2108. Freedom and Equality. 3 Credits.
Case analysis of major ideas related to freedom and equality in the Western political tradition.

PSC 2110. American Political Thought. 3 Credits.
Political thought in the U.S. from colonial times to the present as seen through major representative writings.

PSC 2120W. Freedom in American Thought and Popular Culture. 3 Credits.
An inquiry into definitions of freedom through examination of American political thought and popular culture. Writing intensive. (Same as AMST 2120, AMST 2120W, PSC 2120).

PSC 2211. State and Urban Politics. 3 Credits.
Comparative analysis of context, institutions, processes, and policies of state and urban political systems. Prerequisite: PSC 1002.

PSC 2212. State and Urban Policy Problems. 3 Credits.
Selected issues in state and urban policymaking, with emphasis on urban and metropolitan settings. Prerequisite: PSC 1002.

PSC 2213. Judicial Politics. 3 Credits.
An examination of judicial process and behavior. Emphasis on judicial selection, decision making, interaction with the political environment, and impact and implementation of decisions. Prerequisite: PSC 1002.

PSC 2214. U.S. Constitutional Law and Politics I. 3 Credits.
Separation of powers, federal–state relationships, economic regulation. Prerequisites: PSC 1002.

PSC 2215. U.S. Constitutional Law and Politics II. 3 Credits.
Political and civil rights. Prerequisites: PSC 1002.

PSC 2216. The American Presidency. 3 Credits.
Examination of the politics of presidential selection, the authority of the contemporary institution, the mechanisms and processes for formulating public policy, and the influences of personality on performance in office. Prerequisite: PSC 1002.

PSC 2217. Executive Branch Politics. 3 Credits.
Basic concepts in public administration; influence of bureaucratic politics on policy formulation and implementation. Prerequisite: PSC 1002. Same as PPPA 2117.

PSC 2218. Legislative Politics. 3 Credits.
Theory, structure, and process of the U.S. Congress, with emphasis on elections, party organization, committees, and floor procedure, in the context of executive–legislative relations and interest-group activities. Prerequisite: PSC 1002.

PSC 2218W. Legislative Politics. 3 Credits.
Theory, structure, and process of the U.S. Congress, with emphasis on elections, party organization, committees, and floor procedure, in the context of executive–legislative relations and interest-group activities. Writing intensive. Prerequisites: PSC 1002.

PSC 2219. Political Parties and Interest Groups. 3 Credits.
Role of parties as a linkage between mass preferences and government policies. Organization, nominations, voting, and activities in legislative and executive branches. Prerequisite: PSC 1002.

PSC 2220. Public Opinion. 3 Credits.
How public opinion is measured, how it is shaped, and its consequences for policymaking. Prerequisite: PSC 1002.

PSC 2221. African-American Politics. 3 Credits.
The evolution, nature, and role of African Americans within the U.S. political system. How the African American experience has shaped American politics (specifically public opinion, political behavior, political institutions, and salient public policy debates) and how black Americans have come to understand their position within the American political system. Prerequisites: PSC-1002 or PSC-002 or ((PSC-1011 or PSC-011) and (PSC-1012 or PSC-012 or PSC-012W or PSC-1012W)).

PSC 2222. Science, Technology, and Politics. 3 Credits.
Multiple impacts of scientific and technological developments on the political systems. Discussion of public policies for support, use, and control of science and technology. Prerequisite: PSC 1002.

PSC 2223. Campaigns and Elections. 3 Credits.
Examination of the various forms of American political participation in electoral and governmental politics and their effects on the political process. Prerequisite: PSC 1002.

PSC 2224. Issues in Domestic Public Policy. 3 Credits.
Examination of the decision-making process and the substance of various issues in domestic public policy in such areas as crime, economics, education, energy, the environment, poverty, and health. Prerequisite: PSC 1002.

PSC 2225. Women and Politics. 3 Credits.
An examination of the role and impact of women in politics, including women's interests and access to the political system; specific public policy issues with a particular focus on the role of women. Prerequisite: PSC 1002.

PSC 2228. Media, Politics, and Government. 3 Credits.
The impact of mainstream media and online outlets on politics and the governing process; the role of social media, online advertising, and comedy shows; the changing ways in which voters receive information. Prerequisites: PSC 1002.

PSC 2229. Media and Politics. 3 Credits.
The impact of the media on American politics, including the nature of coverage of political issues and campaigns, dynamics of selecting and presenting news stories, and consequences of media messages for public opinion and action. Prerequisite: PSC 1002.

PSC 2230. Law and Justice: The View from Hollywood. 3 Credits.
Analysis of films that focus on justice, the law, and the legal system. Consideration of what they tell us about political and legal culture and what messages they may have for contemporary legal issues. Focus on the relationship between law and justice, the practice of law, and the role of courts and trials in a political system. Prerequisites: PSC 1002.

PSC 2240. Poverty, Welfare, and Work. 3 Credits.
The elements and politics of America's welfare state. Social welfare policies and how they relate to work and poverty. Prerequisites: PSC 1002.

PSC 2330. Comparative Politics of Western Europe. 3 Credits.
Comparative political analysis with primary focus on the principal states of Western Europe. Prerequisite: PSC 1001.

PSC 2331. Comparative Politics of Central and Eastern Europe. 3 Credits.
Specific countries vary, to include nations of central and Eastern Europe and/or the newly independent states of the former Soviet Union. Prerequisite: PSC 1001.

PSC 2332. European Integration. 3 Credits.
The history of the European Union, its accomplishments as an international actor, and the vibrant debates over its future. Prerequisite: PSC 1001.

PSC 2334. Global Perspectives on Democracy. 3 Credits.
International experiences with the historical evolution and current nature of democratic political systems. Prerequisite: PSC 1001.

PSC 2336. State-Society Relations in the Developing World. 3 Credits.
Historically informed exploration of enduring issues of concern in state–society relations, with an empirical focus on selected countries and regions of the developing world. Prerequisite: PSC 1001.

PSC 2337. Development Politics. 3 Credits.
An examination of how and why political systems develop the way they do. Why do some countries develop into democracies, while others become authoritarian? How do class conflict, the nature of the elite, and the political culture affect the development of political institutions? Prerequisite: PSC 1001.

PSC 2338. Nationalism. 3 Credits.
Causes and the effects of nationalism, covering cases from around the world. Prerequisites: PSC 1001, PSC 1011, PSC 1012W.

PSC 2366. Russian Politics. 3 Credits.
An examination of political institutions, processes, and issues of Russian politics. Prerequisite: PSC 1001.

PSC 2367. Human Rights. 3 Credits.
Human rights theory, the various movements for human, religious, civil, political, and other rights. Prerequisite: PSC 1001.

PSC 2367W. Human Rights. 3 Credits.
Human rights theory, the various movements for human, religious, civil, political, and other rights. Writing intensive. Prerequisites: PSC 1001.

PSC 2368. Politics in the Two Koreas. 3 Credits.
An examination of political institutions, processes, and issues in South Korea and North Korea as well as in inter-Korean relations and major-power involvement in peninsular affairs. Prerequisites: PSC-1001 or PSC-001 or PSC-1001W or PSC-001W or ((PSC-1011 or PSC-011) and (PSC-1012 or PSC-012 or PSC-012W or PSC-1012W)).

PSC 2369. Comparative Politics of South Asia. 3 Credits.
A comparative examination of colonialism, economic development, and identity politics in South Asia. Prerequisite: PSC 1001.

PSC 2370. Comparative Politics of China and Northeast Asia. 3 Credits.
Political institutions and processes of China (including Taiwan), Japan, and Korea since World War II. Influence of indigenous traditions and foreign contacts. Prerequisite: PSC 1001.

PSC 2371. Politics and Foreign Policy of China. 3 Credits.
An examination of political institutions, processes, history, and issues of Chinese politics and foreign policy. Prerequisite: PSC 1001.

PSC 2373. Comparative Politics of Southeast Asia. 3 Credits.
Political forces, processes, and outcomes, using empirical examples from Southeast Asia. Prerequisite: PSC 1001.

PSC 2374. Politics and Foreign Policy of Japan. 3 Credits.
An examination of political institutions, processes, and issues of Japanese politics and foreign policy. Prerequisite: PSC 1001.

PSC 2377. Comparative Politics of the Middle East. 3 Credits.
Politics of the eastern Arab states, Turkey, Iran, and Israel. Prerequisite: PSC 1001.

PSC 2377W. Comparative Politics of the Middle East. 3 Credits.
Politics of the eastern Arab states, Turkey, Iran, and Israel. Writing intensive. Prerequisites: PSC 1001.

PSC 2379. Politics and Foreign Policy of Israel. 3 Credits.
Examination of the institutions, processes, and issues of Israeli politics and foreign policy. Prerequisite: PSC 1001.

PSC 2381. Comparative Politics of Sub-Saharan Africa. 3 Credits.
Comparative analysis of political systems in selected countries of Sub-Saharan Africa. Prerequisite: PSC 1001.

PSC 2383. Comparative Politics of Latin America. 3 Credits.
The politics of selected countries in South America, Central America, and the Caribbean. Emphasis on democratization. Prerequisite: PSC 1001.

PSC 2439. International Political Economy. 3 Credits.
Analysis of the political aspects of global economic relationships, focusing on such issues as economic hegemony, interdependence, trade relations, development assistance, multinational corporations, and the role of international organizations. Prerequisite: PSC 1003.

PSC 2440. Theories of International Politics. 3 Credits.
Exploration of alternative theoretical approaches to understanding world politics in its historical and contemporary dimensions. Prerequisite: PSC 1003.

PSC 2442. International Organizations. 3 Credits.
Development and operations of international organizations working in the areas of collective security, peacekeeping, trade, finance, environment, human rights. Prerequisite: PSC 1003.

PSC 2442W. International Organizations. 3 Credits.
Development and operations of international organizations working in the areas of collective security, peacekeeping, trade, finance, environment, human rights. Writing intensive. Prerequisites: PSC 1003.

PSC 2444. Public International Law. 3 Credits.
Survey of essential principles and concepts of public international law through case analysis and with reference to political factors. Prerequisite: PSC 1003.

PSC 2446. U.S. Foreign Policy. 3 Credits.
Survey of essential principles and concepts of public international law through case analysis and with reference to political factors. Prerequisite: PSC 1003.

PSC 2447. American Presidents at War. 3 Credits.
How American presidents have thought about and conducted wars using an analytical and historical approach. Prerequisites: PSC 1003 or IAFF 1005.

PSC 2449. International Security Politics. 3 Credits.
Overview of international security issues. Insights from a variety of historical periods and theoretical approaches inform the analysis. Prerequisite: PSC 1003.

PSC 2449W. International Security Politics. 3 Credits.
Overview of international security issues. Insights from a variety of historical periods and theoretical approaches inform the analysis. Writing intensive. Prerequisite: PSC 1003.

PSC 2451. Theory of War. 3 Credits.
The nature, purposes, and conduct of war. Strategy and its relationship to politics. Major strategic variants for continental warfare, maritime conflict, strategic bombing, insurgency/counterinsurgency, and nuclear war. Prerequisites: PSC 1003.

PSC 2451W. Theory of War. 3 Credits.
The nature, purposes, and conduct of war. Strategy and its relationship to politics. Major strategic variants for continental warfare, maritime conflict, strategic bombing, insurgency and counterinsurgency, and nuclear war. Prerequisites: PSC 1003.

PSC 2461. European-Atlantic Relations. 3 Credits.
International politics of the North Atlantic area, the European Union, and U.S.–European relations. Prerequisite: PSC 1003.

PSC 2468. Post-Soviet Foreign Policy. 3 Credits.
External problems and policies of Russia and the other successor states of the former USSR (especially the Baltics, Ukraine, and southern rim of the former Soviet Union). Prerequisite: PSC 1003.

PSC 2475. International Relations of East Asia. 3 Credits.
Analysis of the foreign policies of selected East Asian countries and the foreign policies of major powers toward the region. Prerequisite: PSC 1003.

PSC 2476. The Arab-Israeli Conflict. 3 Credits.
Origins, evolution, and issues of the Arab–Israeli conflict. Prerequisite: PSC 1003.

PSC 2476W. The Arab-Israeli Conflict. 3 Credits.
The history and current state of the Arab-Israeli conflict; the Jewish and Arab nationalism movements; Palestine under the British Mandate and after the establishment of the State of Israel; the peace process and its collapse; and recent political developments. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: PSC 1003.

PSC 2478. International Relations of the Middle East. 3 Credits.
Analysis of the regional and international relations of the Middle East. Prerequisite: PSC 1003.

PSC 2482. African International Politics. 3 Credits.
Analysis of interstate relations in Africa and of selected aspects of African relations with the outside world. Prerequisite: PSC 1003. Recommended prerequisite: PSC 2381.

PSC 2484. International Relations of Latin America. 3 Credits.
Emphasis on U.S. foreign policy toward Latin America. Prerequisite: PSC 1003.

PSC 2987. Internship: Political Science. 1-3 Credits.
Study of political behavior and institutions through internship experience. Open to departmental majors only. Admission requires departmental approval and junior standing.

PSC 2988. Internship in Law & Socieity. 3 Credits.

PSC 2990. Selected Topics. 3 Credits.

PSC 2990W. Selected Topics. 3 Credits.

PSC 2991. Special Topics in Political Thought. 3 Credits.

PSC 2992. Special Topics in American Politics and Government. 3 Credits.
Prerequisite: PSC 1002.

PSC 2993. Special Topics in Comparative Politics. 3 Credits.
Prerequisite: PSC 1001.

PSC 2994. Special Topics in International Relations. 3 Credits.
Prerequisite: PSC 1003.

PSC 2994W. Special Topics in International Relations. 3 Credits.
Writing intensive. Prerequisites: PSC 1003.

PSC 3192W. Proseminar: Political Science. 3 Credits.
Examination of selected problems in political science. Admission restricted to political science majors in their junior or senior year. May be repeated once for credit.

PSC 4991. Independent Study. 1-3 Credits.
For departmental majors. Prerequisite: senior standing, 15 credit hours of upper-division political science courses, and approval of the undergraduate program advisor and the faculty member who will direct the study.

PSC 5476W. The Arab-Israeli Conflict. 3 Credits.

PSC 6103. Approaches to Public Policy Analysis. 3 Credits.
Primarily for master's students. Empirical and normative foundations of systematic policy analysis: concepts, theories, models, issues, strengths, limitations, and uses and misuses in the policy process.

PSC 6113. The Constitution: History and Ideas. 3 Credits.
With a focus on the history and ideas that influenced James Madison, consideration of ideas that formed the common heritage of all the framers of the Constitution. The separate traditions of liberty that were fused together in the Constitution. Early changes in American society that placed one of those traditions at the center of America's self-understanding.

PSC 6114. Theories of Judicial Review. 3 Credits.
How and why the U.S. Supreme Court interprets the Constitution. The theory behind the practice of judicial review. Consideration of such questions as whether the Constitution intended judicial review and how the two wings of today's Court justify their own position on judicial review.

PSC 6187. Selected Topics in Political Theory. 3 Credits.
In-depth study of significant issues in political theory. Topics vary by semester. Consult the Schedule of Classes for more details. For advanced students.

PSC 6330. Comparative Government and Politics. 3 Credits.
Open to Elliott School students only. Examination of basic approaches to comparative politics.

PSC 6333. Comparative Politics of Russia and Eurasia. 3 Credits.
Comparative analysis of politics in the post-Soviet region. Theoretical and methodological approaches to understanding important issues, frequently including democracy/autocracy, ethnic conflict, political economy, center–periphery relations, and state building.

PSC 6336. Political Economy of Developing Areas. 3 Credits.
Comparative analysis of how development problems have been defined from both political and economic perspectives and the solutions proposed by outsiders and insiders. Emphasis on the rise, demise, and recovery of development orthodoxies.

PSC 6338. U.S. Foreign Economic Policy. 3 Credits.
Exploration of ideas and issues involved in U.S. foreign economic policy, including relationship of economic and security issues, interdependence, protectionism, role of the dollar, industrial policy, and the debt crisis.

PSC 6345. Comparative Foreign Policy. 3 Credits.
The relationship of international actors with one another and with their external environment analyzed in a comparative framework. Focus on nation-states as well as non-state actors, such as international organizations. Differences and similarities in policies on economics, diplomacy, security, and global issues.

PSC 6346. The Politics of U.S. Foreign Policy. 3 Credits.
Patterns and problems in contemporary U.S. foreign policy. Special attention given to the domestic political factors shaping foreign policy.

PSC 6347. U.S. Foreign Policy Traditions. 3 Credits.
Contemporary debate about the substance of American foreign policy through the lens of alternative theoretical approaches to the study of international relations. Classical realist (national interest), neorealist (balance of power), neoliberal (international interdependence and institutions), and constructivist (national identity) interpretations are compared.

PSC 6348. Politics of U.S. National Security Policy. 3 Credits.
Examines competing theoretical approaches to the study of national security policy and tests these on a variety of substantive issue areas in the United States. (May include such topics as nuclear non-proliferation, responses to regional conflicts, definition of new security goals, etc.).

PSC 6349. International Security Politics. 3 Credits.
Overview of the major theoretical debates in international security. How different theoretical approaches inform policy decisions and options.

PSC 6350. Foreign Policy Analysis–Selected Topics. 3 Credits.
Analysis of U.S. foreign policy toward selected world regions.

PSC 6351. Civil-Military Relations. 3 Credits.
Substantive and theoretical issues and debates in the study of civil–military relations.

PSC 6360. Western European Politics. 3 Credits.
Examination of the principal characteristics of the British, French, German, and Italian political systems, comparing their institutional and behavioral adaptations to the problems of advanced industrial democracies.

PSC 6361. Politics of European Integration. 3 Credits.
The origins, institutions, and politics of West European integration, with emphasis on theories of regional integration and the development of the European Union.

PSC 6362. Nation-Building in the Balkans. 3 Credits.

PSC 6364. Comparative Governments and Politics of Central And Eastern Europe. 3 Credits.
Comparative analysis of domestic political processes and policies in Central and Eastern Europe.

PSC 6366. Government and Politics of Russia. 3 Credits.
The politics and development of the Russian state.

PSC 6367. Post-Soviet Politics. 3 Credits.
How the study of former Soviet countries contributes to major debates in comparative politics. Focus includes regimes, political economy, revolutions, ethnic politics, nationalism.

PSC 6368. Japanese Politics and Foreign Policy. 3 Credits.
Japan's path to modernity and the impact its pattern of development has had on the nation's democratization, political economy, and political institutions in the post-1945 period.

PSC 6370. Politics of China I. 3 Credits.
Readings and discussion of the political dynamics and policy process in contemporary China.

PSC 6371. Politics of the PRC 2. 3 Credits.
Research seminar on selected topics in Chinese politics, using official and other primary sources. Prerequisites: PSC 6370 or permission of instructor.

PSC 6372. Foreign Policy of the PRC. 3 Credits.
Readings and research on the main approaches to analyzing China's foreign policy and foreign relations.

PSC 6373. Political Economy of Industrializing Asia. 3 Credits.
Comparative analysis of the relationship between economic interests and politics in East and Southeast Asia. Emphasis on industrializing economies and their integration into global trade and investment networks.

PSC 6374. Korean Politics. 3 Credits.
An examination of Korean politics from the perspectives of four major research areas: authoritarian regime and economic growth; democratic transition and consolidation; the Asian financial crisis and its consequences; and the two Koreas and international relations.

PSC 6377. Comparative Politics of the Middle East. 3 Credits.
Readings and research on selected problems of the governments and politics of the Middle East.

PSC 6379. Government and Politics of Africa. 3 Credits.
Major theories and themes of African politics considering the context shaping political and economic reforms, formal and informal institutions, and prospects for political reform.

PSC 6383. Comparative Politics of Latin America. 3 Credits.
Readings and discussion on the politics of selected countries in South America, Central America, and the Caribbean. Emphasis on the possibilities for democracy and revolution.

PSC 6388. Topics in Comparative Politics. 3 Credits.

PSC 6390. Politics and Culture. 3 Credits.

PSC 6439. International Political Economy. 3 Credits.
Research seminar exploring alternative theoretical approaches to the study of international political economy and their application to the explanation and interpretation of historical and contemporary events in world political and economic affairs. Primarily for Elliott School degree candidates.

PSC 6440. Theory-International Relations. 3 Credits.
Open to Elliott School students only. Theories of international relations.

PSC 6442. Politics and Practice of International Institutions. 3 Credits.
The politics of international institutions in the areas of collective security, peace keeping, trade, money, development, environment, human rights.

PSC 6444. Politics of International Law. 3 Credits.
The political sources and consequences of international law and norms.

PSC 6456. Origins/Major Wars & Terrorism. 3 Credits.
An examination of the origins of major wars, including terrorism, from the 18th to the 20th centuries from the theoretical perspectives of realism, liberalism, and constructivism/identity.

PSC 6457. Arms Control & Disarmament. 3 Credits.
Major issues and trends in the postwar development of U.S. arms control and disarmament policy.

PSC 6465. The International Politics of Central and Eastern Europe. 3 Credits.
Major historical, political, social, and regional factors that have shaped the interwar, World War II, and postwar evolution of Eastern Europe; emphasis on foreign relations with outside powers and on regional East–West contacts.

PSC 6467. Asian Security. 3 Credits.
An examination of the major issues in Asian Security using various theoretical perspectives involving a mix of political science and policy analysis.

PSC 6475. International Politics of East Asia. 3 Credits.
Foreign policies and international behavior of the regional states (especially China, Japan, and Vietnam) and the extraregional powers (especially the U.S. and Russia).

PSC 6476. The Arab-Israeli Conflict. 3 Credits.
Readings and research on the origins, evolution, and issues of the Arab–Israeli conflict.

PSC 6478. International Relations of the Middle East. 3 Credits.
Readings and research on the regional and international relations of the Middle East.

PSC 6484. International Relations of Latin America. 3 Credits.
Readings and discussion on U.S.–Latin American relations and the foreign policies of selected states.

PSC 6489. Topics in International Relations. 3 Credits.

PSC 6987. Legal Internship. 3 Credits.
Study of the interior workings of legal institutions and related organizations through an approved internship with a court, law firm, legal advocacy group, public defender's office, or legal think tank. A research paper is required.

PSC 6996. Reading. 3 Credits.
Limited to graduate degree candidates. Written permission of instructor required.

PSC 6997. Research. 3 Credits.
Limited to graduate degree candidates. Written permission of instructor required.

PSC 6998. Thesis Research. 3 Credits.

PSC 6999. Thesis Research. 3 Credits.

PSC 8101. Introduction to Empirical Political Analysis. 3 Credits.
Statistical foundations of empirical political analysis and computer applications. Basic probability theory, exploratory and descriptive data analysis, statistical inference, and introduction to linear regression.

PSC 8102. Empirical Political Analysis. 3 Credits.
Techniques of social science data analysis. Model building, estimation, and interpretation. Linear models and extensions. Introduction to discrete choice models. Prerequisite: PSC 8101 or permission of instructor.

PSC 8103. Approaches to Policy Analysis. 3 Credits.
Primarily for doctoral students. Empirical and normative foundations of systematic policy analysis: concepts, theories, models, issues, strengths, limitations, and uses and misuses in the policy process.

PSC 8104. Qualitative Research Methods. 3 Credits.
Theoretical, practical, and ethical aspects of conducting qualitative research.

PSC 8105. Readings in Political Theory. 3 Credits.
Selected major works, both ancient and modern, that illuminate basic problems and questions of political theory.

PSC 8106. Topics in Political Theory. 3 Credits.
Advanced readings and group discussions. Analysis and interpretation of selected concepts and schools of thought.

PSC 8107. Modern Political Thought and Ideologies. 3 Credits.
Analysis of some main currents in modern political thought and ideologies.

PSC 8108. Craft of Political Inquiry. 3 Credits.
Logic of inquiry in political science: theories of knowledge, inference, and research methods.

PSC 8109. Systematic Inquiry and Research Design. 3 Credits.
Study design, data collection, and models of analysis in political science.

PSC 8120. Nonlinear Models. 3 Credits.
Introduction to maximum likelihood estimation interpretation of non-linear statistical models. Statistical inference, appropriate use, and presentation and interpretation of results.

PSC 8122. Logitudinal Analysis. 3 Credits.
Examination of two classes of statistical models for longitudinal data—(1) models for time-series, cross-sectional and panel data and (2) modeling event history (i.e., duration, survival, hazard).

PSC 8124. Multilevel Modeling. 3 Credits.
Statistical issues and models for multilevel (hierarchical) data structures, including the variance components, random intercept, and random coefficient models. Handling cross-level interactions.

PSC 8130. Game Theory I. 3 Credits.
Introduction to the core elements of game theory and how it has been utilized in political science. Applications of formal models to political phenomena and the major insights that have come from this work. Restricted to PSC graduate students only.

PSC 8131. Game Theory II. 3 Credits.
Builds on the introductory material in Game Theory I to focus on examples of formal work in political science. Students expand their knowledge of advanced games and learn the principles behind exemplary published research. Restricted to Registration restricted to PSC graduate students only.

PSC 8132. Network Analysis. 3 Credits.
Sociological and psychological foundations of network theory; network measurement and inferential tools; applications of these tools and concepts to political science. Restricted to Registration restricted to PSC graduate students only.

PSC 8185. Topics in Empirical and Formal Political Analysis. 3 Credits.
Selected topics in quantitative political methodology and formal political theory with varying emphasis on maximum likelihood estimation, nonlinear models, causal inference, formal theories, and mathematical/computational tools for the social sciences. May be repeated for credit provided the topic differs. Prerequisite: PSC 8120.

PSC 8187. Selected Topics in Political Theory. 3 Credits.
In-depth coverage of significant issues in political theory, including such topics as justice, toleration, and political community. For advanced students.

PSC 8210. American Political Process. 3 Credits.
A survey of American political institutions, processes, and behavior.

PSC 8211. Urban Politics. 3 Credits.
Comparative analysis of the context, institutions, processes, and policies of urban political systems.

PSC 8212. Urban Policy Problems. 3 Credits.
Analysis of public policy issues confronting urban governments; emphasis on the theoretical roots and empirical impact of past and present programs in such areas as housing, education, poverty, and crime.

PSC 8213. Judicial Politics. 3 Credits.
Introduction to the literature of judicial process and behavior studies; specific focus on selected topics. Emphasis on the major subfields of law, courts, and judicial process.

PSC 8215. Law, Politics, and Society. 3 Credits.
Role of the judiciary in policy formulation; emphasis on the U.S. Supreme Court and civil liberties issues.

PSC 8216. American Presidency. 3 Credits.
Personalized and institutionalized aspects of the presidency, with particular emphasis on the politics of contemporary policymaking.

PSC 8217. Executive Branch Politics. 3 Credits.
Structure and operation of governmental bureaucracy with particular emphasis on the politics of formulating and implementing public policy.

PSC 8218. Legislative Politics. 3 Credits.
Theory, structure, and process of the U.S. Congress, with emphasis on member–constituency relations, individual and collective decision making, party and committee activities, executive–legislative relations, and interest-group activities.

PSC 8219. Political Parties and Elections. 3 Credits.
Nature and functions of American political parties: organizational status, nominating and electoral politics, and role in governing.

PSC 8220. Public Opinion and Political Psychology. 3 Credits.
Sources and dynamics of public opinion and political socialization.

PSC 8221. Interest-Group Politics. 3 Credits.
Theory, structure, and activities of interest groups in American politics.

PSC 8226. Politics and Organizations. 3 Credits.
Theoretical approaches to understanding organizational behavior and change; applications to specific political problems in U.S., international, and comparative politics.

PSC 8229. Politics and Public Policy. 3 Credits.
Examination of political processes that influence policy formulation, policy implementation, and the uses of policy analysis.

PSC 8286. Selected Topics in American Politics. 3 Credits.
In-depth coverage of significant theoretical and empirical issues in American politics, including such topics as political behavior, electoral politics, and race and politics. For advanced students. (Offered as the demand warrants).

PSC 8331. Advanced Theories of Comparative Politics. 3 Credits.
Major concepts, methods, and theoretical debates in comparative politics, including cultural, rational, and institutional approaches.

PSC 8333. Political Violence. 3 Credits.
Theoretical and methodological approaches to studying violence, such as civil wars, ethnic riots, suicide bombings, and genocide, and the impact of violence on societies and people. Restricted to Registration restricted to PSC graduate students only.

PSC 8334. Democracy and Democratization in Comparative Perspective. 3 Credits.
Theoretical approaches to processes of democratization. Evaluation of cultural, economic, institutional, and international-actor approaches. Case analysis of recently transitioned or transitioning nations. Primarily for Ph.D. students in political science.

PSC 8337. Theories of Political Development. 3 Credits.
Examination of how and why political systems develop the way they do. Why do some countries develop into democracies, while others become authoritarian? How do class conflict, the nature of the elite, and the political culture affect the development of political institutions?.

PSC 8338. Nationalism and Nation-Building. 3 Credits.

PSC 8340. Authoritarianism. 3 Credits.

PSC 8341. Theories of Ethnic Politics. 3 Credits.
Focus on cutting-edge interdisciplinary theories of ethnicity's role in politics. Ethnicity's relationship to democracy, economy, psychology, conflict, and solutions. Cases worldwide.

PSC 8388. Selected Topics in Comparative Politics. 3 Credits.
In-depth coverage of significant theoretical and empirical issues in comparative politics, including such topics as democratization, the politics of development, the role of the state in advanced industrial societies, gender and ethnicity, and the politics of nationalism. (Offered as the demand warrants).

PSC 8441. Advanced Theories of International Politics. 3 Credits.
Perspectives examined range from realism to critical theory and focus upon a variety of explanatory variables.

PSC 8450. Topics-International Relations. 3 Credits.

PSC 8452. Theories of International Security. 3 Credits.
Focus on conflict in different systems and scenarios and on causes and consequences of different strategies. The role of ethics in international security.

PSC 8453. Advanced Theories of International Political Economy. 3 Credits.
Major theories of political economy, from classical perspectives on problems of international cooperation to modern treatments of trade, finance, investment, and regulation.

PSC 8454. Domestic Politics and International Relations. 3 Credits.
Theoretical and empirical approaches to exploring the relationship between domestic politics and international relations. Restricted to Open to PhD students in Political Science and MA students with permission of the instructor.

PSC 8460. Military Intervention. 3 Credits.
Theoretical and empirical approaches to the study of military interventions. The challenges of designing political science research on a complex and policy-relevant topic like military intervention.

PSC 8461. Military Effectiveness. 3 Credits.
Theories of military effectiveness in conventional wars. Case studies of several conflicts and brief exploration of effectiveness in unconventional wars.

PSC 8462. Civil War. 3 Credits.
Theories of causes, conduct, and termination of civil wars. Consideration of violence against civilians, rebel recruitment, counterinsurgency, and civil war outcomes.

PSC 8489. Selected Topics in International Politics. 3 Credits.
In-depth coverage of significant theoretical and empirical issues in international politics, including such topics as comparative foreign policy, ethics and norms in international politics, the politics of military intervention, and theories of security in a post-Cold War environment. For advanced students. (Offered as the demand warrants).

PSC 8997. Advanced Reading. 1-3 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

PSC 8998. Advanced Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

PSC 8999. Dissertation Research. 1-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

PORTUGUESE (PORT)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PORT 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

PORT 1001. Basic Portuguese I. 4 Credits.
Handling the immediate context of daily experience in spoken and written Portuguese: identifying, describing, and characterizing people, objects, places, and events; giving information and instructions; issuing simple commands and requests. Laboratory fee.

PORT 1002. Basic Portuguese II. 4 Credits.
Speaking and writing in Portuguese about past and future events: telling a story (narrating and describing in the past), promising, predicting, and proposing simple hypotheses and conjectures. Prerequisite: PORT 1001 . Laboratory fee.

PORT 1003. Intermediate Portuguese I. 3 Credits.
Increasing active vocabulary, reinforcing mastery of basic grammar, dealing with more complex structures (verbal phrases, subordinate clauses), and using some patterns of indirect speech (repeating or relaying messages, giving reports, summarizing). Prerequisite: PORT 1002 . Laboratory fee.

PORT 1004. Intermediate Portuguese II. 3 Credits.
Consolidation and further expansion of the ability to understand as well as produce a more complex level of oral and written discourse emphasizing subjective expression: issuing indirect commands and requests; giving opinions; making proposals, building arguments; defending and criticizing ideas. Prerequisite: PORT 1003 . Laboratory fee.

PORT 1012. Intensive Basic Portuguese. 8 Credits.
Equivalent to PORT 1001, PORT 1002. Laboratory fee.

PORT 1013. Portuguese for Heritage Speakers. 3 Credits.
Prepares heritage speakers of Portuguese for advanced study in the language beyond the third-year level, including content courses in literature and area studies. Restricted to students who grew up in a Portuguese-speaking environment but have language deficiencies. Prerequisites: Placement examination.

PORT 2005. Composition and Conversation. 3 Credits.
Development of strong conversational skills and the rudiments of expository writing. The vocabulary and structures necessary to move from handling everyday experience and subjective expression to the exposition of more abstract thought and ideas and discussion of political, social, and cultural issues. Prerequisite: PORT 1004. Laboratory fee.

PORT 2006. Applied Portuguese Grammar. 3 Credits.
Intensive study of Portuguese grammatical construction in oral and written form, including consideration of relationships across the history of the language and its grammar, linguistics, and dialectology. Prerequisite: PORT 2005.

PORT 2010. Accelerated Portuguese. 3 Credits.
An intensive course designed for speakers of another Romance language to develop competence quickly in spoken and written Portuguese. Laboratory fee.

PORT 3100. The Lusophone Atlantic World. 3 Credits.
A wide-ranging cross-cultural examination of the Portuguese-speaking Atlantic world, which includes extensive areas of the Americas and West Africa. How Lusophone Atlantic populations relate to those of other areas, such as Mozambique and former Portuguese India, where Portuguese-based Creoles are or were spoken. Prerequisite: PORT 2006 or consent of instructor.

PORT 3101. Culture and Civilization of the Sephardim. 3 Credits.
Focus on the cultural and religious background of the Jews of Spain and Portugal both before and since their expulsion/forced conversion in the late 15th century. Narrative and documentary histories from Sephardic cultures in the Iberian Peninsula and in the Diaspora are discussed. Prerequisite: PORT 2006 or consent of instructor.

PORT 3600. Topics in Lusophone Literature and Culture. 3 Credits.
May be repeated for credit provided the topic differs. Prerequisite: PORT 2006 or consent of instructor.

PORT 4800. Independent Study. 1-3 Credits.

PROFESSIONAL STUDIES ADVOCACY IN THE GLOBAL ENVIRONMENT (PSAD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSAD 6200. Global Perspective Residencies. 3,6 Credits.
Residencies focused on understanding how successful approaches to advocacy vary around the world.

PSAD 6225. Fundamentals of Global Political Management. 3 Credits.
The theory, practice, and development of global political management. The impact on governance in regions and in nation states, including campaign strategy, issues development to impact election outcomes, impacting public opinion in regions and countries, beginning elements of building coalitions, and the global development of political management as a field and as a profession. The role of political managers in nation states and their insights from practical experience. Multinational corporations, NGOs, international governing bodies, and global activism.

PSAD 6240. Global Advocacy: Strategies, Tools, and Tactics. 3 Credits.
The current state of global advocacy and analysis of strategic models. Consideration of which advocacy tools are best used for specific tasks and how they can be applied around the globe. Specific advocacy tools and techniques that maximize success in regions and countries. Students choose either PSAD 6240 or PSAD 6270, depending on their chosen program emphasis; credit cannot be earned for both courses.

PSAD 6250. Cultural Aspects of Global Engagement. 3 Credits.
Focus on understanding multicultural communities and diverse institutions, customs, and practices. The course is developed to prepare students for effective and ethical public engagement on behalf of global organizations, communicating issues and commitments to diverse audiences and the general market. From a base of cultural understanding, students consider effective engagement strategies and techniques. Global case studies with multicultural viewpoints.

PSAD 6260. Comparative Political Management Environments. 3 Credits.
The operating rules, customs, and processes by which laws are enacted and regulations written in countries around the globe. The multitude of governance systems and the realm of influencers around the globe. The varied systems within which legislators, administrators, bureaucracies, and stakeholder's work. Students are expected to master the rules and procedures of at least one government, understand basic negotiation, and draw comparisons between nations or regions.

PSAD 6270. International Public Relations and Global Advocacy. 3 Credits.
How global public relations strategies are developed and implemented to support advocacy efforts. Case studies of successes and failures. Consideration of communications theories that enable insight into challenges arising from differences in language, culture, politics, and economics worldwide. Students develop, implement, and assess a comprehensive global public relations strategy that includes social media technologies. Students choose either PSAD 6240 or PSAD 6270, depending upon their chosen program emphasis; credit cannot be earned for both courses.

PROFESSIONAL STUDIES HEALTH CARE CORPORATE COMPLIANCE (PSHC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSHC 6201. Introduction to Health Care Corporate Compliance. 3 Credits.

PSHC 6202. Compliance with Laws and Regulations I. 3 Credits.
Issues of governance and corporate responsibility, anti-kickback and antitrust law, Civil False Claims Act, emergency medical treatment, and enforcement initiatives.

PSHC 6203. Case Studies in Health Care Corporate Compliance. 3 Credits.
Case study approach to investigation and analysis of compliance issues. Application of principles and diagnostic and remediation skills to real-world situations. Prerequisite: PSHC 6202.

PSHC 6204. Compliance with Laws and Regulations II. 3 Credits.
Issues of governance and corporate responsibility, HIPPA compliance and enforcement, federal tax law, Stark law, Sherman Act, Clayton Act, antitrust enforcement policy in healthcare. Prerequisites: PSHC 6201 and PSHC 6202.

PSHC 6206. Case Studies in Health Care Corporate Compliance. 3 Credits.
Case study approach to investigation and analysis of compliance issues. Application of principles and diagnostic and remediation skills to real-world situations. Prerequisites: PSHC 6201, PSHC 6202.

PROFESSIONAL STUDIES HOMELAND SECURITY (PSHS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSHS 6240. Political Violence and Terrorism. 3 Credits.
The evolution of terrorism and politically motivated violence; causes and origins in regional, national, and international terrorist and insurgent groups and so-called terrorist states; trends in terrorist modus operandi, including asymmetric attacks; formulating effective counterterrorist strategies. Restricted to students in the MPS in homeland security program.

PSHS 6241. Globalization of Threats and International Security. 3 Credits.
The intersection of globalization and national and international security; how globalization may create new threats while amplifying existing threats; the relationship of specific forms of globalized threat to globalization; responses of states and non-state actors to such threats; the role of international organizations. Restricted to students in the MPS in homeland security program.

PSHS 6242. Security and Civil Liberties. 3 Credits.
Examination of U.S. government activities designed to protect the security of American citizens while balancing those interests against citizens' civil liberties; limitations placed on government activities by the First and Fourth Amendments of the Constitution; complexities associated with the characterization of criminals and terrorists. Restricted to students in the MPS in homeland security program.

PSHS 6243. Intelligence and Strategic Analysis. 3 Credits.
The structure and components of the national intelligence community and law enforcement communities; international intelligence comparison; analysis of intelligence policies and strategies at the international, national, and regional levels. Restricted to students in the MPS in homeland security program.

PSHS 6244. Information Systems Protection. 3 Credits.
Exploration of the major areas of information security including risk management, cybercrime, cyberconflict, and the technologies involved in both cyberattacks and information systems protection; creating, implementing, and maintaining an information security program; root causes of insecurity in information systems.

PSHS 6250. Strategic Planning and Budgeting. 3 Credits.
The adaptation of strategic planning and performance measures beyond budgeting by government agencies dealing with long-term security issues; integrative approach to strategic planning and management, focusing on the implementation, evaluation, and oversight of strategy and policy; development of budgets, accountability plans, and risk management to ensure compliance with stated goals; analytical tools and techniques that inform organizational strategies and actions. Restricted to students in the MPS in homeland security program.

PSHS 6251. Inter-Agency Cooperation. 3 Credits.
In-depth study of interagency cooperation issues relevant to the U.S. Department of Homeland Security's organizational structure; cooperative initiatives through mutual assistance agreements and regional, national, and international structures; technology interoperability, legal, and interorganizational challenges. Restricted to students in the MPS in homeland security program.

PSHS 6252. Emergency Management and Crisis Communication. 3 Credits.
The role of crisis communications in the overall management of emergency operations; critical communications tasks, functions, and operations of the emergency operations center, incident command, and associated emergency personnel; strategies and tactics to enhance and promote effective crisis communications among government emergency managers. Restricted to students in the MPS in homeland security program.

PSHS 6253. Managing the Politics of Leadership. 3 Credits.
The role of power and influence in organizations; complexity and challenges of developing political strategies and mobilizing the political support and resources needed to implement objectives. Restricted to students in the MPS in homeland security program.

PSHS 6254. Strategic Change Management. 3 Credits.
The challenges, techniques, burdens, and successes associated with initiating and implementing major change within organizations; the process of organizational change from multiple theoretical perspectives. Restricted to students in the MPS in homeland security program.

PSHS 6260. Methods of Analysis in Security. 3 Credits.
Methods and problems of data collection in security fields; analytical design, instrument utilization, sampling, and measurement; data analysis techniques. Restricted to students in the MPS in homeland security program. Prerequisite: None.

PSHS 6270. Capstone Project. 3 Credits.
Students refine their conception of leadership and knowledge of the homeland security field. Participants experience leadership in action and enhance independent learning while working in both small and large group dynamics. Restricted to students enrolled in the PSHS cohort. Prerequisites: All the curriculum in the PSHS must be completed before registering for this course.

PROFESSIONAL STUDIES-INTEGRATED INFORMATION, SCIENCE, AND TECHNOLOGY (PSIS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSIS 2101. Writing & Comm & Med Rel - I. 4 Credits.
The fundamentals of reading and writing with a clear sense of purpose and audience. How academic writing in virtually any subject area and on virtually any topic represents a formal engagement with larger scholarly debates. The writing process, including prewriting, drafting, and revision as well as basic research methods. Making clear oral presentations.

PSIS 2102. Writing & Comm & Med Rel - II. 4 Credits.

PSIS 2103. Found Math & Stat Sci - I. 4 Credits.

PSIS 2104. Found Math & Stat Sci - II. 4 Credits.

PSIS 2105. Found Info Tech & Comp - I. 4 Credits.

PSIS 2106. Found Info Tech & Comp - II. 4 Credits.

PSIS 3122. Ethics in Sci & Tech Policy. 4 Credits.

PSIS 3123. Legislative Aff & Gov Proc. 4 Credits.

PSIS 4131. Molecular Bio for Biotech. 4 Credits.

PSIS 4132. Phys Principles of Biotech. 4 Credits.

PSIS 4133. Bioinformatics. 4 Credits.

PSIS 4134. Biophysics in Life Sciences. 4 Credits.

PSIS 4135. Computational Modeling. 4 Credits.

PSIS 4136. Intro Biomed Instrumentation. 4 Credits.

PSIS 4137. Alternative Energy Sources. 4 Credits.

PSIS 4138. Introduction to Health IT. 4 Credits.
Current and emerging healthcare information technologies, the policies involved in the delivery of healthcare and health IT, and the people and the processes that support the delivery of healthcare. Restricted to Majors only.

PSIS 4141. Comp & Telecom Networks. 4 Credits.

PSIS 4142. Rel Databases & Design. 4 Credits.

PSIS 4143. Systems Integration. 4 Credits.

PSIS 4144. Info & Network Security. 4 Credits.

PSIS 4145. Software Sys Dev Processes. 4 Credits.

PSIS 4151. Entrepreneurship & Comm Tech. 4 Credits.

PSIS 4152. Entrprnrshp/Tech Venture Cr. 4 Credits.

PSIS 4190. Capstone Proj & Senior Thesis. 4 Credits.

PSIS 4191. Capstone Project and Senior Thesis I. 2 Credits.
The capstone project allows either the conduct of significant independent research or the design and implementation of a real-world project. Either choice is a means for students to use the knowledge and skills they have acquired throughout the program. For most students, the capstone project can showcase their skills via a comprehensive written report or a portfolio that can be presented to future employers.

PSIS 4192. Caps Proj & Senior Thesis- II. 2 Credits.

PSIS 4195. Undergraduate Research. 1-4 Credits.

PSIS 4199. Special Topics. 2-4 Credits.

PROFESSIONAL STUDIES LANDSCAPE DESIGN (PSLD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSLD 6100. Landscape Graphics. 1 Credit.

PSLD 6201. Introduction to Design. 2 Credits.

PSLD 6202. Site Analysis. 2 Credits.

PSLD 6203. Site Engineering. 2 Credits.

PSLD 6204. Construction Methods and Materials. 2 Credits.

PSLD 6205. Digital Representation for Landscape Design. 2 Credits.

PSLD 6212. History of Landscape Design. 2 Credits.

PSLD 6213. Contemporary Themes in the Landscape. 1 Credit.
Current thinking and trends in shaping the landscape.

PSLD 6221. Landscape Plants for Fall. 2 Credits.

PSLD 6223. Landscape Plants for Spring. 2 Credits.

PSLD 6225. Landscape Plants for Summer. 2 Credits.

PSLD 6229. Herbaceous Plants. 1 Credit.

PSLD 6231. Site Design Studio. 4 Credits.
The interaction of the design concept and the various factors and circumstances that dictate or moderate that particular concept in the garden design process. The process that transforms abstract design principles, ordering principles, and spatial organizations previously learned into a specific garden design. Graphics demonstrations and exercises to further develop visual and graphic communication skills.

PSLD 6236. Planting Design Studio. 4 Credits.

PSLD 6240. Comprehensive Project. 2 Credits.

PSLD 6260. Introduction to Sustainable Design. 2 Credits.

PSLD 6261. Ecology of the Built Environment. 2 Credits.

PSLD 6262. Tools for Sustainable Design. 3 Credits.

PSLD 6264. Native Plants I. 2 Credits.
Identification and use of native plant species that are sustainable due to their evolution as part of its local ecosystem.

PSLD 6265. Native Plants II. 1 Credit.
Continuation of PSLD 6264. Identification and use of native plant species that are sustainable due to their evolution as part of its local ecosystem.

PSLD 6266. Ecological Restoration. 1 Credit.

PSLD 6268. Sustainable Design Methods. 2 Credits.

PSLD 6269. Sustenance and the Landscape. 2 Credits.

PSLD 6270. Sustainable Design Charrette. 3 Credits.

PROFESSIONAL STUDIES LAW FIRM MANAGEMENT (PSLM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSLM 6201. Theories, Principles, and Practices of Law Firm Management. 6 Credits.

PSLM 6202. ApplyingStrategic&BusPlanning. 3 Credits.
Team projects using a simulated law firm case study, including practice group and office profitability analysis, market assessments, creation of strategic plans, and merger analyses. Prerequisite: PSLM 6201.

PSLM 6203. Practical Applications of Law Firm Management. 3 Credits.
Presentation of strategic plans, analyses, and recommendations developed in PSLM 6202 before a panel of faculty, managing partners, and law firm professionals. Prerequisite: PSLM 6202.

PSLM 6204. Principles of Leadership. 6 Credits.
An intensive course focused on theories and principles of leadership within firms, including leading organizational change. Prerequisite: PSLM 6203.

PSLM 6205. Application of Leadership Frameworks. 3 Credits.
Concepts and frameworks that highlight leadership roles in firms. Prerequisite: PSLM 6204.

PSLM 6206. Strategic Leadership for Sustainability and Change. 3 Credits.
Integration of the content of PSLM 6204 and PSLM 6205 through a focus on strategic leadership. Prerequisite: PSLM 6205.

PSLM 6207. Process Improvement in Law Firms. 3 Credits.
Development of charters for major projects in law firms, applying skills pertaining to managing change and conflict. Prerequisite: PSLM 6206.

PSLM 6208. Legal Technology and Knowledge Management. 3 Credits.
Key elements of knowledge management, including development of a knowledge management strategy. Prerequisite: PSLM 6207.

PROFESSIONAL STUDIES MOLECULAR BIOLOGY (PSMB)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSMB 4152. Entrprnshp/Tech Venture Cr. 4 Credits.

PSMB 6101. Introduction to Bioinformatics. 3 Credits.
The basic principles of bioinformatics, including genome sequencing, models, and evolution; computational approaches for analyzing biological data. Prerequisites: BISC 1111. Recommended background: 4 credits of general biology.

PSMB 6102. Scripting. 3 Credits.
Introduction to basic concepts of scripting in bioinformatics, such as alignments, searches, and data manipulation for biological data. Recommended background: .

PSMB 6104. Research Orientation. 1-2 Credits.
Introduction to basic approaches to research and professional conduct as a graduate student; curriculum vitae development; scientific writing; human subjects training; biomedical lab safety training; introduction to library resources and literature searches; introduction to writing scientific papers, abstracts, grant applications; and presenting scientific research.

PSMB 6105. Seminar in Computational Biology. 1-2 Credits.
Practical experience in searching current literature, reviewing topics, and interacting in a scientific forum with other students, postdoctoral scholars, visiting faculty, and faculty.

PSMB 6251. A Primer on Computations. 1 Credit.

PSMB 6252. Biomolecular Modeling. 3 Credits.
Principles and practice of molecular simulation; principles of structural biology; principal experimental and computational techniques used to investigate the structure, dynamics, and function of biological systems; practical skills needed to perform and interpret molecular dynamics simulations of biological macromolecules.

PSMB 6253. Principles of Biomedical Instrumentation. 3 Credits.

PSMB 6261. Introduction to Quantitative Biotechnology. 3 Credits.
The study of biology from a physics perspective; quantitative biology; modeling and predicting an organism's reaction to the environment to enable new technologies for disease detection, prevention, and cure; application of mathematical and physical models to the understanding of cellular biology.

PSMB 6262. Bionanotechnology. 3 Credits.

PSMB 6263. Management of Biotechnology Innovation. 3 Credits.
New scientific and technical products, processes, and services related to biotechnology; scientific discovery, emerging technologies, and birth of the biotechnology industry; management concepts and practices to enhance corporate innovation; corporate venture divisions and new management approaches.

PSMB 6264. Entrepreneurship and Technology Venture Creation. 3 Credits.
The process of innovation-entrepreneurship used to launch and build new ventures, with emphasis on technology ventures; organizing for innovation, raising venture capital, wealth creation, managing the small technology-based venture, marketing information technology products and services.

PSMB 6265. Commercialization of Bioscience and Biotechnology. 2 Credits.

PSMB 6266. Capstone Project. 3 Credits.
Issues and standards for ethical conduct of research; career paths in biotechnology; career development tools; scientific written and oral communication, including developing proposals for research funding. Students are required to visit GW's Center for Career Services and to attend select seminars and colloquia.

PROFESSIONAL STUDIES-PARALEGAL STUDIES (PSLX)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSLX 6210. American Jurisprudence. 3 Credits.
An introduction to the foundations, theories, history, and applications of the American legal system; local, state, and federal courts and sources of law; and ethics and professionalism issues of especial importance to paralegals.

PSLX 6211. Legal Research and Writing. 3 Credits.
Fundamentals of legal research using print and online tools.

PSLX 6212. Litigation. 3 Credits.
Legal technology and the rules of court, procedure, and evidence; technical and substantive skills necessary for effective litigation support.

PSLX 6213. Corporations and Contracts Law. 3 Credits.

PSLX 6214. Administrative Law. 3 Credits.
An introduction to administrative and regulatory law; history and development of administrative law; agency, due process, agency actions, administrative investigation and hearings, and judicial review.

PSLX 6215. Government Contracts Law. 3 Credits.
The law of procuring, forming, and executing government contracts, including drafting and litigation; competition requirements, contract changes, and contract terminations; researching and drafting documents common to a government contracts practice.

PSLX 6216. Elements of Intellectual Property Law. 3 Credits.

PSLX 6217. Prosecution and Litigation in Intellectual Law Practice. 3 Credits.

PSLX 6218. International Trade and Finance. 3 Credits.

PSLX 6219. International Litigation. 3 Credits.

PSLX 6221. Tanzanian Legal System. 3 Credits.

PSLX 6222. Tanzanian Community Law. 3 Credits.

PSLX 6223. Contracts. 3 Credits.
Contract elements, their attendant legal ramifications, and the processes necessary to make such determinations. Development of legal reasoning skills in evaluating issues arising from contract law.

PSLX 6224. Advanced Legal Writing. 3 Credits.
Advanced legal writing techniques and drafting for legal practice. Legal writing in plain English; strategies for effective writing; emphasis on legal memoranda, legal correspondence, and preparing and drafting legal pleadings and documents for court. Refines and advances skills in written legal analysis and legal citation.

PSLX 6225. Business Entities. 3 Credits.
Overview of business organizations, including partnerships, limited liability companies, and corporations. Key concepts applicable to business organizations, including regulation, business formation, document preparation. Application of legal analysis within the context of business entities and other topics applicable to paralegals in all disciplines.

PSLX 6226. International Law. 3 Credits.
Introduction and survey of international law, including international trade law and litigation. Rules and principles governing relations among sovereign states, international organizations, and sources of international law. Analysis of the rules and customs for handling international trade. International courts and tribunals; overview of the treaties, customary principles, and institutional structures governing international human rights law.

PSLX 6227. Intellectual Property Law. 3 Credits.
Introduction to the legal structure of an intellectual property practice. Trademarks, copyrights, and patents and the supporting practice concomitant to each element. Analysis of the processes, supporting documentation, laws, and rules regarding patent prosecution and litigation. This course complements and builds upon the legal issues and analysis introduced in the courses on contracts, business entities, and litigation.

PSLX 6294. Independent Research in Legal Studies. 2 Credits.
Guided, independent research to demonstrate the higher level of competency in research, analysis, writing, and oral presentation. Restricted to master's degree candidates in the paralegal studies programs.

PSLX 6298. Paralegal Practicum. 0-3 Credits.
Students work in legal environments while completing their studies, taking active roles to obtain, manage, and maximize the value of their positions. Restricted to master's degree candidates in the paralegal studies programs.

PROFESSIONAL STUDIES PUBLIC LEADERSHIP (PSPL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSPL 6201. MasteringMulti-SectorLeadershp. 3 Credits.

PSPL 6202. Policy Issues & Analysis. 3 Credits.

PSPL 6203. Leading in a Digital Environ. 3 Credits.

PSPL 6204. Politics of Orgnl Leadership. 3 Credits.

PSPL 6205. Intergovernmental Relations. 3 Credits.

PSPL 6206. PPP and Contract Mgmt. 3 Credits.

PSPL 6211. RBM Systems. 3 Credits.

PSPL 6212. Managing Multisector Workforce. 3 Credits.

PSPL 6213. Perf-Based Financial Mgmt. 3 Credits.

PSPL 6221. Org Process Improvement Meth. 3 Credits.

PSPL 6222. Org Process Analysis. 3 Credits.

PSPL 6223. Org Process Design. 3 Credits.

PSPL 6224. PI Research Project. 3 Credits.

PSPL 6301. Fundamentals of Organization Performance Improvement. 6 Credits.
In-depth instruction on the Lean Six Sigma approach to organization performance improvement and appropriate uses of a variety of its analytical methods and tools. Students are required to complete a Lean Six Sigma application project and pass all examinations with a score of 80% or better. Students completing all requirements earn a Green Belt Certificate for proficiency in Lean Six Sigma methods and applications. Recommended background: currently working in an organization.

PSPL 6302. Leading Organization Performance Improvement Initiatives. 3 Credits.
Approaches for designing organization performance improvement initiatives and criteria for selecting the most effective approach for the intended initiative. Organization dynamics and change processes considered toward crafting a strategy for leading the changes required by the initiative. Methods and tools for planning and managing each phase of the change initiative. Application of concepts and skills to the design and development of Lean Six Sigma Black Belt projects that are implemented in subsequent courses. Recommended background: currently working in an organization.

PSPL 6303. Advanced Methods for Organization Performance Improvement. 3 Credits.
Advanced methods for data gathering, analysis, problem definition, and conducting and documenting performance improvement experiments. Change management strategies, experimental process design and tests, use of pilots and "sandboxes," and user-centered design principles. Black Belt-level change initiatives, performance improvement design criteria, and change management and organization engagement strategies. Students are required to begin leading an initiative and implementing changes resulting in documented benefits as well as passing all examinations with a score of 80% or better. Prerequisites: PSPL 6301. Recommended background: currently working in an organization.

PSPL 6304. Advanced Applications in Organization Performance Improvement. 3 Credits.
Students learn tools for pulsing the organization to test the effectiveness of their approaches and assess the degree of support from key leaders. Students are encouraged to adopt an evolutionary design perspective and modify their solutions continuously based on feedback and results achieved--documented benefits in cost savings, process speed increases, enhanced customer satisfaction, and revenue enhancements. All examinations must be passed with a score of 80% or better. Students present their final project reports and receive feedback from faculty and a team of peers. Those who complete all requirements with a grade of B or better will earn a Black Belt Certificate demonstrating proficiency in using advanced Lean Six Sigma methods and processes to lead organization performance improvement initiatives. Prerequisites: PSPL 6301, PSPL 6303. Recommended background: currently working in an organization.

PROFESSIONAL STUDIES PHYSICS EDUCATION (PSPH)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSPH 6223. Energy &Momentum: K-12 Physics. 4 Credits.

PSPH 6224. Elec & Mag: K-12 Physics. 4 Credits.

PSPH 6225. Waves & Optics: K-12 Physics. 4 Credits.

PSPH 6226. Modern Physics & App: K-12. 3 Credits.

PSPH 6227. Math Techniques: K-12 Physics. 3 Credits.

PSPH 6228. Assessment: K-12 Science Ed. 3 Credits.

PSPH 6230. Capstone Project: K-12 Physics. 3-6 Credits.

PROFESSIONAL STUDIES PUBLIC RELATIONS (PSPR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSPR 6201. Public Relations Principles and Practices. 3 Credits.
Basic rules and strategies in public relations. Major trends, major firms, and types of business and expertise. New media and integrated media communications.

PSPR 6202. Advanced Writing for PR Professionals. 3 Credits.

PSPR 6203. Research Methods for Public Relations and Public Affairs Managers. 3 Credits.

PSPR 6204. Media Relations in the New Media World. 3 Credits.

PSPR 6205. Fundamentals of Business and Management for Public Relations and Public Affairs. 3 Credits.

PSPR 6206. Ethical Standards in Public Relations and Public Affairs. 3 Credits.

PSPR 6207. Sustainability Communications Methods and Practices. 3 Credits.

PSPR 6208. Integrated Marketing Communications. 3 Credits.
The evolution of integrated marketing communications as a means by which for-profit and nonprofit enterprises extend the reach and influence of public relations and public affairs; traditional and non-traditional communications approaches and technologies. Recommended background: degree candidacy in the MPS in the Field of Strategic Public Relations program and/or graduate status in the School of Business or School of Media and Public Affairs.

PSPR 6210. SpecTopics in Public Relations. 3 Credits.

PSPR 6221. Consumer Behavior. 3 Credits.

PSPR 6222. Multicultural Marketing. 3 Credits.

PSPR 6223. Public Opinion and Political Socialization. 3 Credits.
The process by which people become engaged in public debates and politics; how they acquire and maintain attitudes, biases, and beliefs, and the decisions they make as a result. Discussion centers on the forces that influence public opinion and political socialization, including the power of the press and its impact on our major institutions. Prerequisites: PSPR 6201 and PSPR 6202.

PSPR 6230. Crisis and Issues Management. 3 Credits.
The intersection of communications and policy disciplines, including environmental scanning, public policy analysis, public policy advocacy, strategic communications, media relations, grassroots mobilization, coalition management and corporate reputation management. How these issues work together to further the broad strategic goals of organizations.

PROFESSIONAL STUDIES PUBLISHING (PSPB)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSPB 6201. Book and Journal Publishing. 3 Credits.
Overview of the book and journal publishing industry and the opportunities and challenges it presents. Major functions of a publishing house and stages of publishing, including editorial, design, production, sales, marketing, and distribution. Publishing house finances.

PSPB 6203. Business of Publishing. 2 Credits.

PSPB 6205. CopyrightLaw/Print&Cyberspace. 3 Credits.

PSPB 6207. Marketing Strategies. 2 Credits.

PSPB 6213. Book Design. 2 Credits.

PSPB 6221. Publishing Management, Organization, and Strategy. 2 Credits.

PSPB 6222. Accounting and Finance for Publishers. 2 Credits.

PSPB 6224. Budgeting, Fulfillment, and Distribution. 2 Credits.

PSPB 6232. Production Management. 3 Credits.
Managing the production process from initial design and editing to a final printed and distributed publication. Aspects of traditional production, including printing basics, manufacturing savings, prepress and composition, paper, postage, and best practices. Emerging trends in digital products and delivery.

PSPB 6235. Essentials of Web Publishing. 2 Credits.

PSPB 6237. Business Models Online. 2 Credits.

PSPB 6251. Fundamentals of Electronic Publishing. 2 Credits.

PSPB 6253. Electronic Publishing Practice. 2 Credits.
Pragmatic, economic, and ethical aspects of electronic publishing for responsible decision making. Prerequisite: PSPB 6251.

PSPB 6255. Electronic Publishing: Infrastructure and Architecture. 3 Credits.
Emerging content technologies, including software and hardware components of a typical publishing system, the enabling standards, and an introduction to publishing systems architecture. Prerequisite: PSPB 6251.

PSPB 6257. Designing/E-publishing Success. 2 Credits.
Principles of digital design: usability testing, search engine optimization, iterative design, and multiple presentational models. Prerequisite: PSPB 6251.

PSPB 6258. User-Centric Design for Print and Electronic Publications. 2 Credits.

PSPB 6261. Editorial Content, Rights, and Permissions. 2 Credits.

PSPB 6262. Editing for Books, Journals, and Electronic Products. 2 Credits.
An overview of the editorial roles, functions, and workflows used in creating publications for print and electronic formats; peer review and online tools for manuscript submission and tracking.

PSPB 6265. Managing Editorial Staff. 2 Credits.

PSPB 6271. Sales Management, Strategy, and Positioning. 2 Credits.

PSPB 6272. Book Publicity & Promotion. 2 Credits.

PSPB 6273. Managing the Marketing Portfolio. 2 Credits.

PSPB 6281. Ethics in Publishing. 1 Credit.

PSPB 6298. Digital Publishing Practicum. 2 Credits.
Application of theory and practice acquired in prior courses to a real-world problem. Each semester the topic reflects a selected area of current importance in digital publishing. Restricted to students in the MPS in Publishing program during their final semester of study.

PROFESSIONAL STUDIES MIDDLE SCHOOL MATH (PSMM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSMM 6221. HistofMath/Middle-School Instr. 3 Credits.

PSMM 6222. Math for MiddleSchool Teachers. 3 Credits.

PSMM 6223. NumberTheory/MidleSchlTeachers. 3 Credits.

PSMM 6224. ProbltyStat/MidleSchlTeachers. 3 Credits.

PSMM 6225. Geometry/MiddleSchoolTeachers. 3 Credits.

PSMM 6226. HigherAlgebra/MdlSchlTeachers. 3 Credits.

PSMM 6227. LinAlgMatrxThry/MdlSchTeachrs. 3 Credits.

PSMM 6228. RealAnlys&Trig/MdlSchlTeachrs. 3 Credits.

PSMM 6229. Math Argumentation & Reasoning. 1 Credit.

PSMM 6230. Standards-based Math instruct.. 3 Credits.

PSMM 6231. Math Learning & Assessment. 1 Credit.

PSMM 6232. Readings on Learning Math. 1 Credit.

PSMM 6233. Capstone:Learn/Teach Math. 3 Credits.

PROFESSIONAL STUDIES MIDDLE GRADE SCIENCE (PSMS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSMS 6221. CognitiveNeurosci for Sci Educ. 3 Credits.

PSMS 6222. Physcl Scie fr MidlGrd Tchrs I. 4 Credits.

PSMS 6223. Phys Sci fr MidGrd Tchrs II. 4 Credits.

PSMS 6224. Life Scien fr MidGrd Tchrs I. 4 Credits.

PSMS 6225. Life Scien fr MidGrd Tchrs II. 4 Credits.

PSMS 6226. Earth Scie fr MidGrd Tchrs I. 4 Credits.

PSMS 6227. Earth Scie fr MidGrd Tchrs II. 4 Credits.

PROFESSIONAL STUDIES-SECURITY AND SAFETY LEADERSHIP (PSSL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSSL 6240. Political Violence and Terrorism. 3 Credits.

PSSL 6241. Globalization of Threats and International Security. 3 Credits.

PSSL 6242. Security and Civil Liberties. 3 Credits.

PSSL 6243. Intelligence and Strategic Analysis. 3 Credits.

PSSL 6244. Information Systems Protection. 3 Credits.

PSSL 6245. Cyber Security Law and Policy. 3 Credits.

PSSL 6246. Cyber Intelligence and Strategic Analysis. 3 Credits.

PSSL 6247. Cyber Defense Strategies. 3 Credits.

PSSL 6248. Introduction to Cyber Conflict. 3 Credits.

PSSL 6250. Strategic Planning and Budgeting. 3 Credits.

PSSL 6251. Inter-Agency Cooperation. 3 Credits.

PSSL 6252. Emergency Management and Crisis Communication. 3 Credits.

PSSL 6253. Managing the Politics of Leadership. 3 Credits.

PSSL 6254. Strategic Change Leadership. 3 Credits.

PSSL 6255. Info. Mgt. Just. & Pub. Safety. 3 Credits.

PSSL 6256. Applied Tech in Data Analytics. 3 Credits.

PSSL 6257. Enterprise Arch. & Standards. 3 Credits.

PSSL 6258. Info Sharing & Safeguarding. 3 Credits.

PSSL 6259. Strat. IT Invsmt. & Perf. Mgmt. 3 Credits.

PSSL 6260. Methods of Analysis in Security. 3 Credits.

PSSL 6270. Capstone Project. 3 Credits.
Development of a research project integrating theoretical and analytic perspectives applied to improving organizational effectiveness in public safety agencies.

PSSL 6401. National & International Security Threats. 6 Credits.
The evolution of terrorism and politically motivated violence. Shifts in the operational tactics of guerrilla, terrorist, and insurgent groups and rogue states. Approaches to the formulation of counter-terrorist strategies. The conduct of national and international threat assessment. The various international legal and strategic options available to public safety agencies.

PSSL 6443. Intelligence and Information Systems. 6 Credits.
This course explores the principles of the structure and components of both the national intelligence community and law enforcement communities. It focuses on the analysis of intelligence policies and strategies at the international, national, and regional levels. This course will provide a general understanding of information security, recognize the different challenges, and acquire an awareness of the different cyber threats that today's organizations are exposed to.

PSSL 6448. Introduction to Cyber Conflict, Cyber Intelligence and Strategic Analysis. 6 Credits.
An exploration of cyber conflict, its history, and how it is being integrated into government and military strategies. The evolution of cyber intelligence and models for its collection and analysis. Technical, tactical, and strategic use of information technology between states and non-state actors; national and international cyber strategies, law, and policy as they relate to cyber intelligence efforts; advanced persistent threats; cyber threats to national security; strategic, operational, and tactical cyber intelligence efforts and countermeasures; and cyber weapons, actors, and methods of delivery. The current state and the future of cyber conflict as an evolving phenomenon. Restricted to Master of Professional Studies in the field of strategic cyber operations and information management students only.

PSSL 6450. Strategic IT Investment and Methods of Analysis. 6 Credits.
The effective use of information technology (IT) within public safety organizations. Integration of IT into business processes. Performance measurement, cost benefits analysis, and program evaluation. Methods and problems related to data collection in security fields, with emphasis on analytical design, instrument usage, sampling, and measurement.

PSSL 6452. Strategic Planning & Emergency Response. 6 Credits.
The adaptation of strategic planning and performance measures beyond budgeting for the requirements of government agencies that deal with long-term security issues. Basic principles of emergency planning, including development of an across-the-board response plan involving all levels of government and the private sector, Strategies for ensuring that communication channels are open and secure during a crisis situation.

PSSL 6453. Leadership and Change Management. 6 Credits.
An in-depth look at the role of power and influence in organizations. Case studies demonstrate the necessity of mobilizing the political support and resources needed to implement objectives. The challenges, techniques, burdens and successes associated with initiating and implementing organizational change from multiple theoretical vantages.

PSSL 6455. Information Management & Data Analytics. 6 Credits.
Application of information management techniques to justice and public safety fields: governance structure,emerging modes of communication within and outside organization, processes that enable managers to make decisions. Strategic application of technology to data analysis. Introduction to cutting edge software including predictive and spatial analytics. Principles of data visualization. Application of analytics and visualization in solving justice and public safety problems.

PSSL 6457. Enterprise Architecture and Information Sharing and Safeguarding. 6 Credits.
Overview of technology environments including software, hardware, networks, applications, data, communications, and other relevant architecture disciplines with a focus on service-oriented architecture and similar innovations applicable to the subject fields. Principles of privacy and safeguarding data in government owned or operated databases related to justice, public safety and homeland security.

PROFESSIONAL STUDIES URBAN SUSTAINABILITY (PSUS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSUS 6201. Principles of Sustainable Urban and Regional Planning. 3 Credits.
The environmental, social, and economic elements of sustainability. Present and future challenges, including environmental management, energy policy, financial crises, global warming, inequality, public education, third and first world slums, the success and failure of nations, urban agriculture, urban economics, and more. The implications of sustainable development and conducting research based on evidenced-based policy. Students focus on the work of researchers outside of the planning field as they write a series of research essays containing reviews of relevant scientific literature.

PSUS 6202. Urban and Environmental Economics. 3 Credits.
The application of neoclassical economics to problems faced by practitioners of the field of sustainable urban and regional planning. Key economic concepts including supply and demand, consumption and production, markets and market failure, and measurement of environmental and other non-market commodities. An economist's perspective on the principals and methods for understanding urban and environmental challenges and solutions, urban growth, environmental quality, public policy, and other issues fundamental to contemporary development.

PSUS 6203. Research Methods I: Geospatial and Econometric Analysis. 3 Credits.
Focus on developing proficiency in geographic information systems (GIS) and econometric analysis, a method of statistical analysis for measuring the relationships at work in socioeconomic phenomena. Building and analyzing spatial datasets, specifically using ArcGIS and Stata statistical software.

PSUS 6204. Land Use Law. 3 Credits.

PSUS 6210. Transportation Planning in City Systems. 3 Credits.
Transportation planning with long-run goals in mind, including reducing greenhouse gas emissions. The role of planning at local and regional scales within the broader framework of transportation engineering.

PSUS 6211. Regional Development and Agricultural Economics. 3 Credits.
The economics of land use patterns and development processes in the United States and elsewhere in the world. Introduction to the field of agricultural economics and examination of food deserts and other food-related problems relevant to the field of sustainable urban planning.

PSUS 6212. Sustainable Communities I: Housing and Design. 3 Credits.
Community development with a focus on policy and the various sectors of interest that affect contemporary urbanization. How policies, planning techniques, and implementation strategies form the core work of planning practitioners. Topics include water supply, food deserts, public health, and urban resilience. Pathways to more sustainable communities are explored through the policy arenas in which key decisions are made; key sectors that make up the fabric of communities; and special topics that have emerged as critical challenges for sustainable community development.

PSUS 6213. Research Methods II: Advanced Geospatial and Econometric Analysis. 3 Credits.
Builds upon the skills learned in PSUS 6203. Application of econometric and geospatial analysis in the field of sustainable urban and regional planning. Emphasis on objectivity and use of the scientific method to form defensible, evidence-based policy. Prerequisite: PSUS 6203.

PSUS 6220. Planning Resilient and Low-Carbon Cities. 3 Credits.
International perspectives on urban planning, taking into consideration increased global temperatures resulting from greenhouse gas emissions-induced climate change. The course is taught with reference to the findings of the Intergovernmental Panel on Climate Change (IPCC) and considers how urbanization around the world must adapt to the reality of global warming and its consequences.

PSUS 6221. The Scientific Basis of Climate Change. 3 Credits.
The science underlying climate change policy and decision making. Earth systems, climate change projections, the need for mitigation, and impact assessment. Designed for non-scientists.

PSUS 6222. Climate Change Economics. 3 Credits.
Energy use in built environments with an emphasis on fundamental drivers of energy demand, strategies to promote energy efficiency, and essential features of energy supply; the relationship between energy demand and supply in development.; how advances in construction technology can help counter greenhouse gas emissions.

PSUS 6223. Sustainable Communities II: Tools for Assessment and Transformation. 3 Credits.
Builds on PSUS 6212 by further detailing the theory and tools relevant to the assessment and transformation of neighborhood and communities. Geospatial analysis explore the fundamental drivers of urban form, advanced transportation systems, theories of change, and various impact assessment tools used to inform policy implementation.

PSUS 6224. Sustainable Energy for Cities and the Environment. 3 Credits.
Resource management and renewable energy technologies. Vulnerabilities of existing urban structures, particularly the energy grid. Implications of and solutions to energy-related problems likely to arise in present and future cities.

PSUS 6230. Sustainable Comm Design Studio. 3 Credits.

PSUS 6231. Practicum:ClimateChangeMgt&Pol. 3 Credits.

PSUS 6233. Capstone Studio. 3 Credits.

PSUS 6235. Adv Topics in Urban Sust. 3 Credits.

PSUS 6260. Intro to Sustainable Design. 2 Credits.

PSUS 6261. Ecology of the Built Env.. 2 Credits.

PSUS 6262. Tools for Sustainable Design. 3 Credits.

PSUS 6264. Native Plants I. 2 Credits.

PSUS 6265. Native Plants II. 1 Credit.

PSUS 6266. Ecological Restoration. 1 Credit.

PSUS 6268. Sustainable Design Methods. 2 Credits.

PSUS 6269. Sustenance and the Landscape. 2 Credits.

PSUS 6270. Sustainable Design Charrette. 3 Credits.
Preparation of a final project that demonstrates students' understanding of how to select and use sustainable site principles in a landscape design. Building and expanding upon techniques learned in previous coursework, students show comprehension of how their project site has boundaries within its surrounding ecosystem, but is still part of a larger life cycle. Students work in a concentrated charrette format to develop a site design that is fully sustainable and buildable.

PROFESSIONAL PSYCHOLOGY (PSYD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSYD 6201. Multi-disciplinary LGBT Health. 2 Credits.

PSYD 6202. LGBT Mental Health. 2 Credits.

PSYD 6203. LGBT Health Policy. 2 Credits.

PSYD 6210. LGBT Health Capstone Research. 0 Credits.
Students enrolling in PSYD 6211 in the spring semester of any academic year must enroll in this course in the immediately preceding summer session and fall semester. No academic credit is given for this course. Restricted to students in the graduate certificate in LGBT health policy and practice program.

PSYD 6211. LGBT Health Capstone. 3 Credits.
Students work with faculty mentors to conceive of, design, and develop an implementation and evaluation plan for a project, innovation, or work product in their place of employment, other sponsoring organization, or community setting with the purpose of advancing the health of LGBT persons in a real world context. Students work in consultation with mentors in summer and spring residency periods with distance and in-the-field completion of the project throughout the program year. Restricted to students accepted and enrolled in LGBT Health Policy & Practice Certificate program. Prerequisites: n/a.

PSYD 6221. LGBT Health Current Topic. 1-2 Credits.
Contemporary, trans-affirmative perspectives on the health, mental health, and policy needs of transgender persons and their communities. Restricted to students in the graduate certificate in LGBT health policy and practice program; permission of the instructor may be substituted.

PSYD 8201. Psychological Assessment. 3 Credits.
Cognitive and projective testing, focusing on core batteries used in intellectual and personality assessment. Laboratory fee.

PSYD 8202. Psychological Assessment. 3 Credits.
Continuation of PSYD 8201. Cognitive and projective testing, focusing on core batteries used in intellectual and personality assessment. Laboratory fee.

PSYD 8203. Practicum in Clinical Psychology. 0-3 Credits.
A continuing practicum, repeated in each semester and summer of the program's three years. In year one, focused on psychological assessment; in upper years, on psychological intervention related to the student's choice of area.

PSYD 8204. Biological Bases of Clinical Psychology. 3 Credits.
The structure and function of the nervous system and its application to understanding psychopathology. Development of the nervous system in interaction with learning and experience as a central basis of human growth and disability.

PSYD 8205. Psychodynamic Psychopathology. 3 Credits.
The developmental psychodynamic basis for understanding psychopathology, with comparisons to relevant biological and social explanatory factors.

PSYD 8206. Cognitive Bases of Clinical Psychology. 3 Credits.
The theoretical and experimental basis of learning, memory, and cognition. Cognitive growth, maturation, and learning. Cognitive processes in relation to the understanding of psychopathology.

PSYD 8207. Group and Organizational Dynamics. 3 Credits.
Social aspects of adaptive and maladaptive dynamic patterns; group structure and the individual; shared unconscious ideas in wish and defense; small, large, and intergroup (community) dynamics and intervention.

PSYD 8209. Statistics and Research Design. 3 Credits.
The role of measurement, design, and statistics in clinical psychological research; basic descriptive and inferential statistics; analysis of variance and multivariate designs; case study designs; clinical field research.

PSYD 8210. Professional Issues. 3 Credits.
The legal and ethical issues in the conduct of professional psychology, including confidentiality, ethical competence, privilege, expert testimony, malpractice, and the insanity defense. Business and ethical issues concerning private practice, licensing, certification, forensics, and insurance reimbursement.

PSYD 8220. Psychodynamic Psychotherapy I. 3 Credits.
Clinical theories, research, techniques, therapeutic action, and ethics. Ego supportive psychotherapy; psychodynamic formulations; object relational and self-psychological perspectives.

PSYD 8221. Psychodynamic Psychotherapy II. 3 Credits.
Continuation of PSYD 8220. Clinical theories, research, techniques, therapeutic action, and ethics. Exploratory psychotherapy; process and outcome; issues of race, class, ethnicity, gender, and sexuality.

PSYD 8222. Behavioral–Cognitive Therapies. 0-3 Credits.
Theoretical and clinical approaches to understanding and modifying behavior, affect, and thought from behavioral and cognitive perspectives. History and development of these perspectives; current work on psychotherapy integration across varying therapeutic approaches.

PSYD 8225. Ego Psychology/Object Relations Theory. 3 Credits.
Consideration of several major contemporary schools of psychodynamic mental functioning—ego psychology, self psychology, object relations theory, and relational perspectives. Formulation skills are built through the two semesters.

PSYD 8226. Ego Psychology/Object Relations Theory. 0-3 Credits.
Continuation of PSYD 8225. Consideration of several major contemporary schools of psychodynamic mental functioning—ego psychology, self psychology, object relations theory, and relational perspectives. Formulation skills are built through the two semesters.

PSYD 8227. History and Systems of Clinical Psychology. 3 Credits.
A review of the historical development of clinical psychology —its roots in mainstream psychology and psychiatry and its modern technical and theoretical systems.

PSYD 8231. Short-Term Psychotherapy. 3 Credits.
A study of brief psychodynamically oriented psychotherapy interventions. Focus on clinical vignettes.

PSYD 8240. Group Psychotherapy. 3 Credits.
Theory and technique in group psychotherapy; history of group therapy and group analysis; current controversies in the field.

PSYD 8244. Cultural Factors-Psychopath/Th. 3 Credits.

PSYD 8246. Community Intervention. 3 Credits.
Consultation theory and practice related to social service, health, educational, and other not-for-profit organizations. Managing change and action plans.

PSYD 8250. Neuropsychological Assessment. 3 Credits.
Theory and practice of neuropsychological assessment. History and development of the field. Major batteries, individualized approaches, and specialized tests.

PSYD 8251. Advanced Psychodynamic Assessment. 3 Credits.
Recent trends in projective testing; Lerner and Lerner, Schafer, Allison and Blatt, Kwawer, Sugarman, Exner.

PSYD 8252. Child and Adolescent Assessment. 3 Credits.
Case seminar with clinical presentations, focused on the core clinical battery. Problems of differential diagnosis between neuropsychological hypotheses and conflict-based hypotheses.

PSYD 8255. Forensic Assessment. 3 Credits.
Overview of the professional standards and ethics guidelines for forensic evaluations. The psychological assessment of criminal cases, the role of the psychologist in expert testimony, and concepts and principles of law encountered in the forensic evaluation process. The role of theory and research in the criminal evaluation process.

PSYD 8260. Child Development. 3 Credits.
Cognitive and emotional factors in the development of normal and abnormal personality dynamics in children and adolescents: experiential and maturational aspects, learning disabilities, the development of conflict and compromise formations; the relevance of child development to adult psychodynamics and psychotherapy.

PSYD 8262. Child and Adolescent Psychotherapy. 3 Credits.
Case seminar on child and adolescent treatment. Biological and psychological treatments; intensive vs. short term; conceptualizations of play therapy; differences from adult techniques.

PSYD 8264. Child and Adolescent Psychopathology. 3 Credits.
Theory and research on child and adolescent psychopathology. The development of diagnostic categories and their relevance to psychodynamic viewpoints.

PSYD 8265. Family Therapy. 3 Credits.
Survey of classical and modern theories of family structure and therapy. History and development of the field. Major schools and current controversies.

PSYD 8266. Clinical Intervention in Schools. 3 Credits.
Theory and practice of clinical psychological interventions in schools. Testing, observation, consultation.

PSYD 8267. Advanced Child Psychotherapy. 3 Credits.
Technical approaches to selected clinical problems and populations. Trauma, physical and sexual abuse, problems in learning and attention, gender identity disorder, behavior problems, adoption, and divorce. Coordination of developmental and therapeutic processes, and collateral work with parents.

PSYD 8270. Current Topics in Clinical Psychology. 0-12 Credits.
May be repeated for credit provided the topic differs.

PSYD 8271. Independent Study. 1-12 Credits.

PSYD 8273. Major Area Paper. 1 Credit.
Major Area Paper Research. May be repeated for credit. Restricted to Professional Psychology graduate students only.

PSYD 8280. Issues-Gender Development. 3 Credits.
Studies of similarities and differences in male and female gender development and sexual object choice. Recent theoretical and clinical contributions. Readings in Freud, Fast, Mayer, Stoller, Tyson and Tyson, Kleeman, Chassaguet-Smirgel, Kaplan, and Friedman.

PSYD 8290. Clinical Procedures. 0 Credits.

PSYD 8291. Clinical Procedures. 0 Credits.
Experience in the practical application of clinical skills in the program clinic supervised by licensed clinical psychologists. Restricted to Professional Psychology graduate students only.

PSYCHOLOGY (PSYC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSYC 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

PSYC 1001. General Psychology. 3 Credits.
Fundamental principles underlying human behavior.

PSYC 2011. Abnormal Psychology. 3 Credits.
Causes, diagnosis, treatment, and theories of various types of maladjustments and mental disorders. Prerequisite: PSYC 1001.

PSYC 2011W. Abnormal Psychology. 3 Credits.
Causes, diagnosis, treatment, and theories of various types of maladjustments and mental disorders. Prerequisite: PSYC 1001.

PSYC 2012. Social Psychology. 3 Credits.
Social foundations of behavior: cognition, motivation, role behavior, communication, small-group processes, and attitudes. Prerequisite: PSYC 1001.

PSYC 2013. Developmental Psychology. 3 Credits.
Introduction to the study of human development; theory and research concerning changes in physical, cognitive, and social functioning and influences on the developing individual. Prerequisite: PSYC 1001.

PSYC 2014. Cognitive Psychology. 3 Credits.
Introduction to the study of cognition; review of data and theories on the topics of perception, attention, memory, language, reasoning, and decision making. Prerequisite: PSYC 1001.

PSYC 2015. Biological Psychology. 3 Credits.
Introduction to the biological basis of behavior; review of data and empirical methods on the topics of neural structure and function, brain damage, neuroanatomy, genes, hormones, and their influence on behavior. Prerequisite: PSYC 1001.

PSYC 2101. Research Methods-Psychology. 3 Credits.
Survey of research designs (e.g., case studies, correlational designs, experiments), methods (e.g., questionnaires, observations), and measurement issues (e.g., reliability and validity). Prerequisite or corequisite: PSYC 1001, STAT 1053.

PSYC 2508. Humanistic Psychology. 3 Credits.
Critical examination of humanistic psychology. Emphasis on role of consciousness in human behavior. Philosophic foundations, existential, phenomenological, and transpersonal psychology. (Formerly PSYC 3108) Prerequisites: PSYC 1001.

PSYC 2514. Adult Development and Aging. 3 Credits.
Psychological aging and development during the adult years, with an emphasis on theories of adult development and research on changes in cognitive functioning and social adjustment in early, middle, and later adulthood. (Formerly PSYC 3114) Prerequisites: PSYC 1001.

PSYC 2529. Theories of Personality. 3 Credits.
Survey of personality theories; emphasis on their application to problems of individuals. (Formerly PSYC 3129) Prerequisites: PSYC 1001.

PSYC 2531. Psychological Tests. 3 Credits.
Survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee. (Formerly PSYC 3131) Prerequisites: PSYC 1001.

PSYC 2544. Industrial/Organizational Psychology. 3 Credits.
Psychological concepts and methods applied to problems of personnel management, employee motivation and productivity, supervisory leadership, and organizational development. Formerly PSYC 2144. Prerequisites: ORSC 1109 or PSYC 1001. (Same as ORSC 2544).

PSYC 2550. Psychology of Sex Differences. 3 Credits.
Relevant biological, psychological, and sociological influences on males and females in the development of sex differences; hormonal differences, gender identity, differential socialization of sons and daughters, masculinity/femininity, cultural evaluation of male and female roles. Survey of relevant psychological theory. Emphasis on empirical research and hypothesis testing. (Formerly PSYC 3150) Prerequisites: PSYC 1001.

PSYC 2554. Psychology of Crime and Violence. 3 Credits.
Examination of many psychological aspects of criminal behavior; personality of criminals and of psychological processes affecting behavior. (Formerly PSYC 3154) Prerequisites: PSYC 1001.

PSYC 2556. Psychology of Attitudes and Public Opinion. 3 Credits.
Psychology of opinion formation, measurement of opinion, social determinants of attitudes, psychological processes in propaganda, bases of receptivity to propaganda, psychological warfare. (Formerly PSYC 3156) Prerequisites: PSYC 1001.

PSYC 2570. Peer Education. 3 Credits.
This is a course designed to train George Washington University undergraduate students to be health peer educators. Students will be trained in various topics related to mental health, physical health, and alcohol and/or other drugs, and will gain the skills needed for outreach programming. Prerequisites: PSYC 1001.

PSYC 2588. Attitudes Toward Death and Dying. 3 Credits.
Exploration of the many different aspects, attitudes, and experiences associated with the process of death and dying. (Formerly PSYC 3188) Prerequisites: PSYC 1001.

PSYC 2596. History and Systems of Psychology. 3 Credits.
A survey and integration of the major viewpoints and concepts of psychology. Recommended for students planning graduate study. (Formerly PSYC 4196) Prerequisites: PSYC 1001.

PSYC 2945. Psychological Study of Spirituality. 3,4 Credits.
The complex interrelationship between psychology and spirituality: health and wellness; development of a spiritual life; psychological factors involved in spirituality; therapy and multicultural issues. (Formerly PSYC 3945) Prerequisites: PSYC 1001.

PSYC 3112. Psychology of Adolescence. 3 Credits.
Psychological characteristics and problems peculiar to adolescence, with emphasis on application of psychology to the solution of such problems. Prerequisite: PSYC 2101 and PSYC 2013.

PSYC 3115. Developmental Psychopathology. 3 Credits.
The origins of child psychopathology, including developmental perspectives and the potential contributions of child-, family-, and community-based characteristics to the emergence of psychopathology. The development of specific childhood disorders. Prerequisite: PSYC 2101 AND PSYC 2011 OR PSYC 2013.

PSYC 3118. Neuropsychology. 3 Credits.
Analysis of neural processes underlying behavior. Basic structure and functions of the nervous system, with emphasis on sensory processes, learning and memory, motivation, and emotion. Prerequisite: PSYC 2101 AND PSYC 2014 OR PSYC 2015.

PSYC 3121. Memory and Cognition. 3 Credits.
An examination of the psychological processes underlying human memory and cognition. Topics cover theoretical and experimental issues involving a range of cognitive function from attention and pattern recognition to learning and memory. Prerequisite: PSYC 2101 AND PSYC 2014 OR PSYC 2015.

PSYC 3122. Cognitive Neuroscience. 3 Credits.
How the structure and functions of the brain are related to cognitive processes and their associated behaviors. The biological bases of behavior and mental activity. Research and case studies by cognitive psychologists, neuroscientists, psychiatrists, and linguists, focusing on how the brain affects pattern recognition, attention, short-term and long-term memory processes, and language. Prerequisite: PSYC 2101 AND PSYC 2014 OR PSYC 2015.

PSYC 3124. Visual Perception. 3 Credits.
An overview of human perception, ranging from the detection of simple stimuli to the identification of objects and events. Perceptions of color, motion, and spatial layout. Research methodology, biological foundations, and theoretical issues. Prerequisite: PSYC 2101 AND PSYC 2014 OR PSYC 2015.

PSYC 3125. Cross-Cultural Psychology. 3 Credits.
Introduction to the theory, methods, and research of cross-cultural psychology, with emphasis on immigrants and ethnic minorities in the United States and on other cultures. Prerequisites: PSYC 2101 and PSYC 2011 or PSYC 2012.

PSYC 3126. Multicultural Psychology. 3 Credits.
The influence of culture on major psychology concepts Current theories and research on culture, with culture being broadly defined to include race, ethnicity, gender, sexual orientation, disability status, and socioeconomic status. Empirical methodologies in cultural psychology, and appreciation of cultural groups within the United States. Issues of culture in the interpretation of personal experiences and in application of cultural diversity issues to various settings. Culturally relevant styles of communication, values from different cultures, racial identity, power and privilege, and issues around health and mental health. Multiculturalism in the modern diverse society. Prerequisite: PSYC 2101 and PSYC 2011 or PSYC 2012.

PSYC 3126W. Multicultural Psychology. 3 Credits.
The influence of culture on major psychology concepts. Current theories and research on culture, with culture being broadly defined to include race, ethnicity, gender, sexual orientation, disability status, and socioeconomic status. Empirical methodologies in cultural psychology, and appreciation of cultural groups within the United States. Issues of culture in the interpretation of personal experiences and in application of cultural diversity issues to various settings. Culturally relevant styles of communication, values from different cultures, racial identity, power and privilege, and issues around health and mental health. Multiculturalism in the modern diverse society. Prerequisites: Psyc 2101 and (Psyc 2011 or Psyc 2012).

PSYC 3128. Health Psychology. 3 Credits.
Current research in the area of health psychology, with special attention to psychological factors related to health and illness, psychological intervention with medical patients, and psychological approaches to illness prevention and health promotion. Prerequisite: PSYC 2101.

PSYC 3132. Social and Personality Development. 3 Credits.
Examination of personal, emotional, and social development from infancy to adolescence and influences on that development. Prerequisite: PSYC 2101 and PSYC 2013.

PSYC 3170. Clinical Psychology. 3 Credits.
An exploration of the history, functions, and concerns of the clinical psychologist. Assessment, treatment, community approaches, ethics. Prerequisite: PSYC 2011 and PSYC 2101.

PSYC 3172. Psychopathology & the Media. 3 Credits.
How abnormal behaviors and mental disorders are portrayed in film and the media, including analysis of the accuracy of these portrayals, focusing on symptomatology, etiology, and treatment of adult psychopathology. Prerequisite: PSYC 2101 and PSYC 2011.

PSYC 3173. Community Psychology. 3 Credits.
The origins and current practice of community psychology, and comparison of community psychological approaches with traditional clinical perspectives. The role of psychology in addressing social issues facing communities; methods for research and intervention targeting communities. Prerequisite: PSYC 2101 and PSYC 2011.

PSYC 3180. Seminar in Cognitive Science. 3 Credits.
Advanced seminar for undergraduate students focusing on recent developments in cognitive science. Topics vary and may include perception, attention, memory, representation, and cognitive control, as well as neural bases of cognitive processes. Prerequisites: PSYC 3118 or PSYC 3121 or PSYC 3122 or PSYC 3124 or PSYC 4106W or PSYC 4107W.

PSYC 3193. Seminar in Industrial/Organizational Psychology. 3 Credits.
Selected specialized topics in the field of psychology and work behavior, such as human ability and personality, decisions and risk behavior, organizational change, and leadership. May be repeated for credit. (Formerly PSYC 4193). Prerequisites: PSYC 1001 and PSYC 2544 or permission of instructor.

PSYC 3198. Current Research Issues. 3 Credits.
Recent studies in psychology, including studies performed by members of the class; emphasis on student participation. May be repeated once for credit. Prerequisites: PSYC 1001 and PSYC 2101.

PSYC 3199. Current Topics in Psychology. 3 Credits.
Topics vary. May be repeated once for credit provided the topic differs. Prerequisites: PSYC 1001 and PSYC 2101.

PSYC 3591. Supervised Research Internship. 1-3 Credits.
Open to qualified students with permission of a supervising faculty member. Arrangements must be made with the faculty supervisor prior to registration; a list of participating faculty members and their research specialties is available from the department. May be repeated for credit; PSYC 3591 and PSYC 4591 combined may be taken for a total of 9 credits maximum. Prerequisites: PSYC 1001, PSYC 2101.

PSYC 3592. Field Internship. 3 Credits.
Senior psychology majors spend a minimum of six hours per week in a supervised internship in a local mental health, rehabilitation, school, or community setting. Students must have weekly blocks of time available. May be repeated for credit, but the repeat enrollment does not count toward the major. Restricted to psychology majors. Prerequisites: PSYC 1001 and PSYC 2101.

PSYC 4106W. Research Lab in Sensation and Perception. 4 Credits.
Capstone course focused on the study of sensation and perception. Students examine previous research, design and carry out research projects, and write psychological research reports. Prerequisites: PSYC 1001, PSYC 2101, and PSYC 2014 or PSYC 2015.

PSYC 4107W. Research Lab in Cognitive Neuroscience. 4 Credits.
A capstone course focused on the study of cognitive neuroscience in which students examine previous research, design and carry out research projects, and write psychological research reports. Prerequisites: PSYC 1001, PSYC 2101, and (PSYC 2014 or PSYC 2015).

PSYC 4201W. Research Lab in Clinical/Community Psychology. 4 Credits.
A capstone course focused on the study of clniical/community psychology in which students examine previous research, design and carry out research projects, and write psychological research reports. Prerequisites: PSYC 1001 and PSYC 2101 and PSYC 2011 or PSYC 2012 or PSYC 2013.

PSYC 4202W. Research Lab in Applied Social Psychology. 4 Credits.
A capstone course focused on the study of topics in applied social psychology, such as discrimination and health, in which students examine previous research, design and carry out research projects, and write psychological research reports. Prerequisites: PSYC 1001 and PSYC 2101 and (PSYC 2011 or PSYC 2012 or PSYC 2013).

PSYC 4203W. Research Lab in Developmental Psychology. 4 Credits.
A capstone course focused on the study of developmental psychology in which students examine previous research, design and carry out research projects, and write psychological research reports. Laboratory fee. Prerequisites: PSYC 1001, PSYC 2101, and PSYC 2011 or PSYC 2012 or PSYC 2013.

PSYC 4591. Independent Research. 1-3 Credits.
Open to qualified students by permission to pursue an independent research project with the supervision of a faculty member ; arrangements must be made with the sponsoring faculty member prior to registration. May be repeated for credit; PSYC 3591 and PSYC 4591 may be taken for a total of 9 credits maximum. (Formerly PSYC 4191) Restricted to . Prerequisites: PSYC 1001, PSYC 2101.

PSYC 4997. Honors Seminar. 3 Credits.
Selected topics in psychology that change each semester. Intended primarily for students in the Special Honors program in psychology. May be repeated once for credit. Prerequisites: PSYC 1001 and PSYC 2101. (Formerly PSYC 4197).

PSYC 6998. Thesis Research. 3 Credits.

PSYC 6999. Thesis Research. 3 Credits.

PSYC 8202. Psychological Research Methods and Procedures. 3 Credits.
Required in all graduate psychology programs. Includes philosophy of science, types of research design, and methods of data collection. Restricted to Graduate students only. Prerequisites: graduate standing, a laboratory course in psychology, and a course in statistics.

PSYC 8203. Experimental Foundations of Psychology: Learning, Memory, and Cognition. 3 Credits.
Current conceptions of learning, memory, and cognition; the research upon which these conceptions are based; applications to practical contexts. Restricted to Graduate students only.

PSYC 8204. Experimental Foundations of Psychology: Biological Basis of Behavior. 3 Credits.
Introduction to the structure and function of the nervous system. Topics include neural communication, sensory processes, memory, neuroendocrinology of sex differences and stress, psychiatric and neurodegenerative disorders. Restricted to Graduate students only.

PSYC 8207. Psychological Assessment I. 3 Credits.
Theoretical and clinical aspects of assessment; includes interviewing, psychometric tests, and projective techniques. Two-hour laboratory—diagnostic work at clinical facilities. Material fee. Restricted to Clinical psychology graduate students only.

PSYC 8208. Psychological Assessment II. 3 Credits.
Continuation of PSYC 8207. Theoretical and clinical aspects of assessment; includes interviewing, psychometric tests, and projective techniques. Two-hour laboratory—diagnostic work at clinical facilities. Material fee. Restricted to Clinical psychology graduate students only.

PSYC 8210. Developmental Theories and Issues. 3 Credits.
Orientation to the field of developmental psychology, with emphasis on traditional and contemporary theories, fundamental concepts and issues, and methodological approaches. Restricted to Graduate students only.

PSYC 8211. Community Psychology I. 3 Credits.
Survey of the history, theories, and values guiding community psychology; models of service delivery. Restricted to Graduate students only.

PSYC 8212. Community Psychology II. 3 Credits.
Continuation of PSYC 8211. Applications of the principles and theories of community psychology to interventions and research. Restricted to Graduate students only. Prerequisites: PSYC 8211.

PSYC 8218. Evidence-Based Interventions. 3 Credits.
Introduction to theory and technique of psychotherapeutic approaches of proven effectiveness. Restricted to Graduate students only.

PSYC 8219. Group Dynamics. 3 Credits.

PSYC 8220. Ethics and Professional Issues. 3 Credits.
The foundations of ethics and ethical decision making, with an emphasis on the APA Ethics Code. Ethical conflicts and issues in the areas of research and practice. Restricted to Graduate students only.

PSYC 8223. Seminar: Human Memory. 3 Credits.
Selected topics of current research interest in the area of human memory. Emphasis on encoding and retrieval processes, amnesia, and disorders of memory. Restricted to Graduate students only.

PSYC 8225. Behavioral Approaches to Child Assessment and Therapy. 3 Credits.
Child assessment and treatment from a behavioral viewpoint. The application of conditioning, reinforcement, and shaping principles with reference to specific disorders of childhood. Restricted to Graduate students only.

PSYC 8227. Seminar: Principles of Psychotherapy. 3 Credits.
For graduate students in clinical psychology. Patient's needs and demands on the therapist. Case participation heavily relied upon. Prerequisite: PSYC 8218.

PSYC 8228. Seminar: Principles of Psychotherapy. 3 Credits.
Continuation of PSYC 8227. For graduate students in clinical psychology. Patient's needs and demands on the therapist. Case participation heavily relied upon. Prerequisite: PSYC 8218.

PSYC 8231. Development of Psychometric Instruments. 3 Credits.
Quantitative techniques and principles used in construction, standardization, and evaluation of personality and ability measures for research and practice; quantification of human judgment for measurement purposes. Prerequisite: course in tests and measurements and an elementary course in statistics. Restricted to Graduate students only.

PSYC 8236. Ethnic and Racial Diversity in Psychology. 3 Credits.
Basic theoretical models of research in ethnic, racial, and cultural diversity and new directions in the field. The impact of being an ethnic minority in the United States. Restricted to Graduate students only.

PSYC 8237. The Practice of General Psychology I. 3 Credits.
Application of psychological principles and findings to a wide spectrum of human problems. Professional issues facing the psychologist offering services. Participation in the development, implementation, and evaluation of applied psychological services and projects. Restricted to Clinical psychology graduate students only.

PSYC 8238. The Practice of General Psychology II. 3 Credits.
Continuation of PSYC 8237. Application of psychological principles and findings to a wide spectrum of human problems. Professional issues facing the psychologist offering services. Participation in the development, implementation, and evaluation of applied psychological services and projects. Restricted to Clinical psychology graduate students only.

PSYC 8239. Lifespan Developmental Psychopathology I. 3 Credits.
Infancy, childhood, and adolescence. Restricted to Graduate students only.

PSYC 8240. Lifespan Developmental Psychopathology II. 3 Credits.
Continuation of PSYC 8239 - Adulthood. Restricted to Graduate students only.

PSYC 8243. Seminar: Psychology of Leadership in Organizations. 3 Credits.
Theories and issues related to the emergence and effectiveness of leaders, with focus on leadership behaviors and processes in organizations. Restricted to Graduate students only.

PSYC 8244. Theories and Processes of Organizational Management. 3 Credits.
Basic functions and techniques of organizational management—design, control, direction, and decision making—examined from the viewpoint of behavioral science. Restricted to Graduate students only.

PSYC 8245. Seminar: Organizational Behavior. 3 Credits.
Analysis of organizational behavior; emphasis on motivation and productivity. Recent research on employee attitudes, primary group, supervisory leadership, formal and informal organization, job design. Restricted to Graduate students only.

PSYC 8246. Seminar: Personnel Evaluation Techniques. 3 Credits.
Techniques of personnel selection and performance evaluation. Employment tests, personal data, assessment interviews, performance ratings, and assessment centers. Federal guidelines in employee selection. Includes practicum. Restricted to Graduate students only.

PSYC 8248. Research Applications to Organizational Intervention and Change. 3 Credits.
Emphasis on development of models of organizational effectiveness; design of valid diagnostic instruments; implementation of research strategies; establishment of program evaluation criteria. Restricted to Graduate students only.

PSYC 8251. Behavioral Neuroscience. 3 Credits.
The neural basis of behavior, with special focus on the psychobiological determinants of learning, memory, and cognition. Methodologies used for different levels of analysis with normal and brain-impaired subjects. Restricted to Graduate students only.

PSYC 8253. Social Cognition. 3 Credits.
Social psychology theories, conceptual approaches, and their applications. Social cognition, person perception, attribution, information processing, attraction, stereotyping. Restricted to Graduate students only.

PSYC 8254. Social Influence. 3 Credits.
Social psychology theories, conceptual approaches, and their applications. Analysis of intentional and unintentional social influence processes and their effects on behavior. Current research on conformity, social power, social exchange, and impression management. Restricted to Graduate students only.

PSYC 8255. Attitudes and Attitude Change. 3 Credits.
Current theory and research on attitudes and attitude change. Restricted to Graduate students only.

PSYC 8256. Introduction to Survey Research. 3 Credits.
Theory and practice of face-to-face telephone and mail surveys. Practical experience with all stages from the formulation of research questions and hypotheses to questionnaire design, sampling, pilot, testing, interviewing, coding, and data cleaning. Prerequisite: STAT 2105 .

PSYC 8257. Current Topics in Social Psychology. 3 Credits.
Advanced seminar with focus on major theoretical approaches, research, or problem areas within field of social psychology. Topic changes each semester. Restricted to Graduate students only.

PSYC 8258. Qualitative Research and Analysis. 3 Credits.
Qualitative research and analysis with a focus on theory, didactic material relevant to qualitative methodologies, and applied qualitative research design and analysis. Restricted to Graduate students only.

PSYC 8259. Psychology of Individual and Group Decision Making. 3 Credits.
Examination of processes in organizational decision making and group behavior. Topics include group and individual decision-making approaches, decision aids and support systems, performance and decision effectiveness, and risk analysis. Restricted to Graduate students only.

PSYC 8260. Psychology of Work Group Development. 3 Credits.
Examination of theory and research on groups as task performance systems. Approaches to team development as a means of improving work group effectiveness, including goal setting, role clarification, increasing interpersonal skills, and conflict resolution. Restricted to Graduate students only.

PSYC 8268. Seminar: Neuropsychology. 3 Credits.
Selected problems in research relating the brain and behavior. Independent topics each semester, such as sensory processing, brain development and behavior, clinical aspects of nervous system function. Restricted to Graduate students only.

PSYC 8275. Women and Health. 3 Credits.
Theoretical and empirical analyses of women's health: how women's health is constructed by medical, psychological, and critical theorists; how sexism, racism, and classism contribute to women's health problems; and identification of conditions that lead to optimal health and well-being. Restricted to Graduate students only. (Same as WSTU 8275).

PSYC 8277. Health Psychology. 3 Credits.
Social psychological theories and research that relate to health and illness. Application of theories of social learning, attribution, attitude change, and social influence to topics such as health promotion and disease prevention, health compliance, and coping with illness and disability. Restricted to Graduate students only.

PSYC 8279. Special Topics in Health Psychology. 3 Credits.
May be repeated for credit provided the topic differs. Admission by permission of instructor. Restricted to Graduate students only.

PSYC 8280. Theories and Practice of Clinical Supervision. 0 Credits.
Theory and practice of clinical supervision through instruction and a supervision practicum in the clinical facilities. Restricted to clinical psychology graduate students.

PSYC 8283. First Year Seminar I: Motivational Interviewing. 0 Credits.
This course develops in clinical psychology doctoral students basic skills necessary for therapeutic effectiveness through motivational interviewing and familiarizes them with goals and values in their clinical training. Restricted to Available only to students in the clinical psychology PhD program.

PSYC 8284. First Year Seminar II: Introduction to Therapy. 0 Credits.
Clinical psychology doctoral students gain basic familiarity with assessment and psychotherapy practices and understanding of the inner workings of the Meltzer Center clinic. Restricted to students in the clinical psychology PhD program.

PSYC 8285. History and Systems of Psychology. 0 Credits.
Clinical psychology doctoral students will engage in self-study of the history and systems of psychology. Restricted to Available only to students in the clinical psychology PhD program.

PSYC 8286. Clinical Psychology Externship. 0 Credits.
Clinical psychology doctoral students will participate in externship placements in clinical settings to develop their clinical skills and competencies. Restricted to students in the clinical psychology PhD program.

PSYC 8287. Current Topics in Clinical Psychology. 3 Credits.
Advanced seminar with focus on major theoretical approaches, research, or problem areas. Topics vary. May be repeated for credit. Restricted to Graduate students only.

PSYC 8288. Current Topics in Industrial/Organizational Psychology. 3 Credits.
Advanced seminar with focus on major theoretical approaches, research, or problem areas. Topics vary. May be repeated for credit. Restricted to Graduate students only.

PSYC 8289. Seminar: Current Topics in Experimental Psychology. 3 Credits.
Review and discussion of contemporary research and theory in a specialized field of psychological study, by leaders in the field. Independent topics each semester; may be repeated for credit. Restricted to Graduate students only.

PSYC 8291. Theories of Organizational Behavior. 3 Credits.
Examination of current theoretical models and research. Restricted to Graduate students only.

PSYC 8295. Independent Research. 3 Credits.
Individual library or experimental research under supervision of staff member. Arrangements must be made with sponsoring faculty member prior to registration. May be repeated for credit. Restricted to Psychology graduate students only.

PSYC 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy major field examination. May be repeated for credit. Restricted to Psychology graduate students only. Prerequisites: Psychology graduate students only.

PSYC 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit. Restricted to Psychology graduate students only.

PUBLIC HEALTH (PUBH)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PUBH 0920. Continuing Research - Master's. 1 Credit.
Continuing Research Credit- Master's Level.

PUBH 0940. Continuing Research - Doctoral. 1 Credit.
Continuing Research Credit- Doctoral.

PUBH 1101. Introduction to Public Health & Health Svcs. 3 Credits.
Introduction to aspects of public health and health services, including health services administration and policy, maternal and child health, environmental health, and health promotion.

PUBH 1102. History of Public Health. 3 Credits.
Historical and philosophical development of public health and its contributions to understanding, preventing, and controlling disease and disabilities.

PUBH 2110. Public Health Biology. 3 Credits.
Basic scientific mechanisms, concepts, and principles in health and the pathogenesis of diseases; a foundation for applications to public health. Prerequisite: BISC 1005 or BISC 1111.

PUBH 2112. Principles of Health Education and Health Promotion. 3 Credits.
Social and behavioral theories underlying health promotion program development and evaluation. Practical applications in a variety of domestic and global public health settings. PUBH 1101 may be taken as a corequisite. Prerequisite: PUBH 1101.

PUBH 2113. Impact of Culture upon Health. 3 Credits.
Relationships between cultural values and the development of modern health systems based on Western models of health care practice. Reliance upon traditional forms of health care. Examples of successful incorporation of traditional practices into evolving health care systems.

PUBH 2114. Environment, Health, and Development. 3 Credits.
Survey of the relationship between health and development and environmental trends. Topics include deforestation, urban contamination, and desertification.

PUBH 2115. Health, Human Rights, and Displaced Persons. 3 Credits.
Concepts of health as a human right, ethics, and the participation of the international community in moving toward health for all. Civil and international conflict in the generation of displaced populations.

PUBH 2116. Global Delivery of Health Systems. 3 Credits.
Introduction to health systems and the basic concepts of health systems administration and financing and health care reform with examples from advanced, middle income, and poor countries.

PUBH 2117. Service Learning in Public Health. 3 Credits.
A service-learning course that combines classroom instruction with practical learning. Students are responsible for securing an approved service site before the beginning of the semester; the instructor is available to assist with this placement.

PUBH 3130. Health Services Management and Economics. 3 Credits.
Basics of management theory, finance, and economics as applied to managing in the public health and health services field. Prerequisite: ECON 1011.

PUBH 3131. Epidemiology: Measuring Health and Disease. 3 Credits.
Principles of epidemiology applied to disease surveillance, control of infectious and chronic diseases, and health services/health policy. Understanding the basic research designs and their relationship to establishing cause and effect and effectiveness of interventions to prevent and cure disease. Prerequisite: PUBH 1101, STAT 1127 .

PUBH 3132. Health and Environment. 3 Credits.
Introduction to environmental and occupational health and implications for individual and population health. Issues of clean water, environmental toxins, air pollution, and the environmental impact on infectious diseases.

PUBH 3133. Global Health and Development. 3 Credits.
Basic concepts of political, social, and economic determinants of health and how health status is measured; burden of diseases that impact development and their basic epidemiological characteristics including who they affect, when they occur, and where risk is greatest; relationships between socioeconomic development and global health can be observed, measured, and used for the management of health programs. Material are global in coverage, but with a strong emphasis on low-income countries. Students must have junior or senior standing. Prerequisites: BISC 1005, BISC 1111 and PUBH 2110.

PUBH 3135W. Health Policy. 3 Credits.
An introduction to the fundamentals of the health care system in the United States and strategies available to policymakers when addressing problems relating to access, financing, and delivery of health care. Prerequisite: PUBH 1101.

PUBH 3136. Health Law. 3 Credits.
Legal concepts related to individual health care and public health systems in the United States. Health care law, public health law, and bioethics.

PUBH 3137. Global Public Health Nutrition. 3 Credits.
Consideration of hunger and other nutrition issues globally, including food insecurity, under/over nutrition, and micronutrient deficiencies. Application of UNICEF malnutrition framework to describe vulnerable groups, critique program strategies, and identify multisectorial strategies to reduce hunger and malnutrition. Prerequisites: Required: PubH 3133 Global Health and Development Recommended: EXSC 2119 Basic Nutrition.

PUBH 3150. Sustainable Energy & Env Hlth. 3 Credits.
Sustainability issues from the perspective of environmental health. Technical, social, and health implications of specific energy sources. Energy conservation and efficiency in the context of population growth, food and water resources, and maintenance of a healthy environment for future generations.

PUBH 3151. Current Issues in Bioethics. 3 Credits.
Recent advances in science and technology make biomedical ethics a continuing matter of concern for students, health professionals and laypersons alike. This course offers an opportunity to investigate both general and specific ethical questions and ethical decision making from both a personal and organizational perspective, including topics such as the right to health care, research with human subjects, reproductive issues, genetics, professional and student roles and responsibilities, and end-of-life issues. Such investigation requires exposure to the issues and to various attempts to address and resolve them. The course requires participation in group discussions as well as independent critical writing.

PUBH 3199. Topics in Public Health. 1-5 Credits.
Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

PUBH 4140W. Senior Seminar. 3 Credits.
Students develop a public health intervention incorporating various domains of the discipline of public health. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to public health majors in their senior year. Prerequisite: PUBH 3130.

PUBH 4199. Independent Study. 3 Credits.
For departmental majors only. Prerequisite: outline of intended project must be approved prior to registration by instructor and dean's office.

PUBH 6001. Biological Concepts in Public Health. 2 Credits.
An overview of current knowledge about biological mechanisms of major diseases causing death and disability in the United States and globally; understanding and interpreting the reciprocal relationships of genetic, environmental, and behavioral determinants of health and disease in an ecologic context; analyzing, discussing, and communicating biologic principles of disease from a public health perspective.

PUBH 6002. Biostatistical Applications for Public Health. 3 Credits.
Application of biostatistical principles to critical analysis of retrospective studies, prospective studies, and controlled clinical trials, as well as studies in the health services literature. Selection, basic calculations, and interpretation of statistical methods for detection of significant associations and differences.

PUBH 6003. Principles and Practices of Epidemiology. 3 Credits.
General principles, methods, and applications of epidemiology. Outbreak investigations, measures of disease frequency, standardization of disease rates, study design, measures of association, hypothesis testing, bias, effect modification, causal inference, disease screening, and surveillance. Case studies apply these concepts to a variety of infectious, acute, and chronic health conditions affecting the population.

PUBH 6004. Environmental and Occupational Health in a Sustainable World. 2 Credits.
Examination of the connection between population health and exposures to chemical, physical, and biological agents in the environment. Problem-solving frameworks familiarize students with data sources, methodologies, and policy approaches being used to address the public health impacts of environmental and occupational health hazards, including the consequences of climate change, natural resource degradation, and industrial chemicals. Integration of key concepts of environmental health with principles of sustainability illustrate how public policies and practices on the local, national, and global level affect population health.

PUBH 6006. Management and Policy Approaches to Public Health. 3 Credits.
Introduction to the basic principles, concepts, and skills related to public health management and policy. Management and policy approaches to public health at the system, organization, and group and individual levels. The interrelated nature of management and policy.

PUBH 6007. Social and Behavioral Approaches to Public Health. 2 Credits.
Social and behavioral science theories, models, and concepts that can be applied to public health problems and interventions. The role of social and community factors, including race, ethnicity, and culture, in both the onset and solution of public health problems; the interrelationship between the social and behavioral sciences.

PUBH 6010. Independent Study. 1-6 Credits.
Designed to provide the student with an opportunity to gain or enhance public health knowledge and to explore an area of interest related to public health research or the delivery and/or administration of health services. Permission of instructor/advisor required.

PUBH 6013. Master's Thesis. 3 Credits.
See Advisor.

PUBH 6014. Practicum. 1-3 Credits.
This course provides the opportunity for MPH students to apply the knowledge and skills acquired through their programs of study. A planned, supervised and evaluated practice experience that is relevant to the student's program is an essential component of a public health professional degree program. These opportunities can take place in a variety of agencies or organizations. Each program customizes Practicum requirements to meet students' needs. (Credit/No Credit) [For 45-credit MPH students who started Summer 06 or after.].

PUBH 6015. Culminating Experience. 1-3 Credits.
Students synthesize and integrate knowledge acquired in coursework and other learning experiences and apply theory and principles to a situation that approximates some aspect of professional practice. Program faculty evaluate the student's mastery of the body of knowledge and ability to demonstrate proficiency in the required competencies. Requirements evaluated are adapted to the degree program.

PUBH 6016. Field/Laboratory Experience. 2 Credits.
The overall purpose of the field/laboratory experience requirement is to introduce students in the MS-PHMEID degree program to a supervised practical experience in a Public Health Laboratory or other qualifying public health entity from the perspective of the actual wet laboratory operations. Students that already have this laboratory experience will be introduced to epidemiologic research, particularly surveillance, and its tie-in with laboratories either in the United States or in an international setting.

PUBH 6050. Introduction to Health Services Delivery. 2 Credits.
Introduction to the U.S. health services financing and delivery system with a focus on the major components of the system, the interaction of elements of the system, and the history of the development of today's system. Addresses the national context and history of health services, population health and health care spending in the US, employment-based health insurance, Medicaid and the uninsured, Medicare, international health care systems, managed care, hospitals and facilities, physicians and health workforce, long-term care and prescription drugs, and health care reform. (Same as HSML 6202).

PUBH 6052. Practical Data Management and Analysis for Public Health. 2 Credits.
Practical aspects of dataset creation, data management, rudimentary statistical analysis, and tabular and graphical presentation of results. Tasks covered include creating codebooks, entering and cleaning data, deriving new variables from existing ones, choosing and implementing appropriate analytical techniques, graphing and tabulating results, and documenting and protecting work.

PUBH 6054. Community Engagement and Advocacy. 2 Credits.
Tools and strategies for public health practitioners to understand, respect, organize, and collaborate with community groups and organizations for promotion of healthy behaviors. Development of practical skills to harness available resources in a community to advocate for healthy living and positive health outcomes.

PUBH 6056. Public Health Leadership Seminar. 1 Credit.
Leadership lessons taken from the careers of a diverse group of executives and entrepreneurs from the corporate, government, nonprofit, and art sectors. Leadership theory and styles. Building networks; skills for effectively engaging with peers, potential employers, and business partners.

PUBH 6058. Researching Violence Against Women and Girls. 2 Credits.
The intersection of violence against women and girls (VAWG) and public health; the impact that violence has on the health of the survivor, her current and future children, and communities; methods and best practices for designing applied research on VAWG. Prerequisites: PUBH 6001, PUBH 6002, PUBH 6003, PUBH 6004, PUBH 6006, and PUBH 6007.

PUBH 6090. Practicum/Culminating Exp. 4 Credits.
Individually tailored. Culminating Experience for the MPH program. Advisor approval required prior to registration.

PUBH 6091. Special Project. 1-4 Credits.
Under faculty supervision, the student undertakes an original project that applies the skills and knowledge gained in the chosen track and/or concentration within the MPH program. Prerequisite: Permission of the instructor. NOTE that credits vary by program; please consult your program plan to register for the appropriate number of credits. [For 36-credit MPH students only].

PUBH 6099. Topics in Public Health. 0-3 Credits.
In-depth examination of a particular facet of public health. Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

PUBH 6121. Environmental and Occupational Epidemiology. 3 Credits.
Demonstration and application of epidemiologic methods for the study of environmental and occupational health problems. Epidemiologic exposure assessment methods and methods relevant to cohort, case-control, cross-sectional, and case cross-over studies. Survey design and sources and evaluation of biases and confounding. Emphasis on written and oral communication skills. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6004.

PUBH 6122. Protecting Public Health and the Environment: Policies, Politics, and Programs. 3 Credits.
The legislative, regulatory, judicial, and political system in the United States developed to protect human health and the environment. National and global public and environmental health agencies, policy development, and current topics. Prerequisites: PUBH 6004 or permission of the intructor.

PUBH 6123. Toxicology: Applications for Public Health Policy. 3 Credits.
Toxicology as both a scientific discipline and a source of information for public health policy with respect to the regulation of foods, pesticides, drugs (pharmaceuticals), environmental chemical pollutants, and other chemicals that may affect human and environmental health. How chemicals interact with biological systems to produce adverse effects. The ways in which toxicologic information is developed and applied to regulatory decision making and the use of toxicology in regulatory risk assessment. Prerequisite: PUBH 6004.

PUBH 6124. Problem Solving in EOH. 3 Credits.
This culminating course uses problem-based learning methods to examine a variety of real-world EOH issues in depth. Cases stimulate students to integrate their cumulative knowledge across all required courses and demonstrate their professional competencies. Students to conduct activities characteristic of EOH practice: evaluating a variety of technical, public, and media, reports; integrating and interpreting environmental, exposure, and health information effectively; designing analytic and communication strategies; presenting in writing and orally relevant materials to address EOH issues; and, making appropriate policy and/or program decisions and recommendations. Prerequisites: PubH 6121, 6123, 6126.

PUBH 6125. Intro-Children's Health & Env. 2 Credits.
Describes the impact of environmental toxicants on children's health and reviews some of the major policy issues in the field of children's environmental health. Prerequisites: PubH 6004.

PUBH 6126. Assessment&Control/Env Hazards. 3 Credits.
Introduces the anticipation, recognition, assessment, and control of hazards in the workplace and the ambient environment. It emphasizes an understanding of the characteristic features of specific hazards, which may be chemical, biological, or physical/ergonomic.

PUBH 6127. Germs: An Introduction to Environmental Health Microbiology. 2 Credits.
Basics of public health microbiology as it relates to the environment, food, water, and bioterrorism. Examines from an environmental health perspective how the principles of microbiology are applied to current and emerging public health issues, whether from intentional or unintentional contamination of the environment. Specific topics will include: industrial animal production and increasing prevalence of antibiotic resistance; effectiveness of various point of use technologies for water purification; recent advances in quantitative microbial risk assessment; one medicine (where public and veterinary health meet); detection strategies for microorganisms (including bioterrorism agents); and current approaches in food defense and agroterrorism. Prerequisites: PUBH 6004.

PUBH 6128. Global Environmental and Occupational Health. 2 Credits.
Examination of the global environmental and occupational health factors that contribute significantly to the global burden of disease, focusing primarily on low- and middle-income countries. Principles from behavioral sciences, development economics, risk assessment, and epidemiology are included. Potential solutions to environmental health problems, metrics used to measure impacts, and areas for future research. Prerequisite: PUBH 6004.

PUBH 6130. Sustainable Energy and the Environment. 2 Credits.
The sustainability of various energy strategies, including energy conservation, green building principles, renewable energy, and mitigation and adaption policies for climate change. Emphasis on the life cycle framework. Topics include natural resource depletion, water and energy consumption, and air, water, and solid waste pollutant emissions. Prerequisite: PUBH 6004.

PUBH 6131. Applied Data Analysis in Environmental and Occupational Health. 3 Credits.
Application of biostatistical and epidemiologic concepts and methods to analysis of environmental and occupational health (EOH) data. Students manage datasets, conduct data analyses, present data graphically, and interpret data for relevance to EOH research, policy, and practice. Development and practice of skills needed for analyzing complex exposures and communicating environmental and occupational research findings. Prerequisites: PUBH 6002, PUBH 6003, and PUBH 6004.

PUBH 6132. Water, Sanitation, and Hygiene (WASH) in Low-Income Countries. 2 Credits.
Introduction to working in both disaster and development settings in countries where contaminated water, inadequate sanitation, and poor hygiene (WASH) cause serious health problems. Students gain practical experience applying WASH methods in the field. Prerequisite: PUBH 6004.

PUBH 6133. Social Dimensions in Climate Change and Health. 3 Credits.
The drivers of climate change and outcomes with particular focus on health dimensions; obstacles, vulnerabilities, inequality, and adaptation as well as technical and social solutions.

PUBH 6134. Communicating Science for Public Health. 2 Credits.
Evaluating the primary scientific literature and communicating research findings in outlets ranging from peer-reviewed journals to 140 character Tweets. Identifying target audiences and shaping messages to maximize impact, while maintaining the integrity of the supporting evidence. Written and oral communication and critical evaluation are emphasized. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6135. Researching Climate Change and Public Health. 3 Credits.
Study of the effects of climate change on human health using evidence compiled by the National Climate Assessment (NCA); widespread impacts, ecological context, oceans of change, infrastructure, water resources, energy, land use, heat, and air quality. Recommended background: PUBH 6003 and PUBH 6004.

PUBH 6136. Introduction to Environmental and Occupational Epidemiology. 3 Credits.
Epidemiologic research designs; methods for the study of environmental and occupational health problems; exposure assessment methods; design aspects of cross-sectional, case-control, cohort, and case cross-over studies; sources and evaluation of biases and confounding; survey and questionnaire design. Prerequisite: PUBH 6002, PUBH 6003 and PUBH 6004.

PUBH 6199. Topics in EOH. 0-3 Credits.
In-depth examination of a particular facet of public health. Topics and prerequisites vary.

PUBH 6235. Epidemiology of Obesity. 1 Credit.
Introduction to the epidemiology of obesity; descriptive epidemiology, measurement, consequences, and determinants of obesity; adiposity and body composition; obesity interventions and policy. Prerequisites: PUBH 6003.

PUBH 6236. Systematic Review of Public Health Literature. 1 Credit.
The process of conducting systematic reviews of literature in order to translate research into public health practice recommendations. Recommended for MPH candidates planning to conduct a systematic review of the literature for their culminating experience. Prerequisites: PUBH 6002 or EXNS 6204; PUBH 6003 or EXNS 6205.

PUBH 6237. Chronic Disease Epidemiology. 2 Credits.
An overview of the descriptive, analytic, and etiologic epidemiology of chronic diseases, with an emphasis on cardiovascular disease, cancer, and diabetes. The role of modifiable risk factors for chronic diseases such as obesity, diet, physical activity, smoking, and environmental exposures in relation to chronic disease prevention and control. Epidemiologic methods and study design and public health approaches to disease control, including surveillance, screening, and interventions. Past or concurrent enrollment in PUBH 6001 or EXSC 6202 and PUBH 6203 and PUBH 6247 or EXSC 6204 is strongly recommended. Prerequisites: PUBH 6002 or EXNS 6204 and PUBH 6003 or EXNS 6205.

PUBH 6238. Molecular Epidemiology. 1 Credit.
Concepts, principles, and use of molecular methods in epidemiologic and clinical research. Common molecular measures and their interaction with environmental factors. Development of a framework for interpreting, assessing, and incorporating molecular measures in their area of research. Prerequisites: PubH 6003.

PUBH 6239. Epidemiology of Foodborne and Waterborne Diseases. 1 Credit.
Foodborne and waterborne toxicants; diseases linked to eating and drinking and their prevention. Topics include transmission of disease and disease processes; microbial toxins, mycotoxins, chemical toxins, bacterial infections (e.g., salmonellosis, shigellosis, vibrio, listeria), virus and parasitic infections; issues in food and water safety. Prerequisites: PubH 6003.

PUBH 6240. Pediatric HIV/AIDS. 1 Credit.
Comprehensive overview of HIV infection in children, with emphasis on the global pediatric HIV epidemic. Biological, epidemiological, clinical, and psychosocial issues; public health programmatic approaches to prevention, care, and treatment. The national and global experience with scaling up prevention services in the global effort to virtually eliminate HIV/AIDS in children. Prerequisites: PubH 6003. Recommended background: PubH 6250 and PubH 6253.

PUBH 6241. Nutritional Epidemiology. 2 Credits.
Methodological issues related to dietary assessment, nutrition surveillance, and the epidemiology of obesity. Current trends, including the health impacts of vitamin D and sodium. Interpretation of the scientific literature in the field. Examples drawn from the National Health and Nutrition Examination Survey. Prerequisites: PubH 6003.

PUBH 6242. ClinicalEpid&Decision Analysis. 2,3 Credits.
Quantitative and qualitative approaches to decision making, including risk- benefit analysis, decision analysis, and cost-effective analysis. Applications to technology assessment; development of clinical guidelines. Note: MPH Health Policy, MS Health Policy and Doctoral Students concurrently take PubH 6299 topics course by the same name for 1 credit, thereby enrolling for three total credits (PubH 6242=2 credits plus PubH 6299.xx, same name =1 credit). Prerequisites: PUBH 6002, PUBH 6003.

PUBH 6243. Topics:ClinicalEpi&DecAnalysis. 1 Credit.
This class takes an evidence-based problem solving approach for Masters level students interested in the health policy focus of clinical epidemiology utilizing methods taught in PubH 6242. Prerequ: PubH 6003. Corequis: PubH 6242.

PUBH 6244. Cancer Epidemiology. 2 Credits.
Epidemiology of specific cancers, with an emphasis on molecular and genetic epidemiology. Current research in the field. Prerequisites: PubH 203.

PUBH 6245. InfectiousDisease Epidemiology. 2 Credits.
The role and conduct of laboratory and field investigations in the epidemiology of infectious diseases. Prerequisite: PubH 6003.

PUBH 6247. Design of Health Studies. 3 Credits.
Epidemiologic concepts and methods applied to specific research questions especially new types of public health problems. Recognition and development of the most appropriate study design for a specific health issue. Ecologic, cross-sectional, case-control, cohort studies and clinical trials. Sampling, measurement, questionnaire design, causality and causal criteria. Development of a research proposal. Co-requisite: PubH 6002. Prerequisite: PubH 6003.

PUBH 6248. Epidemiology of Aging. 2 Credits.
Methodological challenges in studying older populations. Epidemiologic endpoints in aging populations. Basic concepts and theories explored in aging research. Fall. Prerequisites: PUBH 6003.

PUBH 6249. StatPackages/DataMgt&DataAnlys. 3 Credits.
This course familiarizes the student with one of the most widely used database management systems and statistical analysis software packages, the SAS System, operating in a Windows environment. Throughout the course, several database management system techniques and data analytical strategies for the appropriate analysis of datasets obtained from a variety of studies will be presented. Statistical techniques covered include linear regression, analysis of variance, logistic regression, and survival analysis. Prerequisite: PubH 6002.

PUBH 6250. Epidemiology of HIV/AIDS. 2 Credits.
Methodological issues central to HIV/AIDS research. Biases peculiar to HIV/AIDS epidemiologic studies (both observational and experimental designs). The natural history of HIV, diagnosis, surveillance, vulnerable subpopulations, behavioral facets, and evaluation of epidemiologic studies with an emphasis on methodological considerations. Prerequisite: PubH 6003, Recommended PubH 6002.

PUBH 6252. Advanced Epidemiology Methods. 3 Credits.
Advanced quantitative epidemiologic methods, with a focus on basic data analytic techniques, identifying and evaluating bias and adjusting for confounding. Dose-response, trend analysis, and multiple linear and logistic regression models. Prerequisites: PubH 6002, 6003, 6247. Co- or prerequisite PubH 6249.

PUBH 6253. Issues in HIV Care & Treatment. 1 Credit.
This course will provide an overview and in depth consideration of some of the major issues in treatment of HIV disease, including the assessment of efficacy and effectiveness, drug resistance, monitoring of drug toxicity, special populations, the interrelationship between treatment and prevention, and quality of care. The course has been designed with an interdisciplinary audience in mind. In discussions and assignments, students will be able to emphasize their own area of interest and/or expertise (e.g. epidemiology, policy, etc).

PUBH 6255. Org Responses to HIV/Epidemic. 2 Credits.
This seminar focuses on the rapidly evolving responses of local, national and global governmental and non-governmental organizations to the HIV/AIDS epidemic. Inspirational leaders of selected HIV/AIDS organizations are invited to describe how their organizations contribute to fighting the epidemic; the leadership and management skills that they use in their daily work; and their strategic decision-making processes. Basic principles of epidemiology, leadership and organizational strategy and structure are addressed through didactic presentations and interactive faculty-student dialogue. Lessons learned through the lens of HIV/AIDS organizations are broadly applicable to other public health problems. Students will learn about the strengths and challenges of different types of public health organizations as they make career decisions about their own transition to the public health work force. Prerequisite: PubH 6003, HIV/AIDS experience, or permission of Instructor.

PUBH 6258. Adv Topics/Biostat Consulting. 1 Credit.
Principles and practice of biostatistical consulting in public health and medical research environments.

PUBH 6259. Epid Surveillance/PublicHealth. 2 Credits.
Focus on foundations of public health surveillance systems for communicable as well as chronic diseases. Outbreak investigation methods will be included, as well as surveillance data sources, data management, data analysis, ethical issues, surveillance system evaluation, and use of information for prevention. Surveillance systems for reportable diseases, nosocomial infections, bioterrorism events, cancer, environmental disease, vaccine-related adverse events, bovine spongiform encephalopathy, and military personnel will be discussed. Prerequisites: PubH 6003.

PUBH 6260. Adv DataAnalysis-Public Health. 3 Credits.
Advanced data analysis using the SAS System to expand on the analytic techniques gained in PubH 6002 and PubH 6249 and to provide students with the applied statistical skills required to analyze various types of public health datasets. Prerequisites: PubH 6002, 6249.

PUBH 6261. Epi-Bio Skills Bldg Seminar. 1 Credit.
Assists students in developing the skills needed to complete degree requirements and to provide them with practical applied public health training. By the end of the course, students will be able to describe essential skills needed for preparation, implementation, presentation and communication of public health data.

PUBH 6262. Intro-Geog Information Systems. 1 Credit.
Geographic information systems (GIS) for mapping and display of health data. The course makes use of ArcGIS 8.3. The use of spatial statistics for the detection of clusters and patterns in the spread of diseases. Working with geodatabases, shape files, layers, query information from attribute tables, geocode addresses and customizing GIS applications.

PUBH 6263. Advanced GIS. 1 Credit.
Provides mid to advanced level training in GIS for display and analysis of health data. Use software ArcGIS 9.3 and additional extensions such as Spatial Analyst and Geostatistical Analyst. Also uses GeoDa software. Emphasizes benefits of using GIS to do more than simply manage and map data. GIS supports a range of spatial analysis functions that enable researchers to extract additional meaning from manipulating geographic data. Learn to work with raster datasets and geodatabases to build spatial models for analyzing health data and evaluating spatial patterns of health events based on notion of distance. Prerequisite: PubH 6262.

PUBH 6264. Quantitative Methods. 3 Credits.
Introduces basic concepts in mathematical statistics. Topics will include probabilities (unconditional and conditional), density and distribution functions of continuous and discrete random variables, including expected values. Specific distribution functions discussed will be Binomial, Poisson, Hypergeometric, and Gaussian distributions. Additional topics include bivariable distributions, variance-covariance matrix, limiting theory, asymptotic results, and maximum likelihood estimation. Prerequisites: Math 1231, 1232 and PubH 6002, 6249.

PUBH 6265. Design of Medical Studies. 3 Credits.
Design of medical investigations, including the randomized clinical trial, observational cohort study, and the retrospective case-control study. Specific methods regarding sample size, power and precision and statistical procedures for randomization and sa.

PUBH 6266. Biostatistical Methods. 3 Credits.
Biostatistical methods for asymptotically efficient tests and estimates of relative risks and odds ratios from prospective and retrospective matched and unmatched studies. Fixed and random effects models. Logistic regression, conditional logistic regression. Poisson regression. Maximum likelihood and efficient scores. Prerequisites: STAT 6201-6202, PubH 6264.

PUBH 6267. Time Series:Applications in PH. 2 Credits.
Introduce basic concepts for the identification and modeling of time series in the time domain approach. Learn a new set of terminology standards and a different way to analyze these type of data and to forecast future values of a time series and its accuracy. Software used is SAS/ETS and 3 procedures: ARIMA, AUTOREG, FORECAST. New mathematical notation will be used. Prerequisite: PubH 6249.

PUBH 6268. Advanced SAS. 1 Credit.
Intensive in advanced programming using SAS. Expand technical skills to provide advanced SAS tools for data management and graphics. Topics to include Interactive Matrix Language (IML), SAS Macro facility language, and drill-down graphs using SAS/GRAPH. Prerequisites: PubH 6002, 6249 or Instructor's permission.

PUBH 6269. Reproductive Epidemiology. 1 Credit.
Current research, controversial issues and methodological problems in epidemiology of reproductive and perinatal health. Present reproductive health issues such as conception and infertility; perinatal issues such as complications of pregnancy, infections in pregnancy, adverse pregnancy outcomes, and birth defects. Prerequisite: PubH 6003.

PUBH 6270. HIV/AIDS Surveillance. 1 Credit.
Overview of surveillance methods used domestically and internationally to monitor HIV/AIDS epidemic. Surveillance systems including sentinel, population based, behavioral, and incidence surveillance will be presented and discussed. Strengths and weaknesses of these various systems will be discussed in addition to how data from these systems impact and inform HIV/AIDS related policies and programs. Prerequisite: PubH 6003.

PUBH 6271. Disaster Epidemiology. 1 Credit.
Introduction to disaster epidemiology that elucidates the important role epidemiologists play in assessing the health and psychological effects of natural and man-made disasters and in identifying factors that contribute to these effects. Focus will be on applications of epidemiologic methods to the study of public health consequences of disasters, case studies from actual disasters used to illustrate various roles of epidemiologist in responding to these events and lessons learned. Highlight key skills that epidemiologists need to be part of a response and recovery . Identify methodological issues for future work. Prerequisites: PubH 6002, 6003.

PUBH 6272. Infectious Agents- Cancer. 1 Credit.
Describes the role of infectious agents in the etiology of human cancer. Emphasis on differences between specific oncogenic viruses. Other oncogenic agents, bacterial and parasitic, will also be discussed. Discuss laboratory approaches to the documentation of their pathogenicity, how behavior affects mode of transmission, and which types of data provide strongest support for documenting oncogenic potential for humans. Prerequisite: PubH 6003.

PUBH 6273. Ethnographic Methods. 1 Credit.
Use ethnographic field methods in conjunction with epidemiological research. Introduction to specific methods used to examine health phenomena and determinants of disease. Learn specific applied skills that can be modified with socio-cultural modifications to evaluate urban sites and other settings. Basic skills in application of ethnographic methods, including recursive observations, participant observations, and variety of approaches to interviewing such as in-depth, structured and non-structured as well as conversational interviewing. Discuss use of multiple approaches in conjunction with ethnography, including focus groups, archival, document, statistical and secondary data analysis, and survey research methods. Course emphasizes use of ethnographic research methods in community-based health settings and evaluates issues in cultural competency and how to garner stakeholder support to conduct epidemiologic studies. Prerequisite: PubH 6003.

PUBH 6274. Emerging ID for PH Pro's. 2 Credits.
Focus on epidemiology of emerging infectious diseases of public health importance, including factors leading to their development, management of emerging infectious diseases from a public health and laboratory standpoint, including biosafety, and strategies for emergency preparedness from a national and international perspective. Course emphasizes the context of emerging infectious diseases and strategic approaches to their containment. Prerequisites: PubH 6003 or Micr 6292 or Instructor permission.

PUBH 6275. Essential PH Lab Skills. 2 Credits.
This course will provide public health students with practical laboratory experience Prerequ: Micr 6239 or Micr 6212 or permission of instructor.

PUBH 6276. Health Microbiology. 3 Credits.
Gain in-depth understanding of important non-viral pathogens pertinent to PH Microbiology. Learn how to isolate & identify pathogens using critical thinking & problem solving skills.

PUBH 6277. Public Health Genomics. 2 Credits.
Learn about molecular technology and how it is impacting public health practice & discourse in the post genomic era. Explore ways in which genomics is being used to solve or help alleviate PH problems through case-focused discussions. Prerequisite: genetics or molecular biology within 6 years or permission of course instructor.

PUBH 6278. Public Health Virology. 3 Credits.
In-depth understanding of viral pathogenesis by focusing on current research, controversial issues and PH relevance. Survey of family of viruses most relevant to today's public health efforts, concentrating on virus-host interactions & therapeutic strategies.

PUBH 6280. MEID Final Project. 2 Credits.
Focus on the synthesis and summary of data acquired through epidemiologic and/or public health laboratory research. Prerequisites: PubH 6002, 6003, 6292, 6245; Biosafety training, CITI training, HIPAA training, permission of instructor.

PUBH 6281. Analysis of Complex Surveys Using SAS and Stata. 1 Credit.
An applied data analysis course focusing on procedures commonly used to analyze data from complex surveys such as the National Health and Nutrition Examination Survey. Review of various types of sampling, sample design focusing on core components of complex surveys, and the statistical justification and procedures for including design effects in analytic models. Application of these concepts to real data using SAS and Stata. Prerequisites: PubH 6003 and PubH 6249 or equivalent Stata course.

PUBH 6282. Introduction to R Programming. 1 Credit.
R is an open source software environment for statistical computing and graphics. Data transfer between SAS and R, data manipulation and visualization within R, programming and debugging, R libraries, and graphics theory. Prerequisites: PubH 6249. Recommended background: Programming experience in a statistical package such as Stata or in high level language such as C, Python, Perl.

PUBH 6283. Biostatistics Consulting Practicum. 1 Credit.
Supervised experience involving the synthesis of biostatistical skills with client consultation. Students consolidate their skills through an experience-based understanding of how biostatistical skills are utilized in one or more domains of health research. Prerequisites: STAT 6201 and PUBH 6003. Recommended background: PUBH 6249 or PUBH 6210.

PUBH 6299. Topics in Epi/Bio. 1-3 Credits.
In-depth examination of a particular facet of public health. Topics and prerequisites vary.

PUBH 6305. Fundamentals for Health Policy: Public Health and Health Care. 2 Credits.
An overview of public health and health care in the United States as an introduction to the study and analysis of health policy. Presents the governmental framework, institutions, financing streams, workforce, constituencies, and interest groups engaged in the health sector to ensure that students begin their policy analytic training with grounding in the political, economic, and social realities of public health and health care.

PUBH 6310. Statistical Analysis in Health Policy. 3 Credits.
Quantitative and statistical methods of data analysis for health policy and health services research. Instruction in conducting data analyses using Stata statistical and data analysis software and application of acquired skills to health policy and health services research. Practical experience in programming and analysis of various health policy-related questions. Entering and importing data; creating, saving, and merging data sets; creating and modifying variables; labeling variables and values; and conducting analysis ranging from univariate to multivariate analyses, including multiple regression and logistic regression. The use of existing data sets to analyze health policy issues and interpret these analyses for policy purposes. Prerequisites: PUBH 6002.

PUBH 6315. Intro-Health Policy Analysis. 2 Credits.
Core elements of health policy analysis: problem definition, background, the political, economic, and social landscape; development of policy options and recommendations. Written, graphic, and oral presentation skills associated with policy analysis. Prerequisites: PubH 6305.

PUBH 6316. Introduction to Environmental and Occupational Epidemiology. 3 Credits.

PUBH 6320. Advanced Health Policy Analysis. 2 Credits.
Critical elements of health policy applications. Problem definition; political, social, and economic assessment of a problem; program evaluation and data analysis; development of policy options; and the written and oral presentation of findings and recommendations. Practical application of basic quantitative tools in health policy. Prerequisites: PUBH 6310 and PUBH 6315.

PUBH 6325. Federal Policymaking and Policy Advocacy. 2 Credits.
The federal health policymaking process, including an overview of the legislative, administrative, and judicial processes that affect policymaking. The federal budget, authorization, and appropriation processes. An advocacy campaign framework is used to demonstrate common techniques and strategies used to advance legislative and regulatory policies, including coalition building and the use of policy studies and media relations. Prerequisite: PUBH 6305.

PUBH 6330. Health Services and Law. 3 Credits.
Examination of the ways in which the law and legal system in the United States influence and are influenced by the health care system. How judicial, statutory, regulatory, and constitutional sources of law embody health policy and affect access to and quality and financing of health care, as well as the regulation of patient rights.

PUBH 6335. Public Health and Law. 3 Credits.
Designed for students in the health professions and law, to examine how law can both promote public health and conflict with the constitutionally-protected rights of individuals. Introduces the legal concepts that underlie the public health system and inform public health policymaking in the US. Topics include the role of law in public health care and policy (e.g., governmental powers vs. civil liberties, regulation of public health); major areas of public health activity (e.g., health promotion, immunization, screening, and treatment); and the future of public health (e.g., emerging infectious diseases, bioterrorism, obesity, and public health genetics).

PUBH 6340. Health Economics and Finance. 3 Credits.
Examination of economic principles as they apply to health policy in the public and private sectors. The basic framework of economics is used to analyze the behavior of consumers, hospitals, physicians, and insurers, as well as pharmaceutical companies and long-term care providers. Overview of Medicare and Medicaid. Economic analyses of current issues in the marketplace, including rising health spending in the context of the national economy and the federal budget, insurance market dynamics, key issues in the long-term care industry, shifting market forces and power within the health care arena, and new payment initiatives and delivery system models. Prerequisite: PUBH 6352 or an undergraduate economics course.

PUBH 6345. Health Policy Research Design. 2 Credits.

PUBH 6352. Basics of Econ for Health Pol. 1 Credit.
An introduction to modern microeconomics- the study of how consumers, firms, industries, and the public sector make decisions and allocate their resources in the economy. The principles of supply and demand and elasticity in both the private and public sectors will be analyzed.

PUBH 6353. Child Health Advocacy. 1 Credit.
Introduction to child health advocacy. Affordable Care Act (ACA), preventive care, school health, environmental issues, and emergency care. The use of data for advocacy.

PUBH 6354. Mental Health/Subst Abuse Pol. 2 Credits.
Provides an overview of the U.S. mental health and substance abuse delivery system, its components, and the policy challenges created by the organization of this system. Considers the behavioral health care system from the perspective of several main "actors" in the system: patients, providers 9primarily doctors & hospitals), health plans, and payers (public & private). Prerequisite: PubH 6305.

PUBH 6355. Comparative Health Policy. 1 Credit.
Introduction to international health systems and world health policy innovations and potential relevance to the United States. The origins and comparative performance of a range of international healthcare systems and comparative responses to specific health policy challenges. Methodological challenges of international comparisons and theoretical implications. Students design and conduct comparative analysis in the form of a short policy research proposal. Prerequisites: PubH 6305.

PUBH 6356. State Health Policy. 2 Credits.
Students develop a briefing on health and health care for a new governor and health secretary in order to gain a practical understanding of state health policy and programs. The course is designed to replicate the experience of a newly hired policy staff member learning the requirements for the position in a particular state. Prerequisite: PUBH 6305.

PUBH 6357. Health Economics and Policy: Cost Containment Strategies. 2 Credits.
Health care cost containment in the context of the current implementation of national health reform. Cost containment strategies; economic underpinnings, anticipated impacts, perspectives of and implications for health care providers and systems, and political considerations. Prerequisites: PubH 6340.

PUBH 6358. Vaccine Policy. 2 Credits.
Examines the development of U.S. vaccine policy and the growth of various markets targeting routine vaccination of all populations. The interactions among business, legal, political, public health, medical, federal/state/local government, and consumer communities that combine to influence vaccine delivery in a broad range of settings. Prerequisite: PUBH 6305.

PUBH 6359. Reproductive Health Policy. 1 Credit.
Overview of reproductive health policy at the federal and state levels. Balancing the interests of competing stakeholders; the fundamental underlying role of significant disparities in financing for and access to reproductive health services; and how policymaking can alleviate or exacerbate preexisting issues.

PUBH 6360. AdvMaternal&ChildHealthPolicy. 1 Credit.
In-depth exploration of maternal and child health policy in the U.S., with a particular emphasis on the role of personal and public health services for women, children, youth and their families in the context of health and human services system change. Prerequisite: PubH 6561.

PUBH 6361. Health Workforce Policy. 2 Credits.
Strategies for the prevention and control of infectious diseases; focus on low and middle income countries. Goals, strategies, and challenges of major global health intervention programs. Surveillance systems. Vaccination programs; chemotherapy as a prevention and treatment tool; nutritional supplementation; environmental approaches; and potential benefits of integrating multiple interventions. Prerequisites: PUBH 6305.

PUBH 6363. The Health Care Legislative Process. 1 Credit.
How health care legislation is developed in and moves through the U.S. House of Representatives and Senate. The roles of the committees of jurisdiction in each house and how the rules of each house affect legislative outcomes.

PUBH 6364. Fed Budget Process/Health Care. 1 Credit.
Focuses on how the Congressional budget process shapes the funding and design of federal health care programs, ranging from entitlement programs like Medicare to appropriated programs like community health centers. Discussions will cover budget resolutions, appropriations bills, and budget reconciliation legislation, as well as Congressional procedures & committees through which they are considered. Prerequisite: PubH 6305.

PUBH 6365. Advanced Global Health Security & Diplomacy. 2 Credits.
The development of foreign policy at the nexus of global health and national security; the evolving concept of global health diplomacy. Science and technology policy, biodefense and counter terrorism, weapons of mass destruction nonproliferation, food security, global health challenges, and U.S. diplomacy. Role of government and non-governmental organizations.

PUBH 6366. Health Care Corporate Compliance. 2 Credits.
The federal laws and regulations that affect U.S. health care industry participants, particularly those relating to the prevention of fraud and abuse, and the role of corporate compliance programs. Prerequisite: HSML 6215 or PUBH 6330.

PUBH 6368. Law, Medicine, and Ethics. 2 Credits.
Legal, ethical, and policy issues that arise in the biomedical arena. Controversial and challenging questions including those related to the definitions of life and death, nature of personal identity, requirements of justice, and boundaries of liberty. Legal, medical, and ethical/philosophical literature are used in examining these issues. Prerequisite: PUBH 6330.

PUBH 6370. Medicare/Medicaid Law & Policy. 2 Credits.
Describes current legal and public policy issues in the Medicare and Medicaid programs, including the legal, operational, financial, and organizational rules for the two programs. Prerequisite: PubH 6315.

PUBH 6372. Minority Health Policy. 2 Credits.
Introduces students to the concept of health disparities and the implications of disparities for health care practice and policy. Students will learn how disparities are defined and measured, as well as emerging approaches in practice and policy to reducing disparities. Prerequisite: 6315.

PUBH 6374. Pharmaceutical Policy. 2 Credits.
Legal and regulatory frameworks related to the demand for and supply / quality of pharmaceutical products. Policies specific to drug development, pricing, reimbursement, use, dissemination of information, and post-marketing surveillance. Prerequisite: PUBH 6315.

PUBH 6376. Primary Health Care Policy. 2 Credits.
Politics and policy behind the provision of primary healthcare in the United States. The rise of the field of primary care and how it is supported and financed; the role of insurers and government in regulation and oversight in the areas of access, cost, and quality. Prerequisite: PUBH 6315.

PUBH 6378. HIV Policy in the U.S.. 2 Credits.
Examines the policy response to the HIV epidemic in the United States and how the epidemic itself has helped to shape U.S. policy. How and why HIV became a national policy issue; circumstances surrounding the discovery of and early response to HIV; and main policy and programmatic developments and key players over time. The role and implications of the Affordable Care Act for individuals with HIV, the future of the Ryan White HIV/AIDS Program, and the impact of new treatment and prevention strategies on the future course of the epidemic.

PUBH 6380. Bridging Health Policy and Health Information Technology. 2 Credits.
Basics of health care informatics policy and core technological components for health services managers, public health professionals, health policy analysts, and health information technology staff. Policy and legal frameworks, governance and financial issues, technological infrastructure, and business and technological operations. Concepts and roles of information and how information technology can support the healthcare industry in promoting quality improvement.

PUBH 6382. Community Health Center Policy. 2 Credits.

PUBH 6384. Health Care Quality and Health Policy. 2 Credits.
The role of quality in the U.S. health care delivery system from the perspective of multiple stakeholders, including public and private payers, providers, consumers, and employers. Defining and measuring quality; how quality information is used; and policy implications of quality improvement. Recent changes under health reform legislation. Prerequisites: PUBH 6305.

PUBH 6386. Public Health Preparedness Policy. 2 Credits.
Issues in public health emergency preparedness and response at the nexus of homeland and national security. The relationship between public health and criminal investigation, forensic epidemiology, and surveillance; biodefense; and the role of the scientific community. Infrastructure, threat themes, and associated preparedness and response policy.

PUBH 6399. Topics in Health Policy. 0-3 Credits.
In-depth examination of a particular facet of public health policy. Topics and prerequisites vary.

PUBH 6400. Global Health Frameworks. 2 Credits.
Overview of current issues in global public health with particular emphasis on low and middle-income countries. Serves as both an introductory course for students entering the field of global health, as well as an update on current technical and policy issues for advanced students who may have considerable experience.

PUBH 6401. Comp Regional Determinants. 2 Credits.
Examines the set of social, cultural and economic issues most central to shaping health in each of the world's main regions. Overseas Learning Collaboration program in Bangladesh. Prerequisite: PubH 6400. Fee varies by year.

PUBH 6402. Washington Seminar. 2 Credits.
This seminar course will provide an overview of global health policy and practice institutional resources in Washington DC. Students gain an understanding of how global health issues are framed, presented and biased in a multi-institutional setting. This is a collaborative learning exercise where simple web based tools will be used to develop a virtual classroom of the current global health policy and practice dialogue among Washington DC based governmental, multilateral, NGO, private sector and policy institutes.

PUBH 6403. Scientific Basis GH Intervntn. 2 Credits.
Introduces the scientific basis of global health interventions and how they address proximal and underlying determinants of health. Successful students will obtain a strong technical grounding in the determinants, biology and pathogenesis of specific diseases, for which affordable tools for prevention, control, and case management exist and are in use in public health practice.

PUBH 6410. Global Health Study Design. 2 Credits.
A foundation in the tools necessary for planning and designing research related to identifying and solving problems in global health: choosing an appropriate research topic and research question, understanding the relationships between hypotheses and study objectives, conducting a literature review, choosing a research design to achieve the project purpose, writing a research proposal including planning for the challenges of global health research, and achieving productive dissemination of findings.

PUBH 6411. Global Health Qualitative Research Methods. 2 Credits.
An introduction to qualitative data collection and analysis in global health settings. Methodologies include survey design, interviews, focus groups, and participant observation. Archival research and clinical trial research are also addressed. The set of methods most commonly used to collect qualitative data in global health settings. Students are enabled to prepare interview guides, conduct in-depth interviews, and analyze and document the results from a qualitative field project. Prerequisites: PUBH 6002 and PUBH 6410.

PUBH 6412. Global Health Quantitative Research Methods. 3 Credits.
Continuation of the series of global health methods courses. Examination of the fundamental concepts of empirical analysis and qualitative analysis, including open and axial coding, the basis of grounded theory, and regression analysis. Prerequisites: PUBH 6002 and PUBH 6410.

PUBH 6416. Ethical and Cultural Issues in Global Health Research and Programs. 1 Credit.
Examine procedures and concerns for protecting communities and human subjects involved in public health programs and research. Consider cultural considerations integral to ethical conduct of public health research and programming in the global context. Discuss history behind rules and regulations that govern ethical principles around conduct of research involving human subjects. Consider contribution that awareness of cultural contexts where we work makes to ethical nature of our work as global health professionals.

PUBH 6430. Theories for Global Health Communication Interventions. 2 Credits.
Use of communication theory and methods in health promotion. Integration of multidisciplinary approaches to public health communication. Prerequisite: PUBH 6007, PUBH 6400.

PUBH 6431. Global Health Communication Strategies and Skills. 3 Credits.
Students conduct qualitative research to evaluate health communication programs, assess readability level and suitability of written health education materials, conduct content analyses, and review/critique current health communication literature. Prerequisites: PubH 6430-Theories and Applications in Global Health Promotion (unless waived by professor) PubH 6007- Social and Behavioral Approaches to Public Health.

PUBH 6435. Global Health Program Development and Implementation. 2 Credits.
Basic concepts and principles of program development and implementation including data collection methods, decision making, and problem-solving techniques. Application of program development techniques to specific interventions. Prerequisites: PUBH 6400.

PUBH 6436. Global Health Program Management and Leadership. 2 Credits.
Essential tools for successful project, personnel, and program management. Leadership and management theory; key issues in managing global health programs and projects; leadership and management skills development; use of data in management decision making; and importance of quality, supply chain, and resource management. Restricted to MPH in the field of global health program design, monitoring, and evaluation degree candidates. Prerequisites: PUBH 6400, PUBH 6400, and PUBH 6435.

PUBH 6437. Global Health Program Evaluation. 3 Credits.
Fundamentals of program monitoring and evaluation; developing and using program theory in evaluation; impact evaluation and mixed-methods approaches; qualitative methods and statistical analysis for program evaluation. Prerequisites: PubH 6002.

PUBH 6440. Global Health Economics and Finance. 2 Credits.
Examination of economics and finance principles as they apply to global health. Organization, delivery, and financing of health care in developing countries. Tools for analyzing issues related to global health economics and finance and application of those tools to a variety of a global health issues, including demand for health care, health care financing, social insurance, pharmaceuticals, and HIV/AIDS. Prerequisite: PUBH 6400.

PUBH 6441. Global Health Organizations and Regulations. 3 Credits.
The functions, capacities, and governance of international health organizations; the normative power of some international health organizations for regulatory processes; and evidence-based development of public health policies with attention to issues of global trade as it shapes worldwide and national health. Prerequisite: PUBH 6400.

PUBH 6442. Comparative Global Health Systems. 2 Credits.
Examination of national health systems, how they differ, and how they are performing. Health systems analyzed through four different lenses: health care organizations, health workforce development, health care financing, and health policy development. Comparison of health systems and health reforms in seven regions of the world and assessment of how health system performance might be improved. Course fee may apply. Prerequisite: PUBH 6400.

PUBH 6443. Global Health Agreements and Conventions. 2 Credits.
Explores the impact of regulations, trade and human rights on health by examining the relevant international declarations, agreements and conventions. This course will examine a variety of topics including the impact of international trade agreements on health, the International Health Regulations and other regulations affecting global health, and the relationship between health and human rights. Prerequisite: PUBH 6400.

PUBH 6450. Global Health Diplomacy. 2 Credits.
Introduction to the concept of global health diplomacy; how diplomacy has been used to advance health agendas and how health issues have been used to improve diplomatic relations between countries; formal health, multi-stakeholder health, and informal health diplomacy; comparative study of how different countries have devised health diplomacy strategies.

PUBH 6480. Public Health in Complex Emergencies. 2 Credits.
Analyze security institutions, vulnerable groups, humanitarian operations and natural disasters and global security, the impact of global health threats such as HIV/AIDS, SARS, avian flu, tuberculosis and malaria on security institutions, vulnerable populations, civil/military cooperation, and humanitarian operations. Also explore the potential value of various institutions in mitigating global health threats and responding to humanitarian emergencies. Examine a range of scientific, policy, and program interventions designed to address these issues. Prerequisite: PUBH 6400.

PUBH 6481. Global Mental Health. 2 Credits.
Focus on global mental health knowledge and public health policy implementation skills regarding the integration of mental health, public health, and primary care in diverse health systems and challenging cultural contexts. Prerequisite: PubH 6400.

PUBH 6482. International Food and Nutrition Policy. 2 Credits.
Major global food and nutrition issues, their determinants, and the strategies that in place to address them. Students identify major nutrition and food challenges in a country or region as well as the policies and programs that have proven successful in addressing those challenges. Prerequisite: PUBH 6400.

PUBH 6484. Prevention and Control of Vector Borne Diseases. 2 Credits.
Study of insects and other vectors responsible for transmission of diseases in developing countries, including plague, malaria, dengue fever, onchocerciasis (river blindness), and chikungunya virus. Special focus on developing countries, particularly in the Middle East, Africa, Asia, and Latin America. Diseases such as West Nile Virus and Lyme disease in the United States and elsewhere are also addressed. New methods for effective management and control.

PUBH 6485. Prevention and Control of Water and Sanitation Diseases. 1 Credit.
Problems associated with providing adequate water and sanitation in developing countries; infectious diseases such as cholera, dysentery and typhoid. Innovative tools and solutions for improving water supply and sanitation.

PUBH 6486. Global Health Programs and Approaches to the Control of Infectious Diseases. 2 Credits.
Review strategies used for the control of infectious diseases with a focus on the situation in low and middle income countries. Review and critique the goals, strategies and challenges of major global health intervention programs designed to prevent and control infectious diseases. Course includes a historical perspective of achievements to date and the importance of surveillance systems as a core component of effective programs. Intervention strategies addressed include vaccination programs and methods for analysis of effectiveness; the use of chemotherapy as prevention and treatment tools on a population basis; the role of nutritional supplementation; environmental approaches to infectious disease control; and combined/integrated approaches that involve multiple interventions and potential benefits. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6400.

PUBH 6487. Emerging Zoonotic Diseases & Global Food Production. 1 Credit.
Analysis of trends in emerging zoonotic diseases and their links to global food production. Case studies on the use of surveillance systems and outbreak detection techniques to monitor emerging zoonotic diseases. Development of skills to analyze surveillance systems, policy reports, and literature related to emerging zoonotic diseases and food-borne outbreaks within a global context. Prerequisites: PUBH 6003.

PUBH 6488. Cost-effectiveness Analysis in Public Health and Healthcare. 2 Credits.
The application of cost-effectiveness analysis (CEA) to enhance the efficiency of programs and services both in the United States and developing countries. A variety of topics and related analytical tools such as cost benefit analysis, decision analysis, and sensitivity analysis are covered. Students learn to perform cost-benefit and cost-effectiveness analyses and understand the strengths and limitations of these methods and how to apply them to a broad range of health issues.

PUBH 6489. Evaluation of Food and Nutrition Programs and Policies. 1 Credit.
Application of evaluation approaches to existing or proposed nutrition and food programs and policies; competencies in the use of program impact theory as the foundation for evaluating such programs. Students should have a basic knowledge of the biological determinants of various nutritional statuses and some familiarity with program evaluation fundamentals. Prerequisites: PUBH 6001.

PUBH 6491. Public Health Leadership Seminar. 1 Credit.
Leadership lessons derived from the careers of a diverse group of successful executives and entrepreneurs from multiple sectors, including corporate, government, non-profit, and the arts. Development of skills for effective engagement with peers, personal network, potential employers, and business partners. Restricted to students who have faculty permission to register for course.

PUBH 6492. Global Health Programs and Approaches to the Control of Chronic Diseases. 2 Credits.
Concepts, methods, and tools to address chronic non-communicable diseases (NCDs); global public health and development dimension of NCDs, their epidemiology and risks, and health systems approaches for their control with focus on low- and middle-income countries. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6400.

PUBH 6493. Fundamentals of Supply Chain Management in Developing Countries. 2 Credits.
Practical approaches used by government policymakers, essential drugs program managers, NGOs, donors, and others to ensure that high-quality essential drugs are available, affordable and used rationally; existing and potential challenges and workable solutions related to managing the drug supply in developing countries. Restricted to graduate students.

PUBH 6499. Topics in Global Health. 1-3 Credits.
Examination of a particular facet of public health. Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details.

PUBH 6500. Planning and Implementing Health Promotion Programs. 3 Credits.
Students develop skills to effectively plan, design, and implement programs that address public health problems for defined populations in a variety of settings. Prerequisites: PubH 6007.

PUBH 6501. Program Evaluation. 3 Credits.
The knowledge, competencies, and skills needed to plan and implement evaluations of public health programs in a variety of settings. Types of program evaluation, including needs assessment, process evaluation, quantitative and qualitative monitoring of outputs, outcomes, and impact. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6007, PUBH 6435, and PUBH 6500.

PUBH 6502. Practical Data Analysis: PCH. 1 Credit.
Practical aspects of dataset creation, data management, rudimentary statistical analysis & tabular/graphical presentation of results in the user-friendly environments of PASW (formerly SPSS) and MS Excel. Students will create codebooks, enter & clean data, derive new variables from existing ones, choose appropriate analytical techniques & implement them, graph & tabulate results, and document & protect work. Examples will be drawn from commonly-encountered situations in prevention and community health, such as needs assessments & program evaluations. Prerequisites: PUBH 6002, PUBH 6003, and PUBH 6500.

PUBH 6503. Introduction to Public Health Communication and Marketing. 3 Credits.
The application of health communication theories, principles and techniques, as well as marketing constructs and concepts, to advancing public health through practitioner-oriented health communication and social marketing campaign and programs.

PUBH 6504. Social and Behavioral Science Research Methods. 3 Credits.
The processes of study design, data collection, and analysis using SPSS for quantitative research in prevention and community health. All phases of the observational/survey research process considered sequentially, from formulation of research questions to preparation of the final report. Prerequisites: PubH 6002 and PubH 6007 or instructor permission.

PUBH 6510. COPC Principles and Practice. 3 Credits.
Theory and practice of community-oriented primary care, including an extended small group exercise carrying out a COPC project with a simulated community using Web-based data sets.

PUBH 6512. Comm-OrientedPrimryCarePol&Iss. 2 Credits.
Advanced work on COPC methods and policy, focusing on issues related to the provision of health care in underserved communities. Prerequisite: PubH 6510.

PUBH 6513. Community Health Management. 2 Credits.
Management and development of community health services. Builds upon principles for management and community-oriented primary care. Prerequisite: PubH 6510, 6003.

PUBH 6514. Preventing Health Disparities. 2 Credits.
Provides students with an understanding of how social, political, and economic factors contribute to disparities (e.g. racial, ethnic, gender, and geographical) in health and health care and how to use evidence-based approaches to prevent or address health disparities.

PUBH 6515. High Risk&Special Populations. 2 Credits.
Provides students with an overview of the methods to plan, implement and evaluation health promotion and education programs targeted towards high risk and special populations. The course will review the socioeconomic, political-economic, cultural and psychosocial factors of populations who are considered to be at high risk for specific health problems and efforts that have been addressed in current health promotion programs. Prerequisite: PubH 6007.

PUBH 6516. Community Health InfoResources. 2 Credits.
COPC and community health promotion require diverse information skills in order to assess community needs and strengths, determine priority health issues, analyze data, plan interventions, and evaluate programs. This course will introduce students to the information resources useful in planning and implementing COPC and community health projects that address racism. The selected resources will support methods for defining a community, characterizing a community's social and health characteristics, investigating a prioritized problem, and developing programs and solutions. Students will learn how to choose resources, search them, and consider bias in information sources.

PUBH 6530. Qualitative Methods in Health Promotion. 2 Credits.
Application of qualitative methods in the development of health promotion interventions, evaluations, and research. Collecting and analyzing qualitative date through participant observation, interviewing, group methods, and case studies. Prerequisite: PUBH 6007.

PUBH 6531. HlthPromotion/HlthCareSettings. 2 Credits.
Behavioral change counseling and training skills to improve health by changing individuals' behaviors and by developing training materials for use with providers, health professionals and high risk groups. This is an advanced course for second year students. Prerequisite: PubH 6007, 6500.

PUBH 6532. Commnty Org,Devlpmnt&Advocacy. 3 Credits.
Educates health promotion practitioners in how to organize community groups to promote health. The focus is on learning how to use resources available in the community to advocate change. Prerequisite: PubH 6007.

PUBH 6533. Design of Comm Health Surveys. 2 Credits.
This course teaches students how to frame questions in health promotion surveys using sound principles of questionnaire design with emphasis on reliability and validity. Students learn survey design principles and methods and how to analyze survey data.

PUBH 6534. Comm-Based Participatory Res. 1 Credit.
Students learn how to conduct community research in collaboration with community leaders and residents. This course emphasizes the principles of CBPR for addressing health promotion issues in communities including community needs and administrative and policy changes.

PUBH 6535. Promotion of Mental Health. 2 Credits.
Increases understanding about issues in mental health promotion. The emphasis is on mental health as a public health issue and linkages between individual mental health and the environment. Prerequisite: PubH 6007.

PUBH 6536. Workplace Health Promotion. 2 Credits.
Planning, management and evaluation of programs designed to serve employees' needs, promotion of employee health and reduction of health care costs in the workplace. Prerequisite: PubH 6007.

PUBH 6537. Health Promotion & Aging. 2 Credits.
Introduces students to the basic health aspects of the aging process and special health promotion needs for this group. Problems of aging and public health solutions for older Americans will be examined. Students will be able to define the public health concerns for aging Americans, how aging is affected by a multitude of factors, identify health promotion strategies to assist in reaching out to this population and develop methods of collaboration with agencies and organizations to improve the health of the aging population. Prerequisite: PubH 6007.

PUBH 6550. Maternal & Child Health I. 3 Credits.
Public health issues affecting the health and well-being of women, children, and families. A multidisciplinary perspective that integrates the biological, demographic, epidemiological, economic, behavioral, social, cultural and environmental aspects.

PUBH 6551. Maternal & Child Health II. 3 Credits.

PUBH 6552. Women's Health. 2 Credits.
Issues of women's health through the life cycle. The process of critically evaluating women's health research and issues.

PUBH 6553. Adolescent Health. 2 Credits.
Issues of physical, mental, and social development and their bearing on the health of adolescents, with special emphasis on prevention.

PUBH 6554. Children & Youth/Special Needs. 2 Credits.
In order to place children and youth with special needs into a public health framework, this course presents an introduction to and an overview of children and youth with special needs due to a developmental disability. Many aspects of developmental disability will be addressed including 'concept' and definitions of disability, causes, epidemiological considerations, and development of federal legislation. The scope and range of developmental disabilities will be reviewed along with classification schemes. Both national and international distributions will be considered from a sociopolitical viewpoint.

PUBH 6555. ReprodctvHealth:US&GloblPerspc. 2 Credits.
Reproductive health from a variety of public health perspectives, from defining reproductive health, past perspectives, needed improvements, and the factors that influence reproductive health.

PUBH 6556. Maternal & Child Nutrition. 2 Credits.
Covers the nutritional needs of women during the child bearing years, infants, children and adolescents. The course emphasizes the life course approach to nutrition and has a special emphasis on the effects of diet during infancy on obesity and degenerative diseases in later life. Students will examine the biological basis of nutrition, identify risk factors associated with poor nutrition in individuals and populations and evaluate domestic and international programs. Summer (1-credit) and Spring (2-credits).

PUBH 6557. ChildDevelopment&PublicHealth. 2 Credits.
Examination of the development of children from a public health perspective and provide a detailed examination of the indicators of children's health that are needed to assist public health professionals improve children's health.

PUBH 6558. Women, Gender and Health. 2 Credits.
Focuses on gender as a social determinant of health. Emphasis will be placed on examining the frameworks that are used in public health research to understand gender-based issues and how these frameworks affect the types of programs and intervention efforts developed.

PUBH 6559. HIV Prevntn:IntrdisplnryApprch. 2 Credits.
Provides an interdisciplinary overview of HIV prevention research from the behavioral, biological and biomedical perspective. Students are encouraged to approach the assignments and discussions from their own particular expertise and career interests/goals.

PUBH 6560. School Health and Safety. 1,2 Credit.
Examines the history, organization, financing, and politics of school health programs. It will provide an overview of the core components of school health as defined by the Center for Disease Control and Prevention: health services, health education, physical education, nutrition services, counseling or mental health, school environmental health, health promotion, and family/community involvement. Summer (1 credit); Spring (2 credits).

PUBH 6561. Maternal&ChildHlthPolAnalysis. 2 Credits.
Provides instruction in maternal and child health policy in the U.S. with a particular emphasis on policies related to the organization, financing, delivery, and quality oversight of personal health services for mothers and children.

PUBH 6562. Physical Activity and Obesity Interventions: From the Individual to the Environment. 2 Credits.
This course will broadly examine the public health issues related to physical activity and obesity, particularly as they relate to solutions for addressing individual factors and the obesogenic environment. Students will gain a further understanding of the social, physiological, behavioral, and environmental factors related to both obesity and physical activity. The course will focus on examining multiple levels of solutions, specifically: 1) individual and behavioral interventions; 2) school-based and community-level interventions; 3) environmental interventions; 4) policy-level interventions. Students will be expected to critically evaluate the necessary components of interventions, and apply that knowledge to future programmatic efforts.

PUBH 6563. Global Child Health. 2 Credits.
Science, policy, challenges, and successes of global child health; focus on low and middle income countries and children under five years of age. Communicable diseases of childhood and relevant chronic disease pandemics such as HIV and over-nutrition. The burden of disease and associated risk factors; cost-effective interventions and tools. Restricted to graduate students.

PUBH 6570. AdvPublHlthComm: Theory & Prac. 3 Credits.
Focuses on the use of communication to positively influence people's – and population's – understanding of health information, decision-making, and health behavior. In this skills-based course students will study, and in a group project apply, a range of theories and techniques germane to effective message design and delivery. Prereq: PubH 6503.

PUBH 6571. Social Marketing: Theory and Practice. 3 Credits.
The use of marketing to change the behavior of people, populations, and policy makers in ways that are in their, and society's, best interests. Students in this skills-based course study and work in teams to apply a range of marketing strategies to a real-world situation. Prerequisites: PUBH 6503.

PUBH 6572. Marketing Research for Public Health. 3 Credits.
The use of marketing research techniques used to better understand customers of public health programs in order to improve program design, implementation, and effectiveness. A range of qualitative and quantitative techniques are studied for their relevance to program planning, development, and continuous improvement.

PUBH 6573. Media Advocacy for Public Hlth. 3 Credits.
Focuses on the use of communication to positively influence public policy and public opinion. In this skills-based course students will study and apply a range of theories and techniques germane to the policy advocacy process. Prereq: PubH 6503.

PUBH 6574. Pub Hlth Branding Theory&Pract. 2 Credits.
This course focuses on the use of branding in the public health and social sectors. Learning from the commercial sector, we will examine how to brand behaviors as well as products and services. We will review branding methods, examine research on branding and its effectiveness, and build skills in branding for public health objectives.

PUBH 6575. CommunSkills for PubHProfsnls. 1 Credit.
Helps students develop writing and oral presentation skills through intensive, interactive training, practice, and feedback. Provides participants with a solid foundation for all forms of public health and other scientific and technical written and oral communication.

PUBH 6590. Intro Social Entrepreneurship. 2 Credits.
Examine innovative organizations created to improve people's lives and contribute to improved social & economic conditions. Course emphasis on how such organizations are started, how they are sustained, and the various business models that are adopted to achieve an organizational mission.

PUBH 6591. P.A./M.P.H. Clinal Leadership Seminar. 1 Credit.
For first-year physician assistant and master of public health program students, an orientation to their roles as health professionals. Special emphasis on preventive and community medicine.

PUBH 6599. Topics in PCH. 1-3 Credits.
In-depth examination of a particular facet of prevention and community health. Topics and prerequisites vary.

PUBH 6610. Public Health Nutrition Practice and Leadership. 1 Credit.
This course provides an overview of public health nutrition practice. Students develop communication, management and leadership skills necessary for successful careers. Students will also explore potential practicum and culminating experience options, and how to use these experiences to achieve their career goals. This course is designed for first year students in the public health nutrition MPH program.

PUBH 6611. Nutrition Assessment. 2 Credits.
This course examines the anthropometric, biochemical, clinical and dietary methods for assessing nutritional status in individuals. The process of conducting a food and nutrition environment assessments will also be addressed.

PUBH 6612. Food Systems in Public Health. 2 Credits.
A systems approach to understanding food systems and associated public health issues. How the current food system evolved, and how issues such as climate change and population growth may affect food systems in the future. The role of public health practitioners in meeting the population's need for safe, sufficient, and nutritious food. Policies, programs, and proposals aimed at creating healthier, more sustainable food systems. Prerequisite: PUBH 6004.

PUBH 6613. US Food Policy and Politics. 2 Credits.
The programs, regulations and legislation that pertain to food production, food safety, nutrition assistance and dietary guidance in the United States at the federal, state and local levels.

PUBH 6619. Fundamentals of Nutrition Science. 3 Credits.
The fundamental scientific principles of human nutrition; improving diet and nutritional status in the broader context of public health; nutrition assessment, study designs in nutrition science research, the role of nutrition in chronic disease, and current topics in nutrition science.

PUBH 6699. Topics in Nutrition Sciences. 1-3 Credits.
Examination of a particular facet of nutrition sciences. Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details.

PUBH 6999. Master of Science in Epidemiology Thesis. 2 Credits.
Thesis research. Restricted to MS in Epidemiology candidates.

PUBH 8242. DPH Topics:ClinEpi&DecAnalysis. 1 Credit.
An evidence-based problem solving approach for doctoral level students utilizing methods taught in PubH 6242. Prerequis: PubH 6002, PubH 6003. Corequis: PubH 6242.

PUBH 8244. DPH Topics:Cancer Epidemiology. 1 Credit.
Course focuses on critical review and interpretation of cancer epidemiology literature as well as issues in research design in the field. Prerequ:PubH 6001 & PubH 6003. Corequis: PubH 6244.

PUBH 8245. DPH Topics:InfectDiseaseEpi. 1 Credit.
Provides doctoral level material on the content of infectious disease epidemiology. The course focuses on critical review and interpretation of infectious disease literature as well as issues preparing an analytic research paper on an emerging infectious disease and the application of tools used to describe the epidemiology of those diseases. Prerequ: PubH 6003. Corequis: PubH 6245. Spring.

PUBH 8250. DPH Topics: Epi of HIV/AIDS. 1 Credit.
Students select specific topic within area of HIV/AIDS epidemiology. Options include responding to a data analysis problem; responding to a methodological problem found within HIV/AIDS research; or another topic approved by instructor. Prerequ: PubH 6001 & PubH 6003. Corequis: PubH 6250.

PUBH 8259. DPH Topics:EpiSurveillanceinPH. 1 Credit.
Course provides doctoral level material on the content of surveillance offered in PubH 6259. Focus is on critical review and interpretation of surveillance literature as well as issues preparing an analytic research paper. Prerequ: PubH 6002 & PubH 6003. Corequis: PubH 6259.

PUBH 8364. Quantitative Methods. 3 Credits.
Introduces basic concepts in mathematical statistics. Topics will include probabilities (unconditional and conditional), density and distribution functions of continuous and discrete random variables, including expected values. Specific distribution functions discussed will be Binomial, Poisson, Hypergeometric, and Gaussian distributions. Additional topics include bivariable distributions, variance-covariance matrix, limiting theory, asymptotic results, and maximum likelihood estimation. Prerequisites: Math 1231, 1232 and PubH 6002, 6249.

PUBH 8365. Design of Medical Studies. 3 Credits.
Design of medical investigations, including the randomized clinical trial, observational cohort study, and the retrospective case-control study. Specific methods regarding sample size, power and precision and statistical procedures for randomization and sampling. Ethics of clinical trials and the intention-to-treat principle. Prerequisite: PubH 6002.

PUBH 8366. Biostatistical Methods. 3 Credits.
Biostatistical methods for asymptotically efficient tests and estimates of relative risks and odds ratios from prospective and retrospective matched and unmatched studies. Fixed and random effects models. Logistic regression, conditional logistic regression. Poisson regression. Maximum likelihood and efficient scores. Prerequisites: STAT 6202 or Instructor's permission.

PUBH 8401. Foundations in Public Health Leadership & Practice. 3 Credits.
Interactive seminar course provides students in the doctor of public health (DrPH) program with a fundamental understanding of the history of and current issues associated with the four principal DrPH program areas: health policy, health behavior, global health and environmental and occupational health.

PUBH 8402. Ldrshp/PublicHlthPractc&Policy. 2 Credits.
Principles of public health practice and policy with a focus on the interdisciplinary and strategic application of skills, knowledge and competencies necessary both to perform public health core functions and to enhance the capacity to perform these functions.

PUBH 8404. Advanced Topics: Health Systems and Health Policy Research. 3 Credits.
Examination and assessment of issues related to the intersection of healthcare systems and health policy, and how health policy and health services research can inform the development and evaluation of healthcare systems and health policy. Prerequisites: PUBH 6315. Restricted to doctoral candidates.

PUBH 8405. Advanced Topics: Health Economics Research. 3 Credits.
Critical financing issues for U.S. public health and health care services and systems. The role of health services research in understanding the effects of these issues and informing the deliberations and decisions of policymakers.

PUBH 8406. Advanced Topics: Health Research in the Global Arena. 3 Credits.
Alternative field methods adopted from sociology, anthropology, economics, and political sciences for social sciences and policy research. Builds data collection, instruments, measurements, indicators, and data analysis and interpretation skills in specific socio-cultural contexts. Ethical issues in international research.

PUBH 8407. Advanced Topics: Health Leadership in International Settings. 3 Credits.
Doctoral students develop the tools and experiences needed to build capacity for leadership in global health. Prerequisite: PUBH 8406.

PUBH 8408. Advanced Topics: Health Behavior Research & Practice Applications. 3 Credits.
Advanced topics relating theory to practice in areas of health education and behavioral change. Application of qualitative and quantitative research to health related behavior at individual and community levels.

PUBH 8409. Advanced Topics: Health Communication Research. 3 Credits.
Methods of communications research designed to alter health behavior. Emphasis on critical analysis of communications research aimed at the mass public, groups, and interpersonal level.

PUBH 8411. Advanced Topics - Principles of Human Health Risk Science. 3 Credits.
This course provides the doctoral student with a comprehensive orientation to the frameworks, principles and issues involved in assessing, managing and communicating environmental health risks. This fundamental, interdisciplinary course is designed to foster dialogue and insights about contemporary risk science and management issues, including ethical concerns and technical issues that influence policy making. Restricted to EOH DrPH program students only; other students by permission of instructor.

PUBH 8412. Advanced Topics - Environmental and Occupational Health Research and Practice. 3 Credits.
This course exposes students to the theory and reality of both research and practice in environmental and occupational health. There is an emphasis on the use of public health science in policy and regulatory decisions. Prerequisite: PUBH 8411 or permission of instructor.

PUBH 8413. Research Leadership. 1-10 Credits.
Students participate in a range of activities designed to develop and enhance their research methods and analytic skills. These activities include participating in the development and submission of sponsored research proposals; being formally affiliated with a research project, assuming responsibility for completing a real-world research project; engaging in empirical data collection and analysis efforts.

PUBH 8414. Policy and Management Leadership. 1-10 Credits.
Students develop and enhance their management, leadership, and policymaking skills for problem solving in real-world settings; public health departments, community health centers, legislative settings, and public or teaching hospitals.

PUBH 8415. Instructional Leadership. 1-10 Credits.
Students participate in a range of activities designed to develop and enhance their teaching skills. These activities include course development, teaching master's level courses, acting as TA for undergraduate courses, advising students about their class performance, evaluating student performance, and developing remedial programs for students.

PUBH 8416. Study Design & Evaluation Methods. 3 Credits.
Prepares doctoral students to design and conduct program and policy evaluation in public health. Intensive introduction to the principles of study program design and evaluation research emphasizing the ability to synthesize the population-based intervention literature, apply planning and management methods, describe and apply research methods from a range of disciplines, and prepare a program research proposal.

PUBH 8417. Qualitative Research Methods and Analysis. 3 Credits.
Techniques for designing and conducting qualitative research and for analyzing and reporting qualitative data relevant to program development and implementation, community assessment, and policy analysis. Prerequisite: PUBH 8416.

PUBH 8418. Applied Statistical Analysis. 3 Credits.
Intensive course in data management and data analysis using STATA® . Database management system techniques and data analytical strategies for the appropriate analysis of data sets obtained from a variety of studies will presented. The student will manipulate national data sets from epidemiological studies as well as Demographic and Health Survey (DHS) data. Prereq: PubH 8416.

PUBH 8419. Measrmnt/PublHlth&HlthSrvcsRes. 3 Credits.
In this course students review principles of measurement and assessment as they apply to public health and health services research constructs, review existing state-of –the-art measures of individual and population health status (e.g., morbidity, mortality, functioning and health-related quality of life) and of individual and community health behavior, and explores current measurement issues in health research. Prerequisite: PubH 8418.

PUBH 8420. Advanced Analysis & Dissemination. 3 Credits.
Advanced multivariate data analyses of complex datasets and programs, including advanced cross-sectional techniques, time-series analysis, and the use of panel data. Evaluation of results, and dissemination of findings to relevant stakeholders. Prereq: PubH 8417, 8418.

PUBH 8422. Advanced Health Care and Public Health Research Design. 2 Credits.
Design of protocol suitable for implementation as part of DrPH dissertation requirement. Enrollment only after completion of required coursework and successful completion of the comprehensive examination. Instructor's approval required.

PUBH 8423. Dissertation Research. 1-12 Credits.
Dissertation Research for DrPH. Prereq: PubH 8422.

PUBH 8999. Dissertation Research. 1-12 Credits.
Dissertation research.

PUBLIC POLICY AND PUBLIC ADMINISTRATION (PPPA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PPPA 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

PPPA 2000. Justice and the Legal System I. 3 Credits.
The structure and function of constitutional law: the Supreme Court as an institution, how its cases are decided, and effects of its decisions on the political and social life of the country.

PPPA 2001. Justice and the Legal System II. 3 Credits.
Continuation of PPPA 2000. The structure and function of constitutional law: the Supreme Court as an institution, how its cases are decided, and effects of its decisions on the political and social life of the country. PPPA 2000 is prerequisite to PPPA 2001, which focuses on the First Amendment.

PPPA 2117. Executive Branch Politics. 3 Credits.
Contemporary concepts and issues in public administration and management. Major trends and approaches to governmental administration in the U.S., including the changing federal role, roles of the public sector in relation to the private sector, and managing public agencies at all levels. Same as PSC 2217.

PPPA 2701. Sustainability and Environmental Policy. 3 Credits.
A survey of the intersection of the principles of sustainability and the set of public policies that affect environmental management in the United States. Consideration of the idea that environmental policy is inevitably implemented in a complex interaction of both natural and human systems. Topics applicable to most environmental policy debates, such as the the balance between costs and benefits of environmental protection. Introduction to a "toolkit" of environmental policy instruments ranging from highly prescriptive command-and-control regulations to flexible market-based policies.

PPPA 6000. Cross-Sectoral Governance in the U.S. Federal System. 1 Credit.
Introduction to the roles and responsibilities of the public, nonprofit, and for-profit sectors in the delivery of public goods and services.

PPPA 6001. Introduction to Public Service and Administration. 3 Credits.
Introduction to the discipline of public administration. The intellectual traditions and theoretical frames of reference that inform public administration as a field of professional practice and study. Current and continuing challenges and controversies.

PPPA 6002. Research Methods and Applied Statistics. 0-3 Credits.
Development of skills and knowledge for conducting original research and critically evaluating empirical studies. Various research designs and data collection techniques are examined. Focus on computerizing data sets for quantitative analysis, analyzing strength of relationships, selecting appropriate statistical techniques, and testing statistical hypotheses.

PPPA 6003. Economics for Public Decision Making. 3 Credits.
The basic tools and concepts in microeconomic analysis; how these tools can be useful in public decision making.

PPPA 6004. Managing Public Organizations. 3 Credits.
Organizational dynamics, management approaches, and workplace relationships that affect behavior in public organizations. Prerequisite: PPPA 6001.

PPPA 6005. Public Budgeting, Revenue, and Expenditure Analysis. 3 Credits.
Survey course that focuses on the institutions and analytical tools associated with raising revenue and allocating/managing resources at all levels of government. Hands-on budgeting skills and communication of analysis to decision makers. Prerequisite: PPPA 6003.

PPPA 6006. Policy Analysis. 3 Credits.
Development of skills in conducting and critiquing policy analyses. Application of methodologies used in analyzing possible consequences of specified alternatives as applied in the public policy decision-making process. Appropriate applications and limitations of policy analysis and its relationship to politics and the policy process.

PPPA 6008. M.P.A./M.P.P. Capstone. 3 Credits.
For M.P.A. and M.P.P. students who will complete their degree program at the end of the fall semester, this course substitutes for PPPA 6009 and 6119, respectively.

PPPA 6009. MPA Capstone. 3 Credits.
Review of concepts and issues; analysis and integration of ethical, political, economic, managerial, and personal values and issues in the field.

PPPA 6010. Politics & The Policy Process. 3 Credits.
The role of policy analysts in public policymaking. The impact that the political, economic, cultural, and bureaucratic context has on the policymaking process and outcomes. Political and ethical issues raised by the intricate interface of the private, not-for-profit, and public sectors in public policy formulation and implementation.

PPPA 6011. Introduction to Public Policy. 3 Credits.
Foundations of the field of public policy, emphasizing the role of policy analysts in the policymaking process. Topics include agenda setting, decisionmaking, policy implementation, program evaluation, and policy feedback.

PPPA 6013. Econometrics–Policy Research I. 3 Credits.
Multivariate research methods in policy analysis Prerequisite: PPPA 6002 . Laboratory fee.

PPPA 6014. Economics in Policy Analysis. 3 Credits.
The application of intermediate microeconomic theory to the study of public policy. Topics include models of individual choice in policy analysis, policy aspects of models of the firm, theory of market failure and welfare economics, and resource allocation decisions in the public sector. Credit cannot be earned for both PPPA 6014 and SMPP 6206. Prerequisites: PPPA 6085. Recommended background: An intermediate-level microeconomic theory course such as ECON 6217.

PPPA 6015. Benefit-Cost Analysis. 3 Credits.
The application of microeconomic theory and welfare economics to the empirical evaluation of public policies and programs. Applied welfare economics as a framework for policy analysis; empirical measures of welfare change; techniques of benefit–cost analysis. Prerequisite: PPPA 6014.

PPPA 6016. Public and Nonprofit Program Evaluation. 3 Credits.
Theory and practice of program evaluation and evaluative research. Exploration of scope and limitations of current practice in evaluation, considering economic, political, social, and administrative factors. Examination of methodological considerations for design, data collection, analysis, and dissemination. Prerequisite: PPPA 6002 .

PPPA 6017. Introductory Microeconomics for Public Policy. 3 Credits.
Intermediate microeconomics with a focus on policy-relevant topics and examples. Restricted to MPA and MPP degree candidates.

PPPA 6018. Public Policy, Governance, and the Global Market. 3 Credits.
The socioeconomic foundations of government regulation and public policy cooperation for the governance of firms, markets, and globalization. The evolution of national, transatlantic, and multilateral frameworks for market and civil society governance, international competition policy cooperation, regulatory harmonization, and industry standards.

PPPA 6019. MPP Capstone. 3 Credits.
Policy theory and typologies; policy formulation, implementation, and evaluation; ethics and practice in policy analysis, processes, content, and contexts; policy linkages to multiple disciplines. Students submit an analysis of a substantive policy primarily utilizing resources in the D.C. region.

PPPA 6024. Leadership in Complex Organizations. 3 Credits.
What the manager must know and do to provide leadership and guidance in large, complex organizations. An exploration of leadership theories and the factors and processes that condition effective leadership.

PPPA 6025. Ethics and Public Values. 3 Credits.
Ethical dimensions of personal and professional judgments of public officials. Cases are used to consider the ethos of public organizations and the moral foundations of public policy.

PPPA 6027. Program Management. 1 Credit.
Program management as a basis for developing policy and evaluating programs; how managers look at problems, the competing demands they face, what (and who) influences their decisions and actions, and how they get things done.

PPPA 6031. Governing and Managing Nonprofit Organizations. 3 Credits.
Historical, legal, and social foundations of the nonprofit sector. Developing organizational strategy and capacity; managing staff, boards, and volunteers; financial management; fund raising, marketing, public advocacy, and other external relations; partnerships and entrepreneurial activities; measuring performance; and policy issues.

PPPA 6032. Managing Fund Raising and Philanthropy. 3 Credits.
Fund-raising for nonprofit organizations and the management of relationships between donors and recipient organizations. Positioning the organization for fund raising; roles of staff and volunteers; principal techniques for identifying, cultivating, and soliciting donors; ethical principles; emerging trends; and relevant policy issues.

PPPA 6033. Non-Profit Enterprise. 3 Credits.
The use of business methods by nonprofit organizations, commercialization in the nonprofit sector, and the relationship between nonprofit and for-profit entities in pursuing social purposes. Case studies.

PPPA 6034. Managing Nonprofit Boards. 3 Credits.
Overview of the responsibilities, roles, and management of nonprofit boards. The emphasis is on governing boards, but advisory councils and boards of other types are also considered.

PPPA 6042. Managing State and Local Governments. 3 Credits.
Examination of state and local governmental structures and functions, their place within the federal system, their revenue sources, their limitations, and the alternatives available to encourage more effective administration to meet public and private demands.

PPPA 6043. Land Use Planning and Community Development. 3 Credits.
Theory and practice of land use planning. Issues of competing land uses in an era of increased sprawl, population pressure, and environmental threat. Growth management techniques and practices in states and localities; the use of various regulatory controls and economic incentives to achieve desired outcomes. The idea of "sustainable community.".

PPPA 6044. State Politics and Policy. 3 Credits.
Important concepts of state politics and government with emphasis on how those concepts affect the formulation and implementation of policy. The functions of state government and the political, economic, and legal factors that shape state public policies.

PPPA 6048. Financing State and Local Government. 3 Credits.
Analysis of the theory and practice of public finance in state and local governments. Includes the financing of services through municipal taxation, intergovernmental funds, debt instruments, and other revenue sources. Review of expenditures as well as financial management practices.

PPPA 6049. Urban and Regional Policy Analysis. 3 Credits.
Examination of selected national policies and their effects on urban areas and governments. Emphasis on policy dimensions of urban systems and their relationship to the social, political, and economic context. Against the background of urban politics and administration, areas of health, education, welfare, manpower, transportation, and housing are addressed.

PPPA 6051. Governmental Budgeting. 3 Credits.
Survey of the actors, institutions, and processes in the federal budgeting system. Executive budget preparation/execution, legislative review and approval of budget requirements, and independent audit of government spending.

PPPA 6052. Tax PolicyAnalysis. 3 Credits.
This course provides a guided, critical study of budgeting by the U.S. Government: its conceptual foundations, structure, processes, accounting, scoring, and results. This process is evaluated, as a system and by its component elements, using the criteria of performance with respect to its fundamental objectives; fiscal and economic stability and efficiency, including for those programs aimed at promoting equity. Because of the dominant role of the Congress in the budget process, attention is focused on the system and process created by the Congressional Budget Act of 1974.

PPPA 6053. Financial Management for Public and Nonprofit Organizations. 3 Credits.
Intensive analysis, using the case study approach, of concepts and principles used in the not-for-profit sector for financial management purposes. Disciplines of accounting, budgeting, operations control, management, and auditing are integrated into comprehensive management control systems and include issues of system design and implementation.

PPPA 6054. Issues in Federal Budgeting. 3 Credits.
Policy tools available to pursue social objectives, including grants, loans, contracting out, regulation, tax credits, and tax expenditures. Focus on criteria such as effectiveness, efficiency, equity, legitimacy, and administrative ease.

PPPA 6055. Contracting Out and Public–Private Partnerships. 3 Credits.
Contracting out and public–private partnerships as methods of delivering government goods and services. Policy and implementation issues, including when and how contracting out may provide a more efficient and effective method of delivering government goods and services.

PPPA 6056. Regulatory Comment Clinic. 3 Credits.
Survey of regulatory theories, institutions, policies, and procedures. Application of economic tools to analyze the effect of existing and proposed regulations on social welfare. Communication of analysis to decision makers and the public.

PPPA 6057. International Development Administration. 3 Credits.
An institutional and policy context for work in the international development industry. Mainstream policies, reform efforts, and alternative approaches. Major actors, selected policy areas, and regional and comparative perspectives.

PPPA 6058. International Development NGO Management. 3 Credits.
Provides an understanding of the primary implementers of international development assistance. Overview of NGO management, highlighting those features that are particular to NGOs active in international development, including NGO relations with government and donors. Recommended: PPPA 6057 or approval of instructor.

PPPA 6059. International Development Management Processes and Tools. 3 Credits.
Training in development management tools and processes; application of international development approaches specific to the development management profession. Key theories and perspectives of community development and development management. Recommended: PPPA 6057 or approval of instructor.

PPPA 6060. Policy Formulation and Administration. 3 Credits.
Impact of economic and political factors on public policy formulation and implementation; intensive analysis of the analytical, normative, and decision-making models of the policy process with special emphasis on their relationship to current policy problems.

PPPA 6061. Banking and Financial Institutions Policy. 3 Credits.
This course examines the broad range of policy issues applicable to banking and financial institutions – including those related to monetary policy, financial stability, consumer protection, and community reinvestment. This area includes a number of questions that are at the forefront of the current national policy debate about the appropriate role of government and how best to regulate financial institutions and financial markets.

PPPA 6062. Community Development Policy and Management. 3 Credits.
This course examines the policy and practice of community development, including how private sector developers and lenders work with nonprofits, foundations, and the public sector to promote sustainable affordable housing, economic development, and other community-based projects that meet both financial as well as social impact criteria. This category of finance and development is intended to help people and communities just outside the margins of conventional, mainstream finance join the economic mainstream – and to help the economic mainstream enter emerging opportunity markets. The course explores different types of community development opportunities, including affordable housing, charter school, community facility, small business lending, and nonprofit real estate projects. The course also addresses emerging trends that are likely to affect community development policymakers and practitioners, including transportation oriented development, "green" development, use of technology, comprehensive community initiatives, and new ways of raising capital for community development projects.

PPPA 6063. Policy Issues in Corporate Social Responsibility (CSR) and Impact Investing. 3 Credits.
This course examines the role of the public and nonprofit sectors in supporting corporate and investor activities that are intended to have social and environmental, in addition to financial, benefits. These activities – often referred to as "corporate Social Responsibility" (CSR) and "impact investing" – have been described as having significant potential to create social benefits in addition to being in the financial best interests of the corporation or investor. At the same time, some critics of these activities have said that they are less about producing social benefits and more about marketing private sector activities that are primarily designed to produce corporate financial gains. The course explores what is meant by these two terms, what steps the public and nonprofit sectors have taken to support the wide range of activities that these terms encompass, and what have been the results of this work both in the United States and in other countries. The course also addresses emerging trends that are likely to affect the public and nonprofit role in CSR and impact investing in the future.

PPPA 6065. Federalism and Public Policy. 3 Credits.

PPPA 6066. Environmental Policy. 3 Credits.
Current issues in environmental policy: biodiversity, land use including wilderness protection, climate change, environmental justice, economic growth, and ecological sustainability.

PPPA 6067. Environment, Energy, Technology, and Society. 3 Credits.
The identification, examination, and evaluation of how environment, energy, and technology are interrelated and how these interactions influence policy formulation and implementation at the international, national, regional, industrial, and organizational levels. Same as SMPP 6207.

PPPA 6072. Legislative Management and Congress. 3 Credits.
Analysis of Congress as a management system; examination of its internal administration and its role in formulating policy through legislation. Staffing practices, leadership, rules and procedures, oversight functions, and coalition building.

PPPA 6075. Law and the Public Administrator. 3 Credits.
Exploration and analysis of the functions of law in a democratic society. Emphasis is placed upon the procedural, historical, and jurisprudential dimensions of American law. This broad perspective seeks to convey understanding of the law as a legal and moral force guiding and constraining public decision making.

PPPA 6076. Federal Government Regulation of Society. 3 Credits.
Analysis of the federal regulatory process as it affects the public and private sectors. The regulatory process from legal, economic, administrative, and political perspectives.

PPPA 6077. Case Studies in Public Policy. 1-3 Credits.
Critical analysis of topical issues in public policy, using a case-study approach. Specific issues covered will vary.

PPPA 6081. Poverty and Social Policy. 3 Credits.
Introduction to analytical and political issues surrounding the ongoing American and British debates on poverty and social policy; evaluating social assistance programs; the complementary roles of policy analysis and public management.

PPPA 6085. Special Topics in Public Policy. 3 Credits.
Topics announced in the Schedule of Classes. May be repeated for credit, provided the topic differs.

PPPA 6097. Practicum in Public Policy and Public Administration. 0 Credits.

PPPA 6098. Independent Research. 1-12 Credits.
Prerequisite: Permission of instructor and program director.

PPPA 6207. Program Management. 1 Credit.

PPPA 8022. Econometrics-Plcy Research II. 3 Credits.
Advanced topics in econometrics for policy research. This course is designed for doctoral students who wish to use econometric tools in their research. The course prerequisite is PPPA 6013 or an equivalent course in introductory econometrics; however, students should expect a greater degree of difficulty and a greater reliance on self-directed study in PPPA 8022 than PPPA 6013.

PPPA 8023. Mixed Methods in Research Design. 3 Credits.
The historical and philosophical foundations of mixed method research design; review of canonical designs; developing and honing skills to implement mixed methods research designs.

PPPA 8100. Seminar: Literature of Public Administration. 3 Credits.
Contemporary and historical literature in the institutional and intellectual development of public administration.

PPPA 8101. Research Methods. 3 Credits.
Doctoral seminar on theory and practice in research methodology. Data sources and gathering, research models and designs. Critical evaluation of research studies. Emphasis on application of research methods to policy questions.

PPPA 8105. Public Finance and Human Capital. 3 Credits.
The many facets of budgeting and finance and the research approaches used to study issues in this field.

PPPA 8111. Seminar: Public–Private Sector Institutions and Relationships. 3 Credits.
An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Same as SMPP 8311. Prerequisite: doctoral degree candidate status.

PPPA 8123. Seminar: The Policy Organization. 3 Credits.
Unique problems of complex organizations: public, private, and mixed. Emerging concepts and theories. Selected issues.

PPPA 8164. Seminar on Program Evaluation. 3 Credits.
Doctoral seminar on theory and practice in public and nonprofit program evaluation. The broad range of approaches undertaken, current controversies in the field, and the political and ethical context for evaluators.

PPPA 8174. Seminar: Public Management. 3 Credits.
Public organization theory and behavior. Organizational behavior, organization theory, and public management. Key traditions of inquiry in the study of public organizations. Restricted to PhD students only.

PPPA 8183. Current Topics & Research. 1 Credit.
Current scholarship discussed in a seminar setting. The conduct of research and presentation of research findings. May be repeated for credit.

PPPA 8190. Philosophical Foundations of Policy and Administrative Research. 3 Credits.
Philosophy of science as applied to research in public policy and public administration. The nature of and current problems related to epistemology, development and role of theories, and relationships among theory, methodology, and empirical data. Credit for this course may be applied toward the dissertation credit requirement. Restricted to public policy and administration doctoral candidates who have taken and passed the qualifying examination and completed all required course work in a policy or public administration field.

PPPA 8191. Dissertation Workshop. 3 Credits.
Critical analysis of current research. Formulation of a dissertation proposal and development of dissertation research strategies. Credit for this course may be applied toward the dissertation credit requirement. Restricted to public policy and administration doctoral candidates who have taken and passed the qualifying examination and completed all required course work in a policy or public administration field.

PPPA 8197. Doctoral Seminar:Special Topic. 1-3 Credits.

PPPA 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination.

PPPA 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

REGULATORY AFFAIRS (RAFF)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

RAFF 6201. Introduction to Global Regulatory Affairs. 3 Credits.
Foundations of regulatory affairs, including U.S. and international legislation and regulatory processes guidelines. Roles of leaders of regulatory affairs in developing products, navigating the regulatory review and approval process, and contributing to keeping products on the market.

RAFF 6202. Regulatory Drug Biologics. 3 Credits.
Development and evaluation of the regulatory affairs strategies that support drug and biologic development. Research science, study design, master file, risk/benefit analyses, product specifications and milestone identification, IND and NDA.

RAFF 6203. Regulatory Device Diagnostics. 3 Credits.
Development and evaluation of the regulatory affairs strategies that support device and diagnostics development. Research science, study design, master file, risk/benefit analyses, product specifications and milestone identification, IDE, 510K, PMA.

RAFF 6204. Clinical Research for Regulatory Affairs. 3 Credits.
The planning and conduct of clinical trials. Topics include protocol development, study design, post-marketing surveillance, and evaluation and assessment of regulatory submissions. Strategies for achieving clinical development goals.

RAFF 6205. Regulatory Affairs Compliance. 3 Credits.
Analysis and evaluation of regulatory affairs compliance strategies and guidelines. Pre and post marketing compliance of medical products, oversight, labeling, advertising and use.

RAFF 6275. Leadership inRegulatoryAffairs. 3 Credits.
Theories of leadership and change are integrated in the development of change proposals for the regulatory affairs field. The development of leadership solutions to problems in leading regulatory strategic change; integration of all field course work into implementation plans for health care system changes.

RELIGION (REL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

REL 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

REL 1001. Introduction to World Religions: West. 3 Credits.
Examination of the religions of the ancient Mediterranean and the major religions of the West. Religious foundations of Western civilizations. The development of Judaism, Christianity, and Islam and their confrontations with secularization and political upheaval in the modern world.

REL 1002. Introduction to World Religions: East. 3 Credits.
Examination of the major religions of the East and comparison with religions in the West. Approaches to the cross-cultural study of religion. Hinduism, Buddhism, and the religions of Tibet, China, and Japan are studied with respect to their history and their encounter with modernity.

REL 1003. Introduction to World Religions. 3 Credits.
Introduction to the major religions of the world: Judaism, Christianity, Islam, Hinduism, Buddhism, Confucianism, and Daoism. Examination of the central aspects of these religions including the doctrinal, ethical, ritual, experiential, and social dimensions. Exploration of similarities and differences between these religious traditions.

REL 1009. The Hebrew Scriptures. 3 Credits.
The literature, history, and religious thought represented by the Hebrew Scriptures (Old Testament). Continuities and contrasts between Israel and the ancient Near East are considered through study of the world view, oral and literary tradition, main religious ideas, and chief figures and movements of the biblical literature.

REL 1010. The New Testament. 3 Credits.
Literature and history of earliest Christianity in the setting of the religious movements of the Greco-Roman world and developments within Judaism. The meaning of the earliest Christian proclamation about the significance of the life, teaching, and death of Jesus of Nazareth becomes the basis for tracing the formation and expansion of the Christian movement.

REL 1010W. The New Testament. 3 Credits.
Literature and history of earliest Christianity in the setting of the religious movements of the Greco-Roman world and developments within Judaism. The meaning of the earliest Christian proclamation about the significance of the life, teaching, and death of Jesus of Nazareth becomes the basis for tracing the formation and expansion of the Christian movement.

REL 2165. The Gospels. 3 Credits.
Study of the four canonical gospels (traditionally those of Matthew, Mark, Luke, and John) in terms of each presenting a distinct literary portrait of Jesus of Nazareth and each being the product of a religious community that shared at least some beliefs and practices with surrounding "pagan" and Jewish communities.

REL 2169. Lost Gospels. 3 Credits.
Examination of some of the gospels not included in the Christian canon. These include, among others, Q, the Gospel of Thomas, the Gospel of Mary, and the Gospel of Judas. These lost gospels provide a fresh perspective on the development and diversity of early Christianity.

REL 2201. Judaism. 3 Credits.
A survey of Jewish thought and practice from the biblical to the modern period; introduction to the Hebrew Bible, rabbinic Judaism, Jewish philosophy and mysticism, Judaism in the modern period; an examination of the central rituals in Judaism, including Sabbath, dietary laws, and major festivals.

REL 2211. Rabbinic Thought and Literature. 3 Credits.
The thought-world of rabbinic Judaism in its formative period, 100–500 CE, through a close reading of primary texts in translation selected from Mishnah, Talmud, and Midrash. Topics include Oral Torah, the mechanics of rabbinic law, conceptions of God, views on suffering. The influence of rabbinic Judaism on modern Jewish ethics and thought.

REL 2301. Christianity. 3 Credits.
Typical themes, patterns, and points of diversity within the Christian religion; commonly shared and contested features and complex relationship with broader culture.

REL 2314. Contemporary Philosophy of Religion. 3 Credits.
The arguments of major figures in contemporary schools of thought within the philosophy of religion, including analytic, continental, deconstructionist, and process philosophy.

REL 2401. Islam. 3 Credits.
Islam as both a religion and a civilization. The basic Islamic beliefs and practices: the Qur'an, Hadith, and Islamic intellectual legacy; and the history of Islam from 632 to the present with particular attention to its encounter with the West.

REL 2501. Hinduism. 3 Credits.
Study of continuity and change in Hinduism, with emphasis on historical development and the consolidating features of the religion. Attention to relations between classical and popular living forms.

REL 2506. Religion, Myth, and Magic. 3 Credits.
Theories of religion developed by anthropologists; survey of world religions with emphasis on non-Western societies; religious processes and change. (Same as ANTH 2506).

REL 2562. Mythologies of India. 3 Credits.
The lore of Indian gods (Vedic, Puranic), heroes (epics), and holy men (Hindu, Buddhist, Jain, Tantric); ties with Indian art, caste, cult, cosmology, and spiritual ideals.

REL 2601. Buddhism. 3 Credits.
Consideration of the Buddhist tradition both thematically and historically, focusing on topics such as Buddhist doctrine, meditation, and rituals. The lived tradition in the pre-modern and modern periods.

REL 2811. Confucian Literature in East Asia. 3 Credits.
Introduction to Confucian literature in China and other parts of East Asia, from its beginnings to the present day. The various historical, philosophical, and religious dimensions of Confucian texts and practices; the role of Confucianism in the formation and development of Chinese and East Asian political systems, family systems, and gender relationships; recent intellectual debates on Confucianism in East Asia. (Same as EALL 3811, EALL 6811).

REL 2814. Religion and Philosophy in East Asia. 3 Credits.
Historical introduction to the major religious and philosophical traditions in China, Japan, and Korea, with focuses on ancestor worship, shamanistic cults, Confucianism, Buddhism, Daoism, and Shinto. The interactions of common East Asian religious and philosophical traditions how these traditions evolved over time, and the way each cultures assimilates foreign elements. How the very ideas of religion and philosophy are formulated and practiced differently in East Asia from those in the Western tradition. (Same as EALL 3814, REL 3814).

REL 2921. The Religions Wage Peace. 3 Credits.
Resources in various world religions that contribute to peacemaking in interpersonal relations and in domestic and international politics. Consideration of ways in which religions contribute to intolerance and violence. Case-based approach to religions as related to peace and conflict resolution.

REL 2922. Ethics and World Religions. 3 Credits.
Modern concepts of ethics and their relation to major world religions, religion as stimulus and barrier to moral change, and modern moral issues ranging from bioethics to war.

REL 2981. Women in Western Religion. 3 Credits.
Historical, theological, and ethical investigation of the image and role of women in Judaism and Christianity; special consideration of the Biblical experience, the sexual qualifications for religious office, use of male and female images and languages, and contemporary issues. Same as WSTU 3981.

REL 3141. Second Temple/Hellenistic Judaism. 3 Credits.
History of Judaism from the time of Ezra through the destruction of Jerusalem in 70 CE—canonization of the Pentateuch, Hellenism, Maccabean revolt, growth of sectarian movements, Herod, ferment against Rome in context of Eastern and Western political currents. Use of primary sources, especially the Bible, Josephus, and noncanonical writings.

REL 3149. Biblical Issues. 3 Credits.
May be repeated for credit provided the topic differs.

REL 3149W. Biblical Issues. 3 Credits.
May be repeated for credit provided the topic differs.

REL 3151. The Historical Jesus. 3 Credits.
Comprehensive study of the life and teachings of Jesus with critical attention to sources. Quest for the historical Jesus.

REL 3151W. The Historical Jesus. 3 Credits.
Comprehensive study of the life and teachings of Jesus with critical attention to sources. Quest for the historical Jesus.

REL 3161. The Life and Thought of Paul. 3 Credits.
Backgrounds of early Christianity, first-century religious and social conditions affecting the spread of Christianity, the life and journeys of Paul, Paul's presentation of the Christian faith.

REL 3161W. The Life and Thought of Paul. 3 Credits.
Backgrounds of early Christianity, first-century religious and social conditions affecting the spread of Christianity, the life and journeys of Paul, Paul's presentation of the Christian faith.

REL 3221. Issues in Jewish Ethics. 3 Credits.
Exploration of current debates about major ethical issues among Jewish thinkers in the Orthodox, Conservative, and Reform denominations; issues in bioethics, feminism, attitudes towards non-Jews, social action, the ethics of war.

REL 3291. Modern Jewish Thought. 3 Credits.
Jewish thought from 1800 to the present through an exploration of six preeminent Jewish theologians: Moses Mendelssohn, Hermann Cohen, Martin Buber, A.J. Heschel, J.B. Soloveitchik, and Mordecai Kaplan. The relationship between these thinkers and the major Jewish denominations: Orthodox, Conservative, Reform, and Reconstructionist.

REL 3292. Seminar: Issues in Jewish Thought. 3 Credits.
In-depth exploration of a selected thinker or issue in Jewish thought. Recommended for students with academic background in the study of religion or Judaic studies. May be repeated for credit provided the topic differs.

REL 3310. Apocalypse and Social Change. 3 Credits.
Investigation of typical ideas, patterns, and areas of social engagement associated with the genre of religious literature known as apocalypse. Why and how diverse groups within Jewish, Christian, and Muslim traditions crafted apocalypses that have shaped cultures across the globe from past to present.

REL 3321. Christian Ethics and Modern Society. 3 Credits.
Nature and principles of Christian life as developed by the Christian community; problems of personal conduct; application to various social institutions.

REL 3341. Christianity in the Ancient World. 3 Credits.
Rise and development of Christianity in relation to the culture, philosophy, mystery religions, and general religious life of the Greco-Roman world to A.D. 500.

REL 3342. Medieval Faith and Symbolism. 3 Credits.
Christian life and thought in the Middle Ages; mystics, saints, popes, and philosophers.

REL 3343. Religion in the Renaissance and Reformation. 3 Credits.
Transformation of the Western understanding of human identity and destiny from the end of the Middle Ages to the Age of Reason.

REL 3344. Christianity in the Modern World. 3 Credits.
Changes in Christian life and thought since 1700, as seen in theology, literature, political life, and religious institutions.

REL 3405. Shi'ite Islam. 3 Credits.
This course examines the emergence and development of Shi'ism as a branch of Islamic orthodoxy with particular emphasis on its doctrine, practices, theology, the law, politics, and the geographical and political context within which a distince Shi'i identity developed.

REL 3414. Islamic Philosophy and Theology. 3 Credits.
The major schools of Islamic philosophy and theology, considered in both a morphological and historical manner. The relation between revelation and reason, determination and free will, and divine and human knowledge as well as the relation among science, philosophy, and religion. The development of various schools of thought, from the classical period to the present.

REL 3425. Islamic Political Thought. 3 Credits.
In contrast to many courses on this topic that focus on modern period, this course investigates Islamic political thought from its inception during the lifetime of the Prophet to its elaboration and expansion by philosophers, theologians and political theorists, and to its encounter with political though coming from the Western world in modern period.

REL 3431. Sufism (Islamic Mysticism). 3 Credits.
The foundation of Sufism in the Quranic revelation, its subsequent development, and its significance within Islamic civilization. Doctrines and practices of Sufism; history of the Sufi orders; Sufi literature, particularly in Arabic and Persian. The influence of Sufism upon social and political life and its state and role in the contemporary world, both Islamic and non-Islamic.

REL 3432. Persian Sufi Literature East and West. 3 Credits.
The teachings of Sufism as reflected in the history of Persian Sufi literature. The influence of that literature on literary figures outside of the Islamic world, especially in the West, but also in India and China, from the 18th to the 20th centuries.

REL 3475. Islamic Religion and Art. 3 Credits.
Investigation of major forms of Islamic art, such as calligraphy, architecture, and urban design; Quranic chanting, poetry, and music in relation to the principles of Islamic revelation. Same as AH 4119.

REL 3481. Women in Islam. 3 Credits.
The ways in which Islam has articulated gender identity and male–female relationships, and conversely, how women have constructed, interpreted, and articulated Islam and their places within it. Same as WSTU 3481.

REL 3482. Gender and Piety in Islam. 3 Credits.
Issues related to gender, sainthood, and piety in Islam. Reading of classical primary texts and historical, ethnographic, and philosophical works. Focus on mysticism and metaphysics in Sufi and Shi'i traditions. Final projects are creative or research oriented.

REL 3566. Dharma in Hinduism and Buddhism. 3 Credits.
Development of working definitions of dharma as it is used in law, religion, ethics, and narrative in Buddhist and Brahmanical/Hindu texts of India's classical period.

REL 3611. South Asian Buddhism. 3 Credits.
The life of Buddha, the Buddhist Councils, doctrines of the schools of Hinayana Buddhism, philosophies of the schools of Indian Mahayana Buddhism, history of Buddhism in Sri Lanka, early history of Tibetan Buddhism, and the decline of Buddhism in India.

REL 3614. Buddhist Philosophy. 3 Credits.
Development of working definitions of dharma as it is used in law, religion, ethics, and narrative in Buddhist and Brahmanical/Hindu texts of India's classical period.

REL 3666. The Book of Revelation and Other Apocalypses. 3 Credits.
Examination of the Book of Revelation in its original historical context. This includes investigation of the origins of apocalyptic thought within Judaism and comparison of the Book of Revelation with other apocalypses such as Daniel, 1 Enoch, and 4 Ezra.

REL 3701. Religion in the United States. 3 Credits.
Growth of religious groups and institutions in relation to American culture, development of religious thought, and analysis of the contemporary religious scene.

REL 3711. Religion in Contemporary America. 3 Credits.
Trends and currents in American religion in the past fifty years. The nature and meaning of religious pluralism in the United States.

REL 3711W. Religion in Contemporary America. 3 Credits.
Trends and currents in American religion in the past fifty years. The nature and meaning of religious pluralism in the United States.

REL 3814W. Religion&Philosophy/East Asia. 3 Credits.
General introduction to the religions and philosophical tradition of China, Japan, and Korea. Same as EALL 3814.

REL 3831. Daoism in East Asia. 3 Credits.
Study of the early history of the formation and development of Daoism, its growth into an institutionalized religious organization in China, and its role in the religious and philosophical history of Japan and Korea. Same as EALL 3831.

REL 3831W. Daoism in East Asia. 3 Credits.
Study of the early history of the formation and development of Daoism, its growth into an institutionalized religious organization in China, and its role in the religious and philosophical history of Japan and Korea. Same as EALL 3831.

REL 3832. Myth, Ritual, and Popular Religion in China. 3 Credits.
Key aspects of popular religious myths, symbols, rituals, and practices in China, such as ancestor worship, spirit possession, fengshui theories, and pilgrimage.

REL 3841. Religion in Modern China. 3 Credits.
The changes, destructions, and reconstructions of Chinese religions from the late 19th century to the present day. The relationship between the (re)making of Chinese religions and the making of a modern Chinese nation-state. Same as CHIN 3841.

REL 3881. Women, Gender, and Religion in China. 3 Credits.
A historical introduction to the concepts of body, gender, and womanhood in Confucian, Daoist, Buddhist, and popular Chinese religious traditions. Women's roles in religious ritual and practices; the influence of Christianity and modernity. (Same as WSTU 3881, EALL 3881).

REL 3901. Thinking About Religion: Classic and Contemporary Approaches. 3 Credits.
Analysis of different ways in which religious phenomena can be approached. Readings and discussion of some of the epoch-making books in the development of the study of religion.

REL 3910. Perennial Philosophy. 3 Credits.
The meaning of the concept of 'perennial philosophy' as understood by various scholars of thought throughout Eastern and Western history, including its contemporary significance. Perennial philosophy as it concerns the nature of the 'divine reality,' the human state, the cosmos, the arts, and relations between religions.

REL 3915. Islam and Hinduism in South Asia. 3 Credits.
Investigation of the historical development and contemporary practice of Islam in South Asia (India, Nepal, Pakistan, Bangladesh, and Afghanistan). Particular attention to devotional traditions within Sufism and Bhakti Hinduism.

REL 3920. Man and the Natural Environment. 3 Credits.
The religious, philosophical, and historical causes of the modern environmental crisis; examination of the relationship between human beings and the natural environment in the West and in major non-Western civilizations from Graeco–Roman antiquity to modern times. Emphasis on the religious and philosophical issues involved in the relationship between man and nature.

REL 3923. Violence and Peace in Judaism, Christianity, and Islam. 3 Credits.
Historical analysis of the violent and peaceful dimensions of the three Abrahamic faiths, with focus on the relationship of the scriptures of each of the three traditions to the later interpretations that supported both violent and peaceful readings of those texts.

REL 3930. Mysticism East and West. 3 Credits.
Mysticism and its various meanings in Eastern and Western religious and spiritual traditions. Comparative study of major figures and works. What schools of mysticism teach about the nature of God and the world and the human state. The rapport between mysticism and various forms of sacred and traditional art.

REL 3931. Interfaith Dialogue in World Religions. 3 Credits.
Comparison of certain families of religions and the doctrinal debates in which they have engaged, including Hindu–Buddhist, inter-Hindu, inter-Buddhist, Buddhist–Confucian, Jewish–Christian, inter-Christian (Catholic–Protestant), Christian–Islamic, and inter-Islamic debates.

REL 3945. The Psychological Study of Spirituality. 3 Credits.
The complex interrelationship between psychology and spirituality: health and wellness; development of a spiritual life; psychological factors involved in spirituality; therapy and multicultural issues. Same as PSYC 3945.

REL 3951. Myth, Epic and Novel. 3 Credits.
Religious themes and images of the hero and their cultural significance in literature: e.g., Indo-European, Biblical, Babylonian narrative traditions; Greek epic and drama; Dante, Milton, Dostoevsky, Kafka, Hesse, Faulkner, Beckett.

REL 3989. The Goddess in India and Beyond. 3 Credits.
The goddess traditions of Hinduism, with some attention to goddess traditions in the ancient Near East and the Mediterranean. Classical Sanskritic, Tantric, and popular expressions of Hindu goddess worship. Comparative studies and issues of gender.

REL 3990. Selected Topics in Religion. 3 Credits.
Critical examination of religious phenomena rendered timely by current events or special resources. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

REL 3990W. Selected Topics in Religion. 3 Credits.
Critical examination of religious phenomena rendered timely by current events or special resources. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

REL 3999. Readings and Research. 2-3 Credits.

REL 4101. Senior Capstone Seminar. 3 Credits.
Required of and open to students majoring in religion.

REL 4191W. Senior Honors Thesis. 3 Credits.

REL 5701. Selected Topics. 0-4 Credits.

REL 6201. Special Topics in Religion. 3 Credits.
May be repeated for credit provided the topic differs.

REL 6401. Islamic Historiographies. 3 Credits.
Muslim historiographic traditions from the 7th to 15th centuries, including what they looked like and how they developed; the development of scholarly methods used to evaluate the source materials for these traditions in the formative and classical periods ofIslam; key developments in postclassical, non-Arabic Muslim historiographic traditions in the Indian Subcontinent, Ottoman Turkey, and the Persian lands.

REL 6402. Qur'an and Hadith. 3 Credits.
The structure, major themes, and literary aspects of the twin sources of Islam. Commentaries written by Muslim scholars and their part in spreading the teachings of the sacred book of Islam. The general principle elements of Islamic theology, law, politics, ethics, philosophy, and art and architecture. The science of Hadith, its types, its relation to the Qur'an, and methods used for authentication of the sayings of the Prophet. The historical role of the Qur'an and Hadith both in classical as well as modem period with particular emphasis on its part in forming Muslim perception of society, history, and politics.

REL 6441. Islamic Law. 3 Credits.
Islamic positive law in the contemporary context. The family law of Islam (marriage, dowry, custody, guardianship and various forms of divorce); the law of inheritance and public trust (waqf) as two selected topics of Islamic private law. Examination of theories of jihad and siyar in the contemporary context of nation-state systems of international relationships. Islamic rituals ('ibadat) whose spirituality prevails the totality of the Islamic set of laws and regulations.

REL 6460. Topics in the Study of Islam. 3 Credits.
Study of sources and approaches to the investigation of Islam by both Western Islamicists and Muslim scholars, with discussion of the main controversial issues and differences in methods used by various schools of scholarship. Prerequisite: A course on Islam or permission of instructor.

REL 6461. Topics in Islamic Thought. 3 Credits.
Perennial major issues in Islamic theology, philosophy, and Sufism such as Divine Unity, prophetology, eschatology, religious knowledge, sacred law, and ethics. Prerequisite: A course on Islam or permission of instructor.

REL 6511. Currents of Modern Hinduism. 3 Credits.
Hinduism since the early seventeenth century. Colonialism, the impact of missionaries, orientalism, reform, relations between Brahmanical and popular Hinduism, Sanskritic and vernacular traditions, regionalism, communalism, nationalism, fundamentalism, politicized "syndicated" Hinduism, and secularism.

REL 6557. India's Great Epics. 3 Credits.
The Mahabharata and the Ramayana are treated in alternate offerings of the course. These founding epic texts of devotional (bhakti) Hinduism are taught in English translation. Vernacular and performative versions of the epics and Western adaptations.

REL 6771. American Religion to 1830. 3 Credits.
Religious thought and life during the Colonial and early National periods.

REL 6773. American Religion Since 1830. 3 Credits.
Religious thought and life from the Civil War to the present.

REL 6911. Myth, Ritual and Language. 3 Credits.
Method and theory in the interpretation of myth and narrative, ritual and sacrifice, and symbolism, with primary reference to the history of religions.

REL 6997. Readings and Research. 2-3 Credits.
Investigation of special problems.

REL 6998. Thesis Research. 3 Credits.

REL 6999. Thesis Research. 3 Credits.

SCHOOL OF ENGINEERING AND APPLIED SCIENCE (SEAS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SEAS 0920. Continuing Research - Masters. 1 Credit.

SEAS 0930. Examination Preparation. 0 Credits.

SEAS 0940. Continuing Research - Doctoral. 1 Credit.

SEAS 1001. Engineering Orientation. 0-1 Credits.
Introduction to careers in engineering and computer science, University resources, and computer skill development. Emphasizes teamwork skills by applying them to several design projects. (Fall).

SEAS 1800. Special Topics in Engineering. 1-3 Credits.
Experimental offerings on introductory-level topics and applications related to various disciplines in engineering. Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Open both to GW undergraduate students and to high school students. (Fall, spring, and summer).

SEAS 4800. Special Topics. 1-3 Credits.
Special topics related to new technology and advances, experimental offering on new course topics and applications. Topic to be announced in the schedule of classes. May be repeated for credit provided the topic differs. Recommended background: Undergraduate student. (Fall, spring, and summer).

SEAS 6100. Innovation and Technology. 3 Credits.
Introduction to design and management of technology; Law of Diffusion of Innovation; identification of fundamental engineering design limits; Sustained vs. disruptive engineering and technology, best practices from innovators and visionaries; engineering solution at the prototype state; technology impact on society; benefits of intellectual property protections; transformative technology and assessment from a holistic and global view point; application of the lean star-up approach to real-world challenges including sustainability.

SEAS 6200. Launching Technical Ventures. 3 Credits.
Fundamentals of building an organization and the capabilities necessary to launch and nurture early-stage ventures. Lean start-up management practices, with insights and lessons learned to avoid common mistakes associated with launching new businesses. (Spring).

SEAS 6401. Data Analytics Capstone I. 1.5 Credit.
Students apply previously learned data analytics concepts and tools to the solution of practical problems in a year-long project. This first part of the capstone sequence involves planning, design and construction of the project, including project demonstration, project specifications, report writing, and presentations. Restricted to SEAS students in the MS in analytics program. Prerequisites: CSCI 6444 and EMSE 6574, CSCI 6362 or EMSE 6765, CSCI 6441 or EMSE 6586. (Fall).

SEAS 6402. Data Analytics Capstone II. 1.5 Credit.
Continuation of SEAS 6401. Students apply previously learned data analytics concepts and tools to the solution of practical problems in a year-long project. Project demonstration, project specifications, report writing, and presentations. Restricted to SEAS students in the MS in data analytics program. Prerequisite: SEAS 6401. (Spring).

SEAS 6800. Special Topics. 1-3 Credits.
Experimental offering of new course topics and applications related to advances in technology. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. (Fall, spring, and summer).

SCHOOL OF MEDIA AND PUBLIC AFFAIRS (SMPA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SMPA 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

SMPA 1050. Media in a Free Society. 3 Credits.
The role of mass communication in democratic political systems: informational requirements of democracy, sources of political information and the role of news media and other channels in creating and disseminating it; issues relating to propaganda and public information; and the interaction between information flows and democratic political culture. Not open to SMPA majors.

SMPA 1225. Forensics Practice (Debate). 1 Credit.

SMPA 2101. Journalism: Theory & Practice. 3 Credits.
An overview of theories and key issues in journalism in the United States. News and democracy, the historical and social evolution of journalism, news values, journalism as occupation/profession, technologies and changes in journalistic practices. Open only to SMPA majors.

SMPA 2102. Introduction to Political Communication. 3 Credits.
Basic concepts and theories of political communication; development of a framework for analyzing political communication; applications in the United States, other countries, and the international system. Open only to SMPA majors. Prerequisite: PSC 1002.

SMPA 2110W. Introduction to News Writing and Reporting. 0-3 Credits.
Fundamentals of news reporting and writing, with emphasis on the print media. News judgment, information gathering skills, and crafting news and feature stories. Regular in-class and outside reporting and writing exercises. Directly admitted freshmen may enroll in their second semester; all other freshmen need departmental permission. Laboratory fee.

SMPA 2111W. Advanced News Reporting. 4 Credits.
Reporting, writing, and computer skills for covering beats and developing in-depth news stories. Techniques in researching, observing, and interviewing to frame stories of public interest; outside and in-class reporting and writing assignments. Restricted to Journalism and Mass Communication majors or permission of instructor required. Prerequisite: SMPA 2110. Laboratory fee.

SMPA 2112. Digital Media I: Introduction to Video Production. 3 Credits.
Foundational introduction to digital media production. Videography and non-linear editing, with emphasis on use in journalism and political communication. Laboratory fee. Restricted to Political Communication and Journalism & Mass Communication majors only.

SMPA 2113. Digital Media II: Introduction to Web Production and Social Media. 3 Credits.
Foundational introduction to digital media production. Web content and design; photography and audio applied to the web; and using social media. Emphasis on use in journalism and political communication. Laboratory fee. Restricted to Political Communication and Journalism & Mass Communication majors only.

SMPA 2120. Public Opinion. 3 Credits.
Key aspects of the literature on public opinion, with emphasis on the role of media in opinion formation and change. Topics include the meaning of public opinion in a democratic society, a review of methods used to measure opinions, and media effects on opinion.

SMPA 2151. Research Methods. 3 Credits.
Processes of inquiry within mediated communication. The concepts of framing research questions, conducting literature reviews, developing a research design, and interpreting results of cultural and social science research within a societal framework. Prerequisites: STAT 1053 or STAT 1051 or STAT 1111 or STAT 1127.

SMPA 2152. Data Analysis for Journalism and Political Communication. 3 Credits.
Understanding, critiquing, and performing analysis of data sets with applications to journalism and political communication; using data to tell stories and answer questions. Analyzing A/B tests and field experiments; basics of visualizing data; regression. Laboratory fee. Prerequisites: STAT 1051 or STAT 1053 or STAT 1111 or STAT 1127.

SMPA 2173. Media Law. 3 Credits.
Freedom of the press. Changing laws of journalism and mass communication, including defamation, privacy, reporting access, obscenity and indecency, media ownership, intellectual property, advertising, and electronic communication.

SMPA 2177. Media History. 3 Credits.
American media from colonial times to the present, set against a backdrop of ongoing political, social, and economic developments. The development of press, radio, television, cable, satellite, and the Internet; government regulation and media relations; journalistic rights and responsibilities.

SMPA 3150. Journalism Ethics. 3 Credits.
Principles of media ethics; application to contemporary and developing issues and challenges in journalism. Restricted to juniors and seniors only. Prerequisites: SMPA 2111 or SMPA 2111W.

SMPA 3193. Selected Topics in Journalism and Mass Communication Skills. 3-4 Credits.
Topics announced in Schedule of Classes. May be repeated for credit if the topic differs.

SMPA 3194. Selected Topics in Political Communication. 3-4 Credits.
Topic announced in the Schedule of Classes. May be repeated if the topic differs, but may only count once toward the political communication major.

SMPA 3195. Selected Topics in Journalism and Mass Communication. 3-4 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit if the topic differs.

SMPA 3195W. Selected Topics in Journalism and Mass Communication. 3-4 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit if the topic differs.

SMPA 3196. Independent Study. 1-3 Credits.
Students pursue a program of directed reading, research, and writing under the direction of a faculty advisor. Limited to seniors.

SMPA 3197. Internship. 1-3 Credits.
Students spend at least five hours per week per credit with an approved news organization, agency, or office under the general guidance of a faculty advisor. Guidelines are available in the SMPA office and online. May be taken P/NP only. Restricted to SMPA majors and minors in the junior and senior year. May be repeated for up to 6 credits.

SMPA 3230. Reporting in the Digital Age. 3 Credits.
Understanding the emerging tools and developing the technological skills needed to analyze data for news. Students learn to find reliable information through social media and other online tools, use spreadsheets as a reporting tool, and download data for analysis, to create graphics, and to report and write stories based on the analysis. Prerequisite: SMPA 2110. Laboratory fee.

SMPA 3232. Online Journalism Workshop. 4 Credits.
Capstone production experience for SMPA majors. Provides advanced journalism and multimedia production skills needed to produce and report for a news website. Prerequisite: SMPA 2110, SMPA 2112. Laboratory fee.

SMPA 3233. Photojournalism. 3 Credits.
Elements of effective news and feature photos, including study and evaluation of slides taken by students. Picture selection, cropping, captions. Student costs include film and developing. Laboratory fee.

SMPA 3234. Editing and Design for Print and Web. 3 Credits.
Editing, design, layout, and photo selection for newspapers, magazines, and web. Selecting and editing stories; writing headlines and photo captions; sizing and cropping graphic materials; laying out pages. Ethics of editing. Prerequisites: SMPA 2110W.

SMPA 3235W. Broadcast News Writing. 3 Credits.
Introduction to writing television news scripts based on actual events. Using workshop techniques, scripts are evaluated for content, structure, and use of words, pictures, and sound. Extensive writing and rewriting using streaming video from professional newscasts. Prerequisite: SMPA 2110.

SMPA 3236W. Broadcast News Reporting. 3 Credits.
Advanced techniques in television news reporting and editing. Students produce, shoot, and edit news packages by teaming up to report in the field. Prerequisite: SMPA 2110, SMPA 2112.

SMPA 3239. Television News Practicum. 4 Credits.
Capstone production experience for SMPA majors. Students report, produce, direct, and edit GW student news broadcast. Laboratory fee. Prerequisites: SMPA 3235 and SMPA 3236.

SMPA 3240W. Washington Reporting. 3 Credits.
Examination of reporting and writing techniques employed in news coverage of the national government, with an emphasis on serving a regional readership or audience. Using Washington as a laboratory, students focus on contemporary issues and news makers in the legislative and executive branches of government. Prerequisite: SMPA 2110.

SMPA 3241W. Campaign Reporting. 3 Credits.
Development of news gathering and writing skills needed for the coverage of political campaigns. Using in-class exercises and outside assignments, students acquire reporting and writing proficiency to illuminate how campaigns work and how politics affects the lives of citizens. Prerequisite: SMPA 2110.

SMPA 3242. Investigative Reporting. 3 Credits.
Hands-on intensive training in reporting and writing in-depth enterprise news stories that expose hidden problems or wrong-doing. Prerequisite: SMPA 2110.

SMPA 3243W. Feature Writing. 3 Credits.
Learn to frame, research, and write a wide range of feature articles, including profiles, interviews and personal memoirs. Weekly writing assignments and a major final project are discussed and scrutinized in a workshop setting. Prerequisite: SMPA 2110.

SMPA 3244W. Narrative Journalism. 3 Credits.
The narrative or story-telling tradition in journalism. Students experiment with narrative techniques in a series of written exercises and a final project. Enrollment limited to 15 students with preference given to upper-class SMPA majors and graduate students. Prerequisite: SMPA 2110.

SMPA 3245W. Editorial & Persuasive Writing. 3 Credits.
Techniques of editorial and column writing; editorial page and public affairs programming; function of commentary in a free press. Prerequisite: SMPA 2110.

SMPA 3246. Specialized Reporting. 3 Credits.
Advanced reporting in specialized fields, such as business, science, medicine. Topics and instructors vary each semester. Prerequisite: SMPA 2110.

SMPA 3246W. Specialized Reporting. 3 Credits.
Advanced reporting in specialized fields, such as business, science, medicine. Topics and instructors vary each semester. Prerequisite: SMPA 2110.

SMPA 3247. Documentary Production. 4 Credits.
Advanced techniques in writing, researching, producing, and editing long-form documentaries. Prerequisite: SMPA 2112 and SMPA 3479 or permission of instructor.

SMPA 3350. Public Diplomacy. 3 Credits.
The theory and practice of public diplomacy: informing, influencing, and establishing dialogue with international publics and institutions. A conceptual and historical examination of public diplomacy, current practices, and contemporary issues, including international information dissemination, educational and cultural exchange, and international broadcasting.

SMPA 3352. Principles of Public Relations. 3 Credits.
Principles, problems, ethics, and law of public relations for government, private concerns, educational and other public institutions.

SMPA 3353. Strategic Political Communication. 3 Credits.
Origins of strategic approaches to political communication; techniques. Use of strategic communication by individuals, groups, organizations, and governments in both domestic politics and policymaking and in the international system. Prerequisite: SMPA 2102 or permission of instructor.

SMPA 3354. Political Campaign Communication. 3 Credits.
Communication aspects of political campaigns for candidates and ballot issues. Examination of techniques and channels of communication, role of communication in campaign strategy, ethics and implications of campaign decision making.

SMPA 3355. Campaign Advertising. 3 Credits.
Introduction to the theory and practice of campaign advertising. Emphasis on televised political campaign spots, but a range of campaign advertising media are included: radio, direct mail, and the Internet. Prerequisite: SMPA 2112.

SMPA 3357W. Political Speech Writing. 3 Credits.
Theory and practice of public speaking in the context of mediated political communication. Students analyze, write, and give speeches.

SMPA 3358. Strategic Practicum. 3 Credits.
Working in small groups, students research and develop full-scale plans for hypothetical, reality-based, strategic communication campaigns that test and apply theoretical advances in the field. Prerequisite: SMPA 3353.

SMPA 3428. Media, Politics, and Government. 3 Credits.
The impact of mainstream media and online outlets on politics and the governing process. Topics include the role of social media, online advertising, comedy shows, and the changing ways that voters receive information. Same as PSC 2228.

SMPA 3450. Social Media. 3 Credits.
Practical and theoretical implications of social media; what it means to be social and how social media has changed how individuals interact and do business; birth and history of social media and why certain forms of social media flourish while others fail.

SMPA 3459. Language and Politics. 3 Credits.
Connections between language and the political world. Theory and practice of language in politics and the impact on the creation and consumption of politics.

SMPA 3460. Race, Media & Politics. 3 Credits.
Examination of the place of race in American society and politics, with attention to the role of media reporting in helping to shape understanding of race and racial matters, public opinion about race, and race and electoral politics.

SMPA 3461. Campaigns and Elections. 3 Credits.
The role of the news media in campaigns and elections. Offered in even-numbered years.

SMPA 3463. Media Bias. 3 Credits.
Exploration of empirical and theoretical understanding of media bias, its effects on power, and implications for democracy.

SMPA 3469. International Communication. 3 Credits.
A survey of theoretical themes in international communication and their practical applications: information production and circulation, global media industries, and cultures.

SMPA 3470. Comparative Media Systems. 3 Credits.
In-depth study of the developmental, regulatory, political, economic, and cultural dimensions of selected foreign communication systems.

SMPA 3471. Media in the Developing World. 3 Credits.
Contemporary views of media roles in developing nations. The role of the press and electronic media in economic, social, and national development, including media as agents of modernization, development journalism, and post-colonial responses to Western "cultural imperialism." Media and Islam; role of the Internet; and theories of media and globalization.

SMPA 3472. Media and Foreign Policy. 3 Credits.
The emerging role of news media in international affairs and diplomacy. Globalization of news media advances in digital information and communication technologies and consequences for the international system and diplomacy.

SMPA 3475. Media Management. 3 Credits.
Decision making, strategic planning, and daily operations of all types of media organizations. Sales strategies, promotion, and research.

SMPA 3476. Media, Technology, and Culture. 3 Credits.
Concepts, principles, and socio-political implications of new and changing media and related technologies. Focus on intersection of new technologies and the anthropology of everyday life, in particular self-governance, policy development, cultural rupture and cohesion, the tension between national security and individual privacy rights, and First Amendment issues.

SMPA 3477. Information Technology and Politics. 3 Credits.
The effect of new information technologies on the media, public discourse, and political life; ways in which politics has shaped the development of technology.

SMPA 3479. Documentary. 3 Credits.
Origins, genres, and analysis of documentary film. Power, reach, and conceptual frameworks of documentary filmmaking.

SMPA 3480. The Future of Journalism. 3 Credits.
Reasons behind the decline of traditional newspaper and broadcast journalism; the impact of the web and other digital tools on traditional journalism values; new business models for news.

SMPA 4180. Online Journalism Workshop. 4 Credits.
Capstone experience for journalism majors. Advanced journalism and multimedia production skills needed to produce and report for a news website. Prerequisites: SMPA 2112 and SMPA 2113 and SMPA 2111 or SMPA 2111W. Same as SMPA 3232.

SMPA 4181. Television News Workshop. 4 Credits.
Capstone production experience for SMPA majors. Students report, produce, direct, and edit GW student news broadcasts. Laboratory fee. Prerequisites: SMPA 2111 or SMPA 2111W, SMPA 2112, SMPA 2113, and SMPA 3236. Same as SMPA 3239.

SMPA 4182. Specialized Journalism Workshop. 4 Credits.
Capstone experience for journalism majors. In-depth study of advanced journalism skills or specific topic areas. Laboratory fee. Prerequisites: SMPA 2111 or SMPA 2111W, SMPA 2112, and SMPA 2113.

SMPA 4198. Special Honors Research Seminar. 3 Credits.
Open only to special honors candidates in political communication in the senior year. Prerequisite: SMPA 4199 and departmental approval.

SMPA 4199. Senior Seminar. 3 Credits.
Capstone course limited to SMPA majors.

SMPA 6201. Strategic Communications Skills. 1.5 Credit.
Specialized skills courses, such as writing for public affairs, video editing and production, political uses of social media, web development and strategy, speechwriting. Topics announced in the Schedule of Classes. May be repeated for credit, but up to a maximum of 6 credits.

SMPA 6202. Media Effects, Public Opinion, and Persuasion. 3 Credits.
Theories of media effects and persuasion. Institutional functions and individual effects of mediated communication. Impacts of different textual content and format on individual thinking and emotion; forces that shape content production.

SMPA 6203. Information, Technology, and Political Communication. 3 Credits.
Issues pertaining to the political uses of the Internet, social media, and other new media; the effect that new information technologies have on political life and the ways in which politics shape technology development.

SMPA 6204. Strategic Political Communication. 3 Credits.
Theory, techniques, and implications of strategic communication as employed by individuals, groups, organizations, and governments to advance their interests; applications to non-electoral politics and policymaking; use of political, psychological, sociological, and other processes; methodological considerations; domestic and international applications.

SMPA 6205. Media, Development, and Globalization. 3 Credits.
Theories of media and globalization. The changing role of communication media, including the Internet and other newer technologies as well as traditional books, film, newspapers, telephone, and satellite in establishing closer relationships and interdependencies among people, their cultures, and their organizations in various countries.

SMPA 6206. Advocacy Communication and Political Networks. 3 Credits.
Cross-disciplinary approaches to global changes in the nature of governance and collective action. The role of new technology, social movements, NGOs and transnational advocacy networks. Information campaigns and advocacy communication.

SMPA 6207. Political Persuasion and Public Opinion. 3 Credits.
Major theories and perspectives in public opinion and persuasion research. Information processing, psychological models applied to politics and media research (cognition, attitudes, resistance, heuristics), public opinion dynamics.

SMPA 6208. Politics and Public Relations Fundamentals. 3 Credits.
Basic knowledge of the skills to design, implement, and evaluate public relations activities. Case studies of public relations applied to politics. Techniques and tactics used by public relations professionals.

SMPA 6210. Media & Foreign Policy. 3 Credits.
The effects of U.S. media on U.S. and foreign governments, and of foreign media on the U.S.; effects of other countries' media on each other; the impact of the Internet, inexpensive global phoning, CNN, al Jazeera, and other newer technologies and networks on the stuff of international relations: diplomacy, military operations, trade negotiations.

SMPA 6220. Strategic Practicum. 3 Credits.
Design of strategy for an information and influence campaign. Research on issues and actors, identification of critical decision-making points and key constituencies, development of communication strategies more likely to achieve stated objectives of a campaign. Prerequisite: SMPA 6204. For students doing a strategic communication capstone project, this course replaces SMPA 6297.

SMPA 6230. Principles and Methods of Documentary Filmmaking. 6 Credits.
Analytical and practical exploration of the elements of documentary filmmaking. The genres of nonfiction filmmaking; fundamentals of film conceptualization, documentary screenwriting, story structure, and production theory; and basic practical elements of production. Admission by permission of instructor.

SMPA 6231. Documentary Filmmaking Practicum. 3 Credits.
Intensive practical experience in documentary film production. Students produce a 10–15-minute documentary film on a selected topic. Emphasis on major markers in film production: treatment and script writing, location shooting, Final Cut Pro editing, graphics, music, and final sound mix. Prerequisite: SMPA 6230 and permission of instructor.

SMPA 6241. Research Design. 3 Credits.
Design, applications, and limitations of quantitative research as applied to the field of media and strategic communication. Framing of research questions, identification of variables and formulation of hypotheses, measurement, sampling, data gathering techniques, and preparation of research reports. Brief exposure to qualitative research.

SMPA 6242. Analytics and Data Analysis for Strategic Communication. 3 Credits.
Familiarity with major data analytic and analysis techniques used by strategic communication practitioners. Topics covered include basic statistical analysis, multivariate regression, experiments, focus groups, and survey research. Prerequisites: an undergraduate statistics course.

SMPA 6250. Topics in Media Processes and Institutions. 3 Credits.
Topics address such issues as the history of media content, institutions, and process; impact of changing communication technology on culture; history and development of mass-produced culture; and professional ideology and practice of journalism. May be repeated for credit provided the topic differs.

SMPA 6270. Special Topics in Media and Public Affairs. 3 Credits.
Topics vary by semester. Consult the Schedule of Classes for more details.

SMPA 6272. Media Bias, Power, and Democracy. 3 Credits.
Consideration of the available scholarly evidence in order to develop a more sophisticated empirical and theoretical understanding of what constitutes media bias. How do we recognize and measure bias? Are there patterns in decisions about news coverage that indicate bias? Which political parties and economic interests benefit from patterns of news coverage?.

SMPA 6274. Media and War. 3 Credits.
Historic and contemporary examination of the media's role in wartime. Topics include covering war, the role of the media in generating support for foreign intervention, propaganda, effects of war coverage on public opinion, media and genocide, and public diplomacy. Ethical, philosophical and political implications of the media's role.

SMPA 6275. Public Diplomacy. 3 Credits.
The theory and practice of public diplomacy: informing, influencing, and establishing dialogue with international publics and institutions. A conceptual and historical examination of public diplomacy, current practices, and contemporary issues, including international information dissemination, educational and cultural exchange, and international broadcasting.

SMPA 6295. Internship. 3 Credits.
Students identify a suitable employer for an internship relevant to program themes and goals. Students must consult with the director of graduate studies before registering. Restricted to Permission of director of graduate studies required.

SMPA 6296. Directed Readings and Research. 3 Credits.
Independent research with SMPA faculty member. Must be approved in advance by supervising professor and director of graduate studies.

SMPA 6297. Capstone Project. 3 Credits.

SMPA 6298. Capstone Project. 3 Credits.

SMPA 6998. Thesis Research. 3 Credits.

SMPA 6999. Thesis Research. 3 Credits.

SLAVIC LANGUAGES AND LITERATURE (SLAV)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SLAV 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

SLAV 1001. First-Year Russian I. 4 Credits.
Fundamentals of speaking, understanding, reading, and writing Russian. Heritage speakers require permission to register. Laboratory fee.

SLAV 1002. First-Year Russian II. 4 Credits.
Continuation of SLAV 1001. Fundamentals of speaking, understanding, reading, and writing Russian. Prerequisite: SLAV 1001. Heritage speakers require permission to register. Laboratory fee.

SLAV 1003. Second-Year Russian I. 4 Credits.
Fundamentals of speaking, understanding, reading, and writing Russian. Prerequisite: SLAV 1002 . Laboratory fee.

SLAV 1004. Second-Year Russian II. 4 Credits.
Continuation of SLAV 1003. Fundamentals of speaking, understanding, reading, and writing Russian. Prerequisite: SLAV 1003 or placement test. Laboratory fee.

SLAV 1012. Intensive Basic Russian I. 8 Credits.
Intensive course in fundamentals of speaking, understanding, reading, and writing Russian (equivalent to SLAV 1001– SLAV 1002). Recommended for majors. Heritage speakers require permission to register. Laboratory fee.

SLAV 1013. Russian for Heritage Speakers I. 3 Credits.
Prepares heritage speakers of Russian for advanced study in Russian at the third-year level and beyond, including content courses in literature and area studies. Prerequisite: a placement test.

SLAV 1014. Russian for Heritage Speakers II. 3 Credits.
Continuation of SLAV 1013.Prepares heritage speakers of Russian for advanced study in Russian at the third-year level and beyond, including content courses in literature and area studies. Prerequisite: a placement test.

SLAV 1034. Intensive Basic Russian II. 8 Credits.
Continuation of SLAV 1012. Intensive course in fundamentals of speaking, understanding, reading, and writing Russian (equivalent to SLAV 1003– SLAV 1004). Recommended for majors. Prerequisite: SLAV 1002 or SLAV 1012 . Heritage speakers require permission to register. Laboratory fee.

SLAV 1391. Introduction to Russian Literature I. 3 Credits.
Russian literature and society, 1800–1860s, concentrating on the Golden Age of Russian literature; poems and stories by Pushkin, Lermontov, Gogol, and Turgenev.

SLAV 1392. Introduction to Russian Literature II. 3 Credits.
Continuation of SLAV 1391. Russian literature and society on their way to modernity; great works of prose and drama by Dostoevsky, Tolstoy, Chekhov, and Bunin.

SLAV 2005. Intermediate Russian I. 5 Credits.
Practice in speaking, listening, reading, and writing at the intermediate level. Prerequisite: SLAV 1004 or SLAV 1034 or permission of instructor.

SLAV 2006. Intermediate Russian I. 5 Credits.
Continuation of SLAV 2005. Practice in speaking, listening, reading, and writing at the intermediate level. Prerequisite: SLAV 1004 or SLAV 1034 or permission of instructor.

SLAV 2007. Russia Today: Topics in Advanced Russian I. 3 Credits.
Practice in speaking, listening, reading, and writing at the advanced level. Prerequisite: SLAV 2006 or permission of instructor.

SLAV 2008. Russia Today: Topics in Advanced Russian II. 3 Credits.
Continuation of SLAV 2007. Practice in speaking, listening, reading, and writing at the advanced level. Prerequisite: SLAV 2006 or permission of instructor.

SLAV 2015. Readings in the Russian Press I. 3 Credits.
Reading and analysis of current Russian periodicals. For departmental majors and graduate students with a reading-language proficiency requirement.

SLAV 2016. Readings in the Russian Press II. 3 Credits.
Continuation of SLAV 2015. Reading and analysis of current Russian periodicals. For departmental majors and graduate students with a reading-language proficiency requirement.

SLAV 2361. Russian Culture. 3 Credits.
Survey of Russian cultural heritage from its ancient origins through the early 19th century. Architecture from the medieval period through the end of the Empire style. Iconography, the influence of the Church, and effects of the West on Russian culture.

SLAV 2362. Russian Culture. 3 Credits.
Survey of Russian culture from the 19th century through the present, including intellectual movements; realism in music, art, and theatre; ballet; avant-garde painting; and effects of Soviet policies and of Perestroika.

SLAV 2365. 20th-Century Russian Literature to World War II. 3 Credits.
Russian literature and culture of the first half of the 20th century: the impact of the revolution on writers and literature; avant-garde, socialist realism, and emigre literature (Nabokov)—in English.

SLAV 2366. Russian Literature from World War II to the Present. 3 Credits.
Literature in wartime and in postwar years from Solzhenitsyn to the latest trends: the "thaws," village and urban prose, post-Soviet literature, Russian postmodernism-in English.

SLAV 2471. 19th-Century Russian Prose. 3 Credits.
Reading and discussion of selected prose texts of the 19th century from Pushkin to Chekhov—in Russian. Prerequisite: SLAV 2006 ; SLAV 1391– SLAV 1392.

SLAV 2472. 19th-Century Russian Poetry. 3 Credits.
Reading and discussion of selected poetry of the 19th century (Pushkin, Lermontov, Nekrasov, and others)-in Russian.

SLAV 2473. 20th-Century Russian Prose. 3 Credits.
Reading and discussion of selected prose of the 20th century from Bunin to Solzhenitsyn-in Russian.

SLAV 2474. 20th-Century Russian Poetry. 3 Credits.
Reading and discussion of selected poetry of the 20th century from Blok to Brodsky—in Russian. Prerequisite: SLAV 2006 ; SLAV 2365, SLAV 2366.

SLAV 2785. Introduction to Russian Cinema I. 3 Credits.
(In English; all films subtitled.) From Russian silents to the introduction of sound and color (1896–1946). The great revolutionary directors—Eisenstein, Pudovkin, Dovzhenko.

SLAV 2786. Introduction to Russian Cinema II. 3 Credits.
Continuation of SLAV 2785. (In English; all films subtitled.) From post-war to post-perestroika cinema (since 1946): war films, adventure, films about youth.

SLAV 4595. Special Topics. 3 Credits.
May be repeated for credit provided the topic differs.

SLAV 4595W. Special Topics. 3 Credits.

SLAV 4597. Senior Honors Thesis I. 3 Credits.
Senior honors thesis on a topic related to Russian language, literature, or culture. Required of and open only to honors candidates in the department.

SLAV 4598. Senior Honors Thesis II. 3 Credits.
Continuation of SLAV 4597. Senior honors thesis on a topic related to Russian language, literature, or culture. Required of and open only to honors candidates in the department.

SOCIOLOGY (SOC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SOC 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

SOC 1001. Introduction to Sociology. 3 Credits.
A broad overview of the "sociological imagination" as a way of understanding social issues and personal experience; sociology's place among the social sciences; basic elements of sociological perspectives. Credit will not be given for both SOC 1001 and SOC 1002. Same as SOC 1002.

SOC 1002. The Sociological Imagination. 3 Credits.
Definition and application of the concept of the sociological imagination; the connection between personal troubles and public issues; race, gender, inequality, and education. Credit will not be given for both SOC 1002 and SOC 1001. Same as SOC 1001.

SOC 1003. Introduction to Criminal Justice. 3 Credits.
An introduction to the study of criminal justice. The historical development of criminal justice and its evolution into modern legal systems. The impact of different forms of criminal justice on society and the individual.

SOC 2000. Sophomore Colloquium. 3 Credits.
The Sophomore Colloquia are small seminar-style courses limited to second-year students in Columbian College. These courses engage students deeply in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects of the students. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to Registration by instructor approval.

SOC 2101. Social Research Methods. 3 Credits.
Introduction to basic research methods in sociology. Topics include research design, sampling, measurement, and analysis of survey data via computer application. Prerequisites: SOC 1001 or SOC 1002.

SOC 2102. Techniques of Data Analysis. 3 Credits.
Continuation of SOC 2101.Statistical analysis of sociological data with a strong emphasis on computer applications. Prerequisites: SOC 1001 or SOC 1002; and PSC 2101 or PSYC 2101 or SOC 2101.

SOC 2103. Classical Sociological Theory. 3 Credits.
Analysis and critique of the development of Western European and North American social thought in the period of modernity. Consideration of the development of classical theoretical statements and the emergence of topics of sociological inquiry globally. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2103W. Classical Sociological Theory. 3 Credits.
Analysis and critique of the development of Western European and North American social thought in the period of modernity. Consideration of the development of classical theoretical statements and the emergence of topics of sociological inquiry globally. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2104. Contemporary Sociological Theory. 3 Credits.
A systematic evaluation of the work of selected social theorists of the post–World War II era. Emphasis on application of theoretical concepts to matters of present-day concern. Prerequisites: Either SOC 1001 or SOC 1002.

SOC 2104W. Contemporary Sociological Theory. 3 Credits.
A systematic evaluation of the work of selected social theorists of the post–World War II era. Emphasis on application of theoretical concepts to matters of present-day concern. Prerequisites: SOC 1001 or SOC 1002.

SOC 2105. Social Problems in American Society. 3 Credits.
Introduction to critical social problems (e.g., unemployment, poverty, crime, discrimination) in the United States and how they are, and have historically been, researched and understood by the academic and non-academic worlds. Concepts, theories, and methods of sociological research; examination of the field of social problems generally, emphasizing contemporary social problems. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2111. Field Research. 3 Credits.
Examination of the logic of qualitative inquiry and techniques of qualitative data collection and analysis. Various research methods are covered, with an emphasis on intensive interviewing, participant observation in field settings, and focus groups. Prerequisites: Either SOC 1001 or SOC 1002.

SOC 2112. Evaluation Research. 3 Credits.
Introduction to the evaluation of public programs designed to address the impact of social problems on individuals, households, and larger collective groups. Application of social science theory and research methods to the assessment of impact benefits and costs of such programs. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2135. Youth and Delinquency. 3 Credits.
Analysis of historical, economic, and social conditions affecting both difficulties in socializing youth and the evolution of the state's formal systems of control. Prerequisites: Either SOC 1001 or SOC 1002.

SOC 2136. Criminology. 3 Credits.
Nature and distribution of crime as related to the development and operation of criminal law and various social and legal institutions. Analysis of the historical, social, legal, and cultural conditions affecting the nature of crime, criminality, and the development of state responses made to it. Prerequisites: EITHER: (SOC 1001 or SOC 1002) AND SOC 1003.

SOC 2137. Transnational Crime. 3 Credits.
Violation of laws across national boundaries in an environment of increased globalization; causation, victimization, and control. Examination of transnational crime as a social problem rooted in global inequality and disparate levels of development, not simply as a security or crime problem. Restricted to (Soc 1001 or Soc 1002) and Soc 1003.

SOC 2139. Alternatives to Imprisonment. 3 Credits.
Incarceration as a prominent feature of formal social control in the United States; the efficacy of strategies to reduce reliance on prisons; historical use of imprisonment and alternatives; the recent increase in correctional control and its social, cultural, and economic costs; the impact of incarceration on reducing crime; obstacles to reforming current incarceration policies; and the effectiveness of front-end and back-end strategies to reduce reliance on imprisonment. Prerequisites: SOC 1001 or SOC 1002 and SOC 1003.

SOC 2145. Criminal Law. 3 Credits.
Introduction to the sources and fundamental principles of criminal law and procedure using major sociological perspectives as interpretive tools. Prerequisites: (SOC 1001 or SOC 1002) and SOC 1003.

SOC 2146. The Bill of Rights and Criminal Justice. 3 Credits.
Examination of the powers of law enforcement and how they relate to the rights conferred upon suspects and defendants by the U.S. Constitution.

SOC 2150. Sociology of Sports. 3 Credits.
Sport as a social institution; the role, consequences, and functions of sport in U.S. society; relationship between sport and institutions including education, mass media, economics, and politics.

SOC 2151. Jackie Robinson: Race, Sports, and the American Dream. 3 Credits.
How Jackie Robinson's struggles and accomplishments can help in understanding current issues in race, sport, and U.S. society. The background leading to, and the impact emanating from, Robinson's entry into major league baseball.

SOC 2152. Media, Class, Race, and Family. 3 Credits.
The reciprocal influences of mass media content and social structure, with particular attention to dominant media narratives. Methodologies for identifying and deconstructing media messages, marketing strategies, and entertainment themes, and how these align or conflict with social circumstances. Prerequisites: SOC 1001 or SOC 1002.

SOC 2161. Sociology of Complex Organizations. 3 Credits.
Review of sociological approaches to the study of complex organizations. Selected and comparative emphasis on bureaucratic organization in both government and private sectors. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2162. Sociology of the Family. 3 Credits.
An examination of the stages of family life: birth, childhood, premarital relationships, marriage and sex roles in marriage, retirement and old age. Special emphasis on development and maintenance of interpersonal relations. Prerequisites: COMM 1025 or SOC 1001 or SOC 1002 . Same as COMM 2162.

SOC 2163. Sociology of Education. 3 Credits.
Analysis of educational systems from historical–comparative, institutional, and micro-sociological perspectives. Emphasis on educational systems in relation to the religious, cultural, economic, and political forces shaping their character; the role of formal education in modern society. Prerequisites: SOC 1001 or SOC 1002.

SOC 2164. Sociology of the Holocaust and Genocide. 3 Credits.
An interdisciplinary approach to the study of genocide from historical, anthropological, and sociological perspectives. The centrality of ideologies of power and race to acts of genocide. Genocides of the past century will be examined to deepen students' understanding of the crime and its aftermath. Prerequisites: SOC 1001 or SOC 1002.

SOC 2165. Sociology of Religion. 3 Credits.
Analysis of the relationships between religion and society. Topics include the contribution of religion to social integration, social change, and social inequality; the nature of religious experience; religious symbolism; the basis of religious communities. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2167. Sociology of Law. 3 Credits.
Law as a social phenomenon and agency of social control; study of judicial process and the sources of and challenges to the legitimacy of law. Prerequisites: SOC 1003; SOC 1001 or SOC 1002.

SOC 2168. Economic Sociology. 3 Credits.
Sociological approach to the study of microeconomic and macroeconomic behavior. Historical and comparative analyses informed by the literature of sociology and other social sciences. Critical review of economic policy in developing, post-communist, and advanced market societies. Prerequisites: SOC 1001 or SOC 1002.

SOC 2169. Urban Sociology. 3 Credits.
Analysis of the city from a sociological perspective. Topics include the social change and inequality associated with urban growth, neighborhood change, and suburbanization; residential segregation; the issue of whether community exists in cities; urban poverty and homelessness. Prerequisites: SOC 1001 or SOC 1002.

SOC 2170. Class and Inequality in American Society. 3 Credits.
Analysis of distribution of resources and opportunities for participation, education, and social mobility; international comparisons; analysis of public policies that affect these distributions. Prerequisites: SOC 1001 or SOC 1002. Same as SOC 2170W.

SOC 2170W. Class/Inequality-Amer Society. 3 Credits.
Analysis of distribution of resources and opportunities for participation, education, and social mobility. International comparisons; analysis of public policies that affect these distributions. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2172. Institutional Racism: Policies and Prescriptions. 3 Credits.
Institutional policies and practices in the United States that yield racially disparate outcomes. The origins of such policies and practices, potential changes, and how such changes can be achieved. Restricted to SOC 1001 or SOC 1002.

SOC 2173. Social Movements. 3 Credits.
General survey of the various forms of collective behavior (fads, panics, riots, social movements, etc.), and a more detailed study of the genesis, development, and decay of social movements and social revolutions. Prerequisites: SOC 1001 or SOC 1002.

SOC 2175. Sociology of Sex and Gender. 3 Credits.
The consideration of gender and sex as organizing principles of social relations. Analysis of the dynamics of inequality in such areas as families, the workforce, culture and mass media, politics, sexual relationships, law medicine, religion, and education. Prerequisites: SOC 1001 or SOC 1002.

SOC 2177. Sociology of the Sex Industry. 3 Credits.
Sociological examination of sex workers and businesses in the United States and other nations. Analysis of major theoretical perspectives and research on the social organization of sex work, the experiences of participants, issues of gender and sexuality, and alternative policy frameworks regarding prostitution, pornography, and commercial stripping. Prerequisite: Either SOC 1001 or SOC 1002 and either SOC 2175 or SOC 2178.

SOC 2178. Deviance and Control. 3 Credits.
Examination of deviant behavior and its control. Topics include theoretical perspectives, changing societal conceptions of deviance, deviant behavior and identity, and the dynamics of control agencies. Prerequisites: SOC 1001 or SOC 1002.

SOC 2179. Race and Minority Relations. 3 Credits.
Analysis of relationships between dominant and minority groups in society; nature and range of problems; analysis of the phenomenon of prejudice. Prerequisites: SOC 1001 or SOC 1002.

SOC 2181. Special Topics in Sociology. 3 Credits.
Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Prerequisite: SOC 1001 or SOC 1002.

SOC 2181W. Special Topics. 3 Credits.
Analysis and examination of various processes in society of general importance to the field of sociology, e.g., social conflict, socialization, social change. Topic changes each semester; may be repeated once for credit. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2184. Violence and the Family. 3 Credits.
Comparative approach to power and violence in family systems. Analysis of devaluation of family relations. Critical survey of explanations of violence and responses made to it. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2189. Special Topics in Criminal Justice. 3 Credits.
Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of classes for more details. Prerequisites: SOC 1001 or SOC 1002; SOC 1003.

SOC 2189W. Special Topic-Criminal Justice. 3 Credits.
Analysis and examination of various processes and problems of general importance to the field of criminal justice. Topic changes each semester; may be repeated once for credit. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2988. Internship in Law and Society. 3 Credits.
Study of the American legal system and its effects on individuals and society through practical experience. Students must have a confirmed and approved internship involving substantive work within the legal system. The internship should be appropriate for an undergraduate student and require a minimum work commitment of 15 hours per week. Restricted to declared law and society minors. Prerequisites: SOC 2167; and UW 2031 or UW 2031W.

SOC 3195. Research. 1-3 Credits.
Independent study and special projects. Open only to selected undergraduates with promising academic records. Students must submit a written proposal of their plan of study for the approval of the member of the department who will direct the research. Departmental approval required for registration. Prerequisites: SOC 1001 or SOC 1002.

SOC 4192. Advanced Seminar in Criminal Justice. 6 Credits.
Internship in a criminal justice agency; field placement in consultation with a faculty member is required before registration. Weekly seminar meetings, presentations, journal, and a paper are required. Restricted to seniors majoring in criminal justice. Prerequisites: SOC 1001 or SOC 1002; and SOC 1003; and SOC 2136 or SOC 2145.

SOC 4195. Senior Research Seminar. 3 Credits.
For sociology majors. Directed research and writing on sociological topics. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to Sociology majors only. Prerequisites: SOC 2101 or SOC 2102 and SOC 2103 or SOC 2104.

SOC 6230. Sociological Research Methods. 3 Credits.
Survey of the procedures, methods, and problems of contemporary sociological data collection, with an emphasis on survey methods. Major topics include research design, instrument construction, survey sampling, and measurement.

SOC 6231. Data Analysis. 3 Credits.
Intensive study of quantitative data analysis techniques, with strong emphasis on computer applications. Prerequisite: SOC 6230.

SOC 6232. Qualitative Methodology: Doing Field Research. 3 Credits.
Practical application of data collection methods in natural settings; observation, participant observation, and field experience. Emphasis on implementing research projects by using these methods for purposes of developing empirically grounded theory.

SOC 6238. Development of Sociological Theory. 3 Credits.
Development of sociology from the early 1800s to the 1920s. Intensive analysis of the classical theoretical statements.

SOC 6239. Contemporary Sociological Theory. 3 Credits.
Intensive examination and evaluation of contemporary schools of sociological theory in Europe and America. Advanced analysis of theoretical perspectives.

SOC 6240. Field Research in Organizational Settings. 3 Credits.
Applications of field research techniques in formal organizational settings. Examination of the logic of qualitative inquiry and techniques of qualitative data collection. Intensive interviewing and participant observation in field settings are emphasized.

SOC 6244. Sociology of Families and Kinship. 3 Credits.
A systematic introduction to recent theoretical perspectives and empirical research on family patterns. The course combines a focus on how and why societal family patterns vary and change over time with an examination of how individuals vary in their experience of life course transitions, such as marriage, childbirth, employment, divorce, and retirement.

SOC 6245. Race Relations. 3 Credits.
Systematic analysis of race relations and inequality, primarily in the United States. Topics include current status and recent trends in inequality, the institutional and organizational patterning of discrimination, the structure of racial attitudes, theoretical perspectives on race relations, and selected policy issues.

SOC 6246. Comparative Race and Ethnicity. 3 Credits.
Examination of race and ethnic relations in comparative, international perspective. Selected societies are analyzed in terms of patterns of racial and ethnic inequality, intergroup relations, institutional foundations of discrimination, social control systems, and sources of social change.

SOC 6248. Race and Urban Redevelopment. 3 Credits.
An examination of sociological forces shaping the development of metropolitan areas, racial inequality, and the intersections of urban development and race relations. Major theories of urban and metropolitan development and causes of racial inequality; major past and current public policies.

SOC 6250. Urban Sociology. 3 Credits.
Systematic analysis of urbanization and life within urban areas, primarily in the United States. Topics include theoretical perspectives on urban growth and neighborhood change, housing, the community question, neighborhood effects on individuals within the metropolis, and selected policy issues.

SOC 6252. Selected Topics. 3 Credits.
Examination of selected topics of general importance to sociology. May be repeated once for credit.

SOC 6254. Evaluation Research. 3 Credits.
Systematic survey of the conceptualization, design, and practice of evaluation research. Prerequisite: SOC 6230.

SOC 6255. Practicum in Applied Sociology. 3,6 Credits.
Supervised sociological research through an internship in a local organization (e.g., a government agency, a non-governmental organization, or a research firm). The internship must be for at least 10 hours a week. Weekly seminar; final paper. Prerequisite: completion of all methodology requirements for the M.A. degree.

SOC 6257. Criminal Law for Forensic Scientists. 3 Credits.
An overview of criminal law offenses and procedures, evidence recovery, admissibility of scientific evidence, and expert testimony. Emphasis on the interaction between the criminal process and forensic science. Instruction includes a moot court exercise. (Same as FORS 6224).

SOC 6258. Deviance and Control. 3 Credits.
Examination of major theories and research in the field of deviance and social control, with special emphasis on recent empirical advances and comparative perspectives.

SOC 6259. Criminology. 3 Credits.
The status of various criminology theories. Theories of crime causation and crime control; cross-cultural research on crime.

SOC 6260. Special Topics in Criminal Justice. 3 Credits.
Examination of selected topics in criminal justice. May be repeated once for credit if the topic differs.

SOC 6261. Sociology of Law. 3 Credits.
The development and use of law in complex societies, including the different roles of civil and criminal law. The role of the sociology of law within the discipline of sociology.

SOC 6262. Corrections. 3 Credits.
Analysis of adult and juvenile correctional systems, including probation, parole, jails, and prisons. Topics include theoretical perspectives, the impact of corrections on crime rates, and evaluations of sentencing and other reforms.

SOC 6263. Race and Crime. 3 Credits.
Examination of race, crime, and punishment in American society. Analysis of competing theoretical explanations for interracial differences in crime rates, and racial patterns in the apprehension, adjudication, and punishment of offenders.

SOC 6264. Organized Crime. 3 Credits.
The role of organized crime in the political economy of different countries, with emphasis on the development of organized crime networks in the United States.

SOC 6265. Women, Welfare & Poverty. 3 Credits.
Examination of how the causes and consequences of poverty differ for women and men; how race, class, and gender shape policy responses to poverty. The history of family assistance policy in the United States and the impact of various welfare reform efforts. Same as WSTU 6265.

SOC 6266. Gender & Criminal Justice. 3 Credits.
How understandings, practices, and theories of gender shape the workings of criminal justice systems, including issues of criminality and responses to crime, victimization and violence, and definitions of illegal behaviors. Same as WSTU 6266.

SOC 6268. Race, Gender and Class. 3 Credits.
How social structures are constructed through race, gender, and class and how they shape experience. The intersections of race, gender, and class in education, science, politics, labor markets, and social welfare policies. Same as WSTU 6268.

SOC 6271. Gender and Society. 3 Credits.
Examination of current empirical and theoretical work on gender as an organizing principle of social relations. Consideration of the relationship of gender to sex and sexuality. Same as WSTU 6271.

SOC 6272. Theoretical Perspective-Gender. 3 Credits.

SOC 6273. The Sex Industry. 3 Credits.
Sociological examination of prostitution, pornography, and other forms of sex work in the United States and internationally. Topics include theoretical perspectives, structure of the sex industry, workers' experiences, gender issues, political conflicts, and policy implications.

SOC 6286. The Law of Race and Slavery. 3 Credits.
The role of legal norms and processes in developing patterns of slavery and race relations in the United States and other societies. Admission by permission of instructor. Same as HIST 6312 and LAW 6596.

SOC 6290. Principles of Demography. 3 Credits.
Introduction to basic demographic perspectives and data; methods for analysis of population size, distribution, and composition; determinants and consequences of population trends. Departmental prerequisite waived. Same as ECON 6290/ GEOG 6290/ STAT 6290.

SOC 6291. Methods of Demographic Analysis. 3 Credits.
Basic methods for analysis of mortality, natality, and migration; population estimates and projections; estimation of demographic measures from incomplete data. Departmental prerequisite waived. Same as ECON 6291/ GEOG 6291/ STAT 6291.

SOC 6295. Research. 1-12 Credits.
Independent study and special projects. Before permission is granted to register for Soc 6295, the student must submit a written plan of study for the approval of the staff member of the department who will be directing the research. May be repeated once for credit but to no more than a total of 6 credits.

SOC 6998. Thesis Research. 3 Credits.

SOC 6999. Thesis Research. 3 Credits.

SPANISH (SPAN)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SPAN 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

SPAN 1003. Intermediate Spanish I. 3 Credits.
Development of intermediate functional and communicative proficiency in Spanish. Focus on the development of listening and speaking skills, reading and writing abilities, and intercultural competence. Prerequisite: SPAN 1002 or SPAN 1012. Laboratory fee.

SPAN 1004. Intermediate Spanish II. 3 Credits.
Continuation of SPAN 1003. Development of intermediate functional and communicative proficiency in Spanish. Focus on the development of listening and speaking skills, reading and writing abilities, and intercultural competence. Prerequisite: SPAN 1003. Laboratory fee.

SPAN 1012. Intensive Elementary Spanish. 6 Credits.
Development of functional and communicative proficiency in Spanish. Focus on the development of listening and speaking skills, reading and writing abilities, and intercultural competence. Introductory course, no prerequisite. Language Center Fee. (Same as SPAN 1001, SPAN 1002).

SPAN 1034. Intensive Intermediate Spanish. 6 Credits.
Equivalent to Span 1003– SPAN 1004. Prerequisite: SPAN 1002 or SPAN 1012. Laboratory fee.

SPAN 2005. Advanced Spanish I. 3 Credits.
Development of advanced Spanish proficiency, with a focus on argumentative speaking and writing. Development of cross-cultural competence and analysis of historical, social, and cultural practices and perspectives of Spanish-speaking societies. Prerequisite: SPAN 1004 or SPAN 1034. Laboratory fee.

SPAN 2006. Advanced Spanish II. 3 Credits.
Continuation of SPAN 2005. Development of advanced Spanish proficiency, with a focus on argumentative speaking and writing. Development of cross-cultural competence and analysis of historical, social, and cultural practices and perspectives of Spanish-speaking societies. Prerequisite: SPAN 2005. Laboratory fee.

SPAN 2056. Intensive Advanced Spanish. 6 Credits.
Equivalent to Span 2005– SPAN 2006. Prerequisite: SPAN 1004 or SPAN 1034. Laboratory fee.

SPAN 3005. Experiencing Cuba: Past and Present. 2 Credits.

SPAN 3010W. Advanced Spanish Writing. 3 Credits.
Designed to develop writing skills within the fields of Spanish literature and culture. Students read and discuss literary and media texts while analyzing essential features and themes of Spanish/Hispanic cultures. Cultural and literary topics are used as basis for process-writing assignments (production, correction, revision). Students develop a writing portfolio. Prerequisites: SPAN 2006 or SPAN 2056.

SPAN 3015. Spanish for Heritage Speakers. 3 Credits.

SPAN 3021. Advanced Spanish for Oral Communication—Latin America. 3 Credits.
For students enrolled in programs in Latin America. Prerequisite: SPAN 2006 or SPAN 2056.

SPAN 3022. Advanced Oral Proficiency: Environmental and Social Sustainability in Latin America. 3 Credits.
Development of advanced Spanish oral proficiency, critical content knowledge, terminology and concepts through content-based course work in the areas of environmental and social sustainability in Latin America. Critical evaluation of key environmental and social aspects of sustainability as related to Spanish-speaking countries. Focus on understanding and interpretation of language- and discipline-specific written and oral materials such as film and documentary, news, academic, literary and public media texts. Prerequisite: SPAN 2006 or above, or appropriate GWU placement score.

SPAN 3035. Spanish Language and Culture: Advanced. 3 Credits.

SPAN 3040. Advanced Spanish Service-Learning. 3 Credits.
Advanced oral and written work through community engagement, with consideration of social change and reflection on civic engagement, leadership, and service. Students work on local community service projects. Prerequisite: SPAN 2006 or SPAN 2056. Laboratory fee.

SPAN 3100. Readings in Spanish and Latin American Literature. 3 Credits.
Readings, textual analysis, and writing on a broad selection of texts from different genres and periods. Spanish and Latin American literatures in their cultural contexts. Introduction to methods of literary analysis and criticism. Prerequisite: SPAN 2006 or SPAN 2056.

SPAN 3200. Bilingualism in the Spanish-Speaking World. 3 Credits.
Social, cultural and political contexts in which bilingualism in Spain and Latin America occurs. Language attitudes and policies regarding bilingualism and their role in the development of cultural identities and ideologies. Appropriate GW Spanish placement score may be substituted for prerequisites. Taught in Spanish. Restricted to undergraduate students. Prerequisites: SPAN 3010W, or SPAN 3022 or SPA 3100.

SPAN 3400. Theatre of Spain and Latin America. 3 Credits.
Theatrical representation: presence and performance, body, voice, dialogue, and the unfolding of conflict. Theatrical traditions and movements may include Golden Age drama; neo-Classical and Romantic drama of the 19th century; drama of political protest; existentialist drama and the theater of the avant-gardes. Prerequisite: SPAN 3100 .

SPAN 3410. Latin American Short Fiction. 3 Credits.
Short prose narratives as agents of questioning textual meaning and subverting former literary traditions. Writers may include Arenas, Borges, Cortázar, Fuentes, García Márquez, Quiroga, Peri Rossi, Ana Lydia Vega, Zapata Olivella. Prerequisite: SPAN 3100 .

SPAN 3420. The Essayist Tradition in Latin America. 3 Credits.
Relations between state and nation in post-independence literary and political polemics of 19th-century Latin America. Topics may include the essay as a new genre for a new age; the figure of the public intellectual vis-à-vis the processes of state and nation formation; the post-colonial state and its imagined national, ethnic, racial, and economic communities. Prerequisite: SPAN 3100.

SPAN 3430. Afro-Latin America in the Diaspora. 3 Credits.
Major issues related to the diaspora of people of African descent in Latin America: racial–ethnic identity and nation, the myth of racial democracy, ties with "the motherland," ties with other diaspora communities, emigration, the role of the arts in these questions. Prerequisite: SPAN 3100 .

SPAN 3440. Caribbean Literature and Culture. 3 Credits.
Literary and cultural trends emanating from the Spanish-speaking Caribbean, focusing on Cuba, the Dominican republic, and Puerto Rico, with some attention to the circum-Caribbean regions of Central and South America. Prerequisite: SPAN 3100 .

SPAN 3500. Medieval Spanish Literature. 3 Credits.
Reading and analysis of the major literary texts from the 11th through the 15th century. Attention paid to linguistic aspects of Old Spanish. Prerequisite: SPAN 3100 .

SPAN 3510. Golden Age Literature. 3 Credits.
Major texts of the 16th and 17th centuries. Topics may include lyric poetry and the "invention" of subjectivity; prose fiction; comedia and the relation between private and public life; humanism and the classical tradition; the invention of the press, the status of writing, and the new culture of the book; the (post)modernity of Golden Age literature. Prerequisite: SPAN 3100 .

SPAN 3520. Latin American Colonial Literature. 3 Credits.
Analysis of chronicles, essays, memoirs, epistolary exchanges, and poetry contextualized vis-à-vis the medieval and Renaissance values of Imperial Spain. Authors may include Cabeza de Vaca, Bartolomé de las Casas, Colón, Cortés, Díaz del Castillo, El Inca Garcilaso de la Vega, Sor Juana Inés de la Cruz, Rodríguez Freile, Sepúlveda. Prerequisite: SPAN 3100 .

SPAN 3530. Enlightenment Spain. 3 Credits.
Analysis of chronicles, essays, memoirs, epistolary exchanges, and poetry contextualized vis-à-vis the medieval and Renaissance values of Imperial Spain. Authors may include Cabeza de Vaca, Bartolomé de las Casas, Colón, Cortés, Díaz del Castillo, El Inca Garcilaso de la Vega, Sor Juana Inés de la Cruz, Rodríguez Freile, Sepúlveda. Prerequisite: SPAN 3100 .

SPAN 3540. Major Authors of Spain and Latin America. 3 Credits.
Close readings of the work of a major author and application of related critical and theoretical material. Authors may include J.L. Borges, G. Garcia Marquez, Clarice Lispetor, M.L. Bombal, Juan Goytisolo, Juan Rulfo, Alejo Carpentier, Mañuel Puig. Prerequisite: SPAN 3100 .

SPAN 3570. Latin American Women Writers. 3 Credits.
Works of well-established women writers (e.g., Sor Juana Inés de la Cruz, Gabriella Mistral, and Luisa Valenzuela) and of more recent writers (e.g., Elena Poniatowska, Diamela Eltit, Ana Lydia Vega, Cristina Peri-Rossi, and Laura Esquivel) discussed in relation to feminist principles of criticism. Prerequisite: SPAN 3100 .

SPAN 3600. Special Topics. 3 Credits.
May be repeated for credit provided the topic differs. Prerequisite: SPAN 3100 .

SPAN 3650. Literature and Dictatorship. 3 Credits.
Study of the dynamic relationship between literature and politics during periods of intense social repression and censorship in Spain and/or Latin America. Issues raised in and by literature when discourse is controlled, censored, and repressed by military dictatorships. The role of culture in understanding traumatic historical events. Prerequisite: SPAN 3100 .

SPAN 3700. Cinema of Spain and Latin America. 3 Credits.
Film as a language of cultural and historical testimony in Spanish America and Spain. Topics may include the Silent Era, Surrealism, the Mexican Golden Age of the '40s, the New Cinema of the '50s, Peronist cinema in Argentina, socialist film in Cuba, and postmodern production. May be repeated for credit. Laboratory fee. Prerequisite: SPAN 3100 .

SPAN 4410. Contemporary Narrative in Latin America. 3 Credits.
Experimental fiction in Latin America, with focus on literature of the mid-1960s through the present. Authors may include Alejo Carpentier, Julio Cortázar, Diamela Eltit, Carlos Fuentes, Cabrera Infante, Lezama Lima, García Márquez, Octavio Paz, Ricardo Piglia, Elena Poniatowska, Mario Vargas Llosa. Prerequisite: SPAN 3100 .

SPAN 4450. Mexican Literature and Culture. 3 Credits.
Study and analysis of Mexico's most significant intellectual, historical, and cultural events from the Spanish Conquest of the Aztec empire to the present. Topics include the Spanish appropriation of the Aztec Empire, literature and cultural phenomena during the colonial period, the age of independence, the Mexican revolution, and contemporary Mexico. Prerequisite: SPAN 3100.

SPAN 4460. Southern Cone Literature and Culture. 3 Credits.
Study and analysis of some of the most significant writers, ideas, texts, and films of Argentina, Chile, and Uruguay. Issues of tradition, identity, representation, modernity, gender and sexuality, and literature and politics as seen in historical context. Prerequisite: SPAN 3100 .

SPAN 4510. Cervantes Don Quixote. 3 Credits.
Issues raised in the text of Don Quijote: literature and life, words and deed, the fashioning of self, the structures of narrative, the limits and possibilities of representation, and the relation between appearance and reality, knowledge and understanding, fiction and truth. Cervantes' "invention" of the novel. Prerequisite: SPAN 3100 .

SPAN 4520. Topics in the Avant-garde. 3 Credits.
Study of the literary and artistic avant-gardes of Spain and Latin America in relation to the dialectic of enlightenment. Consideration of the avant-gardes as successful interpretations of modernity and as movements that anticipate, and in some instances instigate, the "post-modern" end of modernity. Prerequisite: SPAN 3100 .

SPAN 4540. The Myth of the Two Spains. 3 Credits.
Literature as an expression of the institutionalization of liberalism in 19th-century Spain and of official and popular resistance to this modernizing credo. Topics may include the romanticism of Quintana, Espronceda, Blanco-White and Becquer; the costumbrismo of Castro and Larra; the realism of Galdós; and the naturalism of Pardo Bazán and Clarín. Prerequisite: SPAN 3100 .

SPAN 4550. 1898-1998: Spain's First Century without Empire. 3 Credits.
Spain's imperial crisis and its persistence throughout the 20th century as a central theme in Spanish literary and intellectual culture. Topics may include decadence and regeneration; modern Spanish nationalism and cultural imperialism; Hispanicism and pan-nationalism; the Spanish Civil War, fascism, and liberalism; and the transition from fascism to democracy. Prerequisite: SPAN 3100.

SPAN 4560. Modern Poetry of Spain and Latin America. 3 Credits.
Poetry after modernism; forms and themes that characterize the work of authors such as Agustini, Guillén, Huidobro, Lezama, Mistral, Neruda, and Palés. Prerequisite: SPAN 3100 .

SPAN 4600. Special Topics. 3 Credits.
May be repeated for credit provided the topic differs.

SPAN 4650. Literary Translation. 3 Credits.
Combination literary translation workshop and seminar on translation theory. Study of the main issues of literary translation between Spanish and English, in both directions, as seen in different writers and genres. Translation of writings on cultural, philosophic, and political issues. Prerequisite: SPAN 3100 .

SPAN 4700. Film as Text in Latin America. 3 Credits.
The basic points of filmic analysis as related to Latin American cinema. Issues of film as a genre in its own right, the particular language of cinema, relationships between written text and film, and other interdisciplinary aspects of narrative. Prerequisite: SPAN 3100.

SPAN 4800. Independent Study. 1-4 Credits.
Admission by permission of department chair and instructor. May be repeated for credit. Prerequisite: SPAN 3100 .

SPAN 4910W. Proseminar I. 3 Credits.
Required of all majors; preparation for the major field examination. Literature in relation to the other arts and the social sciences. Textual analysis, literary criticism, theory, and methods. Prerequisite: SPAN 3100 .

SPAN 4920W. Proseminar II. 3 Credits.
Continuation of SPAN 4910. Required of all majors; preparation for the major field examination. Literature in relation to the other arts and the social sciences. The concepts of literary history and the history of Spanish and Latin American literature; periods, authors, genres, topics. Prerequisite: SPAN 3100 .

SPECIAL EDUCATION (SPED)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SPED 0920. Continuing Research - Masters. 1 Credit.

SPED 0940. Cont Research - Doctoral. 1 Credit.

SPED 6100. Selected Topics. 1-12 Credits.
Topics and fees announced in the Schedule of Classes.

SPED 6101. Research and Independent Study. 1-3 Credits.
Individual study or research under guidance of staff member. Admission by permission of advisor. May be repeated for credit.

SPED 6201. Introduction to Special Education. 3 Credits.
Survey course to acquaint prospective teachers with special education and to help them become aware of the various educational modifications necessary to accommodate children with special needs in a school program.

SPED 6210. Universal Design for Learning and Assessment. 3 Credits.
Overview and introduction to universal design for learning, including contemporary issues, applications of digital and assistive technologies, and tools for developing a comprehensive plan for implementation. Same as CPED 6110.

SPED 6221. Accessing Community Systems for Individuals with Disabilities. 3 Credits.
Overview of access to community systems and service delivery for individuals with special needs and their families. Material fee.

SPED 6222. Legal Issues and Public Policy for Individuals With Disabilities. 3 Credits.
Examination, interpretation, and analysis of legislation and policies affecting the education and career development of individuals with disabilities. Emphasis on federal legislation in the context of national policy reform in disability services. Material fee.

SPED 6223. Introduction to Brain Injury: Programs, Policies, and Resources. 3 Credits.
An overview of acquired brain injury and its effects; current trends in the field, related policy, research, and development of new resources.

SPED 6224. Brain Function and Impact of Brain Injury on Learning and Education. 3 Credits.
Provides an in-depth understanding of neuroanatomy related to the impact of brain injury on child and adolescent development and learning to prepare educators to participate in educational assessment and planning.

SPED 6227. Technology in Vocational Evaluation. 3 Credits.
Introduction to an array of assistive technology services and products facilitating professional interventions and vocational evaluation procedures; application to the assessment of persons with disabilities. Material fee.

SPED 6228. Community-Based Assessment and Work Sample Development. 3 Credits.
Introduction to community-based vocational appraisal methods; development of job training analysis skills, labor market surveys, work samples; requirements of The Americans with Disabilities Act; incorporation of assistive technology; classroom theory and field work. Material fee.

SPED 6229. Interpretation and Application of Academic and Vocational Assessment Information. 3 Credits.
Specific strategies and techniques to analyze, interpret, and synthesize assessment information for the development of comprehensive academic/vocational profiles for adolescents and adults with disabilities. Observation and recording procedures, report development, and postassessment conferencing are emphasized. Material fee.

SPED 6230. Vocational Assessment of Individuals with Disabilities. 3-6 Credits.
Investigation of vocational appraisal processes and techniques for individuals with disabilities. Includes assessment for transition using field-based assignments. Three credits of practicum experience for students specializing in vocational evaluation. Material fee. Same as CNSL 6130.

SPED 6231. Instructional Methods in Secondary Special Education and Transition. 3 Credits.
Techniques and processes used in programming for the needs of individuals with disabilities as they prepare for transition to postsecondary programs and employment. Emphasis on skills related to professional liaison and support roles in the design of instructional arrangements and cooperative training. Material fee.

SPED 6232. Foundations in Special Education, Career Development, and Transition. 3 Credits.
Overview of historical, theoretical, and philosophical foundations of career development and transition. Explores directions for career development/transition practices in the context of educational reform and social and political change. Material fee.

SPED 6233. Curriculum in Special Education. 3 Credits.
Theory and practice in planning, implementing, and evaluating curriculum for individuals with disabilities. Emphasis on techniques for modifying curriculum and materials for individualized programming. Requires field-site curriculum implementation. Materials fee.

SPED 6234. Seminar in Advanced Writing and Professional Presentation. 3-6 Credits.
Analysis and development of advanced professional writing skills, including literature synthesis, persuasive writing, and proposal writing. Material fee.

SPED 6235. Employment Models for Individuals with Disabilities. 3 Credits.
Rationale, occupational resources, and programming strategies for job placement and the development and coordination of employment programs for individuals with disabilities. Material fee.

SPED 6236. Introduction to Career and Career–Technical Education and Transition Services. 3-6 Credits.
Introduction to programs and services that provide career development and transition planning for individuals with disabilities. Material fee.

SPED 6237. Learning Strategies, Assessment, and Instruction for Individuals with Learning Disabilities. 3-6 Credits.
Theory and practice in evidence-based reading interventions. Learning strategies; content enhancement focused on literacy and self-determination. Material fee.

SPED 6238. Issues in Educating Individuals with Learning, Emotional, and Intellectual Disabilities. 3 Credits.
Introduction to the academic, cognitive, social, and emotional characteristics of individuals with learning disabilities; etiological theories; educational service delivery models, with particular emphasis on the adolescent with learning disabilities. Policy issues, continuum of services, and the transition from school to post-school environments. Material fee.

SPED 6239. Collaboration for Professionals Working with Students with Disabilities. 3 Credits.
Exploration of attitudes and beliefs about team teaching, collaboration and inclusionary environments. Development of knowledge and skills related to collaborative consultation and team teaching; interpersonal communication; the dynamics of collaborative teams; examination of the variety of environments in which special educators work. Material fee.

SPED 6240. Family Support and Guidance in Special Education. 3 Credits.
The developmental process of parenting and how that process is affected by having a child with developmental delay or disability. Family systems theory, stress and coping mechanisms, and communication and support strategies. Material fee.

SPED 6242. Neurodevelopmental Assessment and Programming for Infants and Toddlers with Disabilities. 3 Credits.
Application of the neurodevelopmental model to techniques for developing and implementing educational programs for infants and toddlers with disabilities. Prerequisite or concurrent registration: SPED 6263 or SPED 6268 or permission of instructor. Material fee.

SPED 6243. Developmental Assessment of Infants. 3 Credits.
Theory and current practice in the assessment of infants with or at risk for developmental disabilities. Material fee.

SPED 6244. Ethical Considerations in Neonatal and Infant Intervention. 3 Credits.
Overview of the major ethical issues involved in neonatal and infant intervention. The impact of recent and emerging technological innovations considered from medical, legal, ethical, and psychosocial perspectives. Material fee.

SPED 6245. Developmental Implications of Prematurity and Risk. 3 Credits.
Causes of prematurity. Conditions that place children at developmental and educational risk.

SPED 6253. Introduction to Autism Spectrum Disorders. 3 Credits.
Overview of autism spectrum disorders with a focus on etiology, characteristics, and evidence-based practices. Topics include defining, assessing, accommodating, and instructing students with autism spectrum disorders.

SPED 6254. Autism Spectrum Disorders and Transition to Employment and Post-Secondary Life. 3 Credits.
The policies, principles, models, and processes involved in job development, job accommodations and modifications, and employment and post-secondary placement services for individuals with autism and related disabilities. Legislation is reviewed in terms of its impact on placement of persons with autism who will transition into the workplace and/or post-secondary education.

SPED 6255. Collaboration with Systems and Families. 3 Credits.
Overview of models and strategies for coordinating services across disciplines and among school and community agencies for special populations. Emphasis on interdisciplinary team coordination, communication, decision making, planning, and follow-up for individuals with disabilities. Material fee.

SPED 6260. Developmental Assessment in Special Education. 3 Credits.
Examination of formal psychoeducational tests used with preschool and elementary-school-aged children. Development of formal and informal assessment techniques. Introduction to the skills necessary to write psychoeducational reports. Material fee.

SPED 6261. Practicum: Methods and Materials for Young Children with Disabilities. 3,6 Credits.
Implementation of educational strategies and materials, including designing and developing teaching materials, classroom teaching, feedback and evaluation with professor. A seminar accompanies this clinical experience.

SPED 6262. Formal Assessment of Young Children with Disabilities. 3 Credits.
Weekly seminar designed to prepare early childhood special educators to translate formal assessment data into instructional programming. Requires fieldwork with children. Material fee. Prerequisite: SPED 6260 .

SPED 6263. Development of the Infant with Special Needs. 3 Credits.
The processes of normal infant development and interrelationships among areas of development; relationship of these processes to the growth and development of infants with or at risk for developmental disabilities. Material fee.

SPED 6264. Medical and Genetic Conditions of Infants and Children with Developmental Disabilities. 3 Credits.
Introduction to medical and genetic conditions that affect the cognitive, language, and social development of infants and children with developmental disabilities.

SPED 6266. The Development of Language and Literacy. 3 Credits.
Within the context of typical and atypical development, the impact of various disabilities on language and literacy development. Material fee.

SPED 6267. Instructional and Assistive Technology in Early Childhood Special Education. 2,3 Credits.
Instructional strategies and assistive technology and their implications and uses for young children (0–5 yrs) in a wide variety of environments. Lectures, laboratory, and demonstrations. Material fee.

SPED 6268. Development of Children and Youth with Disabilities. 3 Credits.
Theories of human growth and development are considered as a framework for examination of typical and atypical development of children and youth. Material fee.

SPED 6269. Etiology, Symptomatology, and Approaches to Intervention with Children with Disabilities. 3 Credits.
An in-depth examination of the causes and characteristics of various disabilities. Current principles and approaches to intervention are examined. Material fee.

SPED 6272. Strategies for Inclusion: Addressing the Needs of Diverse Learners. 3 Credits.
Strategies by which teachers can more effectively assume the responsibility to serve all children in an inclusionary setting, including those who are second language learners and students with disabilities. Same as CPED 6172. Material fee.

SPED 6273. Impact of Culture on Education. 3 Credits.
The impact of culture and ethnicity on educational experiences. The relationship between school culture in the United States, one's own culture(s), and the cultures of diverse populations existing within our schools. Values, norms, rules, ethics, beliefs, attitudes, expectations, and assumptions of various cultures. Material fee.

SPED 6274. In-Service Planning/Programmng. 3 Credits.

SPED 6275. The Culturally and Linguistically Diverse Student with Disabilities: Policy, Research, and Trends. 3 Credits.
Educational service delivery for the culturally and linguistically diverse student. National, state, and local policies; current research in bilingual education, special education, and bilingual special education. Same as CPED 6175. Material fee.

SPED 6276. Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student. 3 Credits.
Issues in academic and psychosocial assessment of second language learners. The impact of second language acquisition and culture on the assessment process; differentiation between language difference and disability; IEP development; the use of interpreters and translators; the involvement of family and communities; standardized and alternative assessments; and legislative mandates. Same as CPED 6176. Material fee.

SPED 6277. Teaching Culturally and Linguistically Diverse Students with Disabilities. 3 Credits.
Methods and materials for teaching students with disabilities who are English language learners. Classroom management, instructional and assessment strategies, materials and curricula, and collaborating with families and communities to meet the cultural, linguistic, academic, social, and emotional needs of students in various settings. Material fee.

SPED 6280. Developmental Assessment of Adolescents. 3 Credits.
Formal and informal psychoeducational assessment; assessment instruments commonly used with upper-elementary, junior, and senior high school students; the writing of psychoeducational reports. Material fee.

SPED 6283. The Urban Impact on Children and Youth with Disabilities. 3 Credits.
Effects of the total environment in which inner-city children live on their ability to learn and their cognitive, social–behavioral, and physical/health development. Material fee.

SPED 6288. Characteristics of Individuals with Learning, Emotional, and Intellectual Disabilities. 3 Credits.
An in-depth examination of typical and atypical growth and development, psychiatric diagnosis and psychosocial development issues, and general and specific characteristics of the student with serious emotional disabilities. May be repeated for credit. Material fee.

SPED 6290. Affective Development and Behavior Management in Special Education. 3 Credits.
Theory, programming, and behavior management strategies from theoretical and practical points of view. Material fee.

SPED 6299. Federal Education Policy Institute. 3 Credits.
The federal role in education policymaking in the context of national, state, and local efforts to create school environments for effective learning and the promotion of social and emotional health in children and youth. Same as CPED 6199.

SPED 6990. Internship in Teaching Children with Emotional and Behavioral Disabilities: Assistant Teacher. 3-6 Credits.
The federal role in education policymaking in the context of national, state, and local efforts to create school environments for effective learning and the promotion of social and emotional health in children and youth. Same as CPED 6199.

SPED 6991. Internship in Teaching Children with Emotional and Behavioral Disabilities: Co-Teacher. 3-6 Credits.
Continuation of SPED 6990. Graduate students become the primary teaching team in the classroom with ongoing supervision. Graduate students plan and apply psychoeducational teaching strategies with children with emotional and behavioral disabilities. Refinement of instructional and behavior management strategies. Weekly seminar continues. Material fee.

SPED 6992. Behavior Management Practicum: Adolescents with Disabilities. 3 Credits.
Field-based examination of theory of behavior development and techniques for classroom management. Material fee.

SPED 6993. Internship: Teaching Young Children with Disabilities. 3,6 Credits.
Supervised internship in early childhood special education. Weekly seminar. Material fee.

SPED 6994. Internship: Early Intervention. 3-6 Credits.
Supervised internship in early intervention. Weekly seminar. Material fee.

SPED 6995. School- and Community-Based Internship in Special Education and Transition. 1-9 Credits.
A 50- to 450-hour supervised internship in school- and community-based settings involved in career, vocational, and transition services.

SPED 6996. Teaching Internship in Transition Special Education. 3-6 Credits.
Supervised teaching internship; seminar required. Permission by instructor. Material fee.

SPED 6997. Internship in Teaching Culturally and Linguistically Diverse Students with Disabilities. 3-6 Credits.
Supervised internship and weekly seminar. A full-time, field-based teaching experience working with students with disabilities who are English language learners. Writing an appropriate IEP, interacting with families and communities, and planning and implementing instructional approaches and strategies. Material fee.

SPED 8100. Selected Topics. 1-12 Credits.
Topics and fees announced in the Schedule of Classes.

SPED 8101. Research and Independent Study. 1-3 Credits.
Individual research under guidance of a staff member. Program and conferences arranged with program advisor.

SPED 8301. Research Seminar in Special Education. 1-12 Credits.
Participation in a small group with a selected faculty member; research on and discussion of an area of common interest. Admission by permission of instructor.

SPED 8303. Administration and Supervision of Special Education. 3 Credits.
Philosophy and nature of special education; program organization, administration, and development. Surveying local needs; program evaluation and supervision. Admission by permission of instructor. Material fee.

SPED 8304. Research and Trends in Special Education. 3 Credits.
Emphasis on topical research issues, problems of conducting research, and research syntheses. Material fee.

SPED 8305. Foundations of Neuroscience in Special Education. 3 Credits.
Develops understanding of the neurological bases of sensation and perception, object recognition, control of motor action, learning and memory, emotion and language, attention, consciousness and cognitive control, and social cognition.

SPED 8306. Advanced Study in Development Science and Variance I: The Early Years. 3 Credits.
Consideration of cognitive neuroscience research on developmental issues of infancy and early years; assessment, identification, and related prevention and intervention. Prerequisite: SPED 8305.

SPED 8308. Preparation for the Professoriate in Special Education. 3 Credits.
Philosophical, ethical, and methodological aspects of personnel preparation in university and field-based programs; opportunities for practice in pedagogical design and delivery. Material fee.

SPED 8310. Advanced Study in Development Science and Variance II: The Later Years. 3 Credits.
Consideration of cognitive neuroscience research on adolescent development, including executive functioning, self-regulation, atypicality in learning, social and emotional behavior, motivation, and attention. Prerequisite: SPED 8306.

SPED 8311. Proseminar in Special Education: The Interdisciplinary Foundations. 3 Credits.
A theoretical and research-based course that introduces students to strategies by which data from cognitive neuroscience research can be applied to conceptualizing research in special education. A doctoral student forum addresses interdisciplinary research knowledge. Prerequisite: SPED 8310.

SPED 8343. Psychoeducational Diagnosis in Special Education. 3 Credits.
The range of diagnostic and intervention strategies applicable to the student who presents psychosocial and related learning difficulties. Admission by permission of instructor. Material fee.

SPED 8345. Consultation and the Change Process. 3 Credits.
Consultation models from organizational development, organizational psychology, and mental health applied to professional practice in education and special education. Material fee.

SPED 8352. Disability and Public Policy. 3 Credits.
Overview of current legislation and public policy affecting education, employment, and civil rights of individuals with disabilities. The evolution of disability policies and their relationship to principles of social justice. Material fee.

SPED 8353. Post-Master's Internship in Special Education. 1-6 Credits.
Supervised professional internship in college teaching, administration, supervision, research, or policymaking. Internships are individually arranged. Admission by permission of instructor.

SPED 8354. Doctoral Internship: Special Education. 1-6 Credits.
Supervised professional internship in research college teaching, administration, policymaking, or private agency function. Admission by permission of advisor.

SPED 8360. Interdisciplinary Techniques in the Diagnostic Process in Special Education. 3 Credits.
Application of theoretical concepts of assessment; development of assessment programs; interpretation and application of interdisciplinary diagnostic evaluations. Prerequisite: SPED 6260, and permission of instructor. Material fee.

SPED 8998. Doctoral Seminar in Special Education. 3-6 Credits.
Review of literature in a topical area; preparation of a dissertation proposal and a manuscript of publishable quality. Admission by permission of instructor and approval of major advisor. Material fee.

SPED 8999. Dissertation Research. 3,6 Credits.
Prerequisite: SPED 8998.

SPEECH AND HEARING SCIENCE (SPHR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SPHR 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

SPHR 1011. Voice and Diction. 3 Credits.
Development of naturalness, correctness, and clarity in conversation through the study of phonetics, rate, volume, pitch, and quality in preparation for performance. Laboratory fee.

SPHR 1071. Foundations of Human Communication. 3 Credits.
An introduction to the fundamental principles of the biology of speech, hearing and language, language structure and use, and human communicative interaction. Practice in the identification of specific verbal and nonverbal aspects of communication behavior.

SPHR 1071W. Foundations of Human Communication. 3 Credits.
An introduction to the fundamental principles of the biology of speech, hearing and language, language structure and use, and human communicative interaction. Practice in the identification of specific verbal and nonverbal aspects of communication behavior.

SPHR 1072. Multicultural Issues in Human Communication. 3 Credits.
Consideration of the influences of culture and bilingualism on language development and use and on communicative interaction; experimental and ethnographic methods for studying language and communication in a multicultural society.

SPHR 1081. American Sign Language I. 3 Credits.
Development of basic communication skills, with appropriate vocabulary and grammatical structures; emphasis on comprehension skills.

SPHR 1082. American Sign Language II. 3 Credits.
Continuation of SPHR 1081. Development of basic communication skills, with appropriate vocabulary and grammatical structures; emphasis on comprehension skills. Prerequisite: SPHR 1081.

SPHR 1084. Perspectives in Deaf Culture. 3 Credits.
Introduction to the Deaf community as a linguistic and cultural minority group. The roles of deaf people in the larger society, including political activism. Generational differences concerning education, socioeconomic status, medical issues, and language.

SPHR 2083. American Sign Language III. 3 Credits.
Continuation of SPHR 1082. Development of basic communication skills, with appropriate vocabulary and grammatical structures; emphasis on comprehension skills. Prerequisite: SPHR 1082.

SPHR 2101. Research Methods. 3 Credits.
Introduction to fundamental research principles (e.g., hypothesis testing, sampling, validity and reliability), designs (e.g., experiments, case studies), and methods (e.g., behavioral observations, acoustic and physiologic measurements, neuro-imaging) used in the study of speech, language, and hearing. Prerequisites: SPHR 1071.

SPHR 2102. Neural Substrates-SpHr & Lang. 3 Credits.

SPHR 2104. Speech and Language Disorders. 3 Credits.
Survey of the nature and causes of developmental and acquired disorders of speech and language. Emphasis on prevention and effective communication with persons having a speech–language impairment.

SPHR 2104W. Speech and Language Disorders. 3 Credits.
Survey of the nature and causes of developmental and acquired disorders of speech and language. Emphasis on prevention and effective communication with persons having a speech–language impairment.

SPHR 2105. Anatomy and Physiology for Speech and Hearing I. 3 Credits.
Anatomy and physiology of the respiratory, phonatory, articulatory, and resonatory subsystems of speech; swallowing; and the cranial nerves.

SPHR 2106. Anatomy and Physiology for Speech and Hearing II. 3 Credits.
Anatomy of the auditory and vestibular systems; physiology of hearing; anatomy of the brain and spinal cord; physiology of the nervous system.

SPHR 2107. Acoustics. 3 Credits.
This course focuses on speech acoustics, with emphasis on how the speech signal is produced and the elements of speech important for speech perception. Recommended background: Students are advised to complete, or currently be taking, Phonetics (SPHR 2136) and Anatomy and Physiology (SPHR 2105) with this course.

SPHR 2108. Introduction to Audiology. 3 Credits.
Survey of the field of audiology, including the measurement of hearing, the nature and causes of hearing impairment, hearing aids and habilitation/rehabilitation of the hearing impaired. Prerequisite: SPHR 2107; prerequisite or corequisite: SPHR 2106. Laboratory fee.

SPHR 2117. Hearing & Perception. 3 Credits.
Consideration of the psychoacoustics of the normal auditory system in terms of auditory sensitivity, loudness, pitch, masking, and binaural hearing. Topics in speech perception that build upon psychoacoustics and speech acoustics. Prerequisite: SPHR 2108.

SPHR 2130. Phonetics and Phonological Development. 3 Credits.
Detailed study of English phonetics and phonology; prespeech vocalization and phonological development; multicultural issues in phonological development; intensive practice in phonetic transcription. Prerequisite or corequisite: SPHR 2105. Laboratory fee.

SPHR 2131. Language Acquisition and Development. 3 Credits.
Theories of language acquisition; development of language from birth through adolescence; emphasis on development of semantics, syntax, morphology, and pragmatics; multicultural issues in language development. Laboratory fee. Prerequisite: SPHR 2135.

SPHR 2132. Literacy. 3 Credits.
An overview of literacy development (thinking, listening, speaking, reading, spelling, writing) with emphasis on reading and writing development. Laboratory fee. Prerequisite: SPHR 1071.

SPHR 2133. Autism. 3 Credits.
How the study of autism and related disorders may shed light on the characteristics of the mind. The broad characteristics of autism spectrum disorders, including cognitive, behavioral, and neural aspects; definitions of typical vs. atypical development; and difficulties associated with diagnosis and treatment.

SPHR 2135. Language: Structure, Meaning, and Use. 3 Credits.
A survey of basic linguistic terminology and the components of language structures. Major topics will include language structure (syntax, morphology, phonology), meaning (semantics), and the use of language as a means of communication among individuals (pragmatics).

SPHR 2136. Phonetics. 2 Credits.
An overview of phonetics of American English and an introduction to sounds of languages of the world. General principles of phonetic description and analysis, speech production mechanisms, classification of consonants and vowels of English and other languages, suprasegmental aspects of speech, and acoustic characteristics of speech sounds. Allophonic variation and phonetic characteristics of connected speech and social and regional phonetic variation. Instruction and practice in transcription using the International Phonetic Alphabet.

SPHR 3116. Brain & Language. 3 Credits.
How the brain operates for language production and understanding and how damage to the brain can interrupt neural processes with a variety of neurolinguistic consequences. Neuroimaging and behavioral research that informs the understanding of the bases of neurolinguistic communication disorders. Prerequisite or corequisite: SPHR 2106.

SPHR 3199. Selected Topics. 3 Credits.
Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

SPHR 4118. Senior Seminar. 3 Credits.
Critical evaluation of the research literature on speech and hearing; the process of scientific writing and analysis; how research can inform and improve clinical practice. For departmental majors in the senior year. Laboratory fee. Prerequisite: SPHR 1071 or SPHR 1071W or SPHR 2104 or SPHR 2104W.

SPHR 4118W. Senior Seminar. 3 Credits.
Critical evaluation of the research literature on speech and hearing; the process of scientific writing and analysis; how research can inform and improve clinical practice. For departmental majors in the senior year. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. Prerequisites: SPHR 1071 or SPHR 1071W or SPHR 2104 or SPHR 2104W.

SPHR 4119. Analysis and Modification of Communication Disorders. 3 Credits.
For department majors in their senior year. Assessment of speaker–listener behavior; acoustic, behavioral, and linguistic properties of speaker intelligibility and credibility; observation, analysis, and modification of speech and language comprehension and expression. Prerequisite: senior standing. Laboratory fee.

SPHR 4196. Independent Study. 1-6 Credits.
Independent research and special projects. Before students are permitted to register for SPHR 4196, they must submit a written proposal of the plan of study and obtain approval of the staff member who will direct the study and of the department chair.

SPHR 6201. Clinical Practicum in Speech-Language Pathology. 1-6 Credits.
Supervised clinical practice in the evaluation and treatment of speech and language disorders; counseling of clients and families; development of treatment plans and writing of evaluation and progress reports. Admission by permission of the instructor. May be repeated for up to 6 credit hours.

SPHR 6202. Clinical Practicum in Audiology. 1-6 Credits.
Supervised clinical practice in behavioral and electrophysiologic assessment of hearing, hearing aid assessment and fitting, and aural rehabilitation; counseling clients and families; writing evaluation and progress reports. Admission by permission of the instructor. May be repeated, but may not be taken for more than 6 credit hours.

SPHR 6205. Professional and Clinical Issues in Speech and Hearing. 1 Credit.

SPHR 6207. Diagnostic Procedures in Speech and Hearing. 3 Credits.
Fundamental philosophical and conceptual issues in the assessment of speech-language functioning across a wide range of disorders and diverse populations. Consideration of how assessment procedures guide treatment decisions.

SPHR 6210. Research in Communication Sciences and Disorders. 1,3 Credit.
Fundamental issues and methods in clinical research; group and single-subject experimental designs; application of clinical research methodology and findings to assessment and treatment. Non-thesis students register for 3 credits; thesis students register for 1 credit concurrent with SPHR 6211. Restricted to graduate students in speech and hearing sciences.

SPHR 6211. Preparing the Thesis Prospectus. 2 Credits.
For first-year graduate students. Introduction to the fundamentals of quantitative research design and procedures in the speech and hearing sciences. Critical evaluation of research in speech and hearing sciences; scientific writing skills; the process and expectations for conducting thesis research. Students register for SPHR 6210 for 1 credit. Restricted to speech and hearing sciences master's thesis students.

SPHR 6220. Disorders of Articulation and Phonology. 3 Credits.
Survey of the nature and causes of impairments of speech sound production in children and adults. Differential diagnosis of oral motor versus phonological disorders; treatment approaches; identification and modification of regional dialects and foreign accents. Laboratory fee.

SPHR 6221. Neurodevelopmental Disorders of Speech Production. 2 Credits.
Evaluation and treatment of infants and children with neurodevelopmental speech disorders, including cerebral palsy. Emphasis on management of prespeech oral motor and feeding impairments. Laboratory fee.

SPHR 6222. Acquired Neuromotor Disorders of Speech Production. 2 Credits.
Examination of the neuroanatomical and neurophysiological bases and acoustic and perceptual characteristics of acquired dysarthrias and apraxia of speech. Evidence-based approaches to the assessment, differential diagnosis, and treatment of these disorders. Laboratory fee.

SPHR 6230. Pediatric Language and Speech Disorders I. 3 Credits.
Survey of current approaches for assessing and treating language delays and disorders in infants, toddlers, preschoolers, school-age children, and adolescents. Review of standardized, observational, and ethnographic approaches used in language assessment; current models of intervention and service delivery. Laboratory fee.

SPHR 6231. Pediatric Language and Speech Disorders II. 3 Credits.

SPHR 6240. Neurogenic Communication Disorders. 3 Credits.
Differential diagnosis of acquired speech and language disorders, with an emphasis on the aphasias acquired in adulthood. Evidence-based approaches to the assessment and treatment of adult neurogenic language disorders. Laboratory fee.

SPHR 6241. Applied Neuroanatomy. 3 Credits.
Neuroanatomy and neurophysiology of systems underlying speech, language, and hearing. Neuroimaging techniques and investigations. Applications to the assessment and treatment of communication disorders. Laboratory fee.

SPHR 6250. Eval/Treatment-Speech Disorder. 3 Credits.

SPHR 6251. Seminar: Speech Fluency Disorders. 3 Credits.
Consideration of stuttering and other disorders of speech rate and rhythm from developmental, linguistic, physiological, and psychosocial points of view. Investigation of evidence-based approaches to assessment and treatment.

SPHR 6260. Voice Disorders: Evaluation and Treatment. 3 Credits.
Normal anatomy and physiology of the human vocal mechanism. Nature, causes, and clinical management of functional and organic voice disorders, including laryngectomy. Laboratory fee.

SPHR 6261. Seminar: Voice Disorders. 2 Credits.

SPHR 6276. Aural Rehabilitation. 3 Credits.
Habilitation/rehabilitation of the hearing impaired, including auditory training, speech reading, hearing aids, assistive listening devices, communication strategies, and counseling. Laboratory fee.

SPHR 6277. Psychoeducational Management of Children With Hearing Impairment. 3 Credits.

SPHR 6281. Dysphagia. 2 Credits.
Anatomy and physiology of normal swallowing. Nature and causes of dysphagia in adults. Assessment, including clinical examination and radiologic methods; treatment. Laboratory fee.

SPHR 6282. Augmentative Communication and Computer Applications in Communication Disorders. 2 Credits.
Principles of assessment, development, and selection of augmentative and alternative communication systems; application through case studies. Computer applications, including review of selected hardware and software and selection criteria. Laboratory fee.

SPHR 6283. Multicultural Perspectives in Communication Development and Disorders. 2 Credits.
Application of culturally appropriate and theoretically based speech and language procedures to clinical assessment and intervention with multilingual/multicultural populations.

SPHR 6284. Autism. 2 Credits.
The various facets of Autism Spectrum Disorder (ASD); clinical aspects and how speech-language pathologists are involved in the assessment, diagnosis, and treatment of ASD; the relationship between typical cognitive and brain development throughout the lifespan and how it is manifested in ASD. Restricted to graduate students.

SPHR 6290. Selected Topics in Clinical Audiology. 1-3 Credits.
Advanced study of selected theoretical and clinical issues. May be repeated, but may not be taken for more than a total of 6 credits.

SPHR 6291. Selected Topics in Speech–Language Pathology. 1-3 Credits.
Advanced study of selected theoretical and clinical issues regarding various aspects of practice in speech–language pathology. May be repeated but not for more than a total of 6 credit hours.

SPHR 6295. Independent Research in Speech, Language, and Hearing. 1-12 Credits.

SPHR 6998. Thesis Research. 2 Credits.

SPHR 6999. Thesis Research. 2 Credits.

STATISTICS (STAT)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

STAT 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. See the Schedule of Classes for more details. Restricted to First-year students in CCAS.

STAT 1051. Introduction to Business and Economic Statistics. 3 Credits.
Lecture (3 hours), laboratory (1 hour). Frequency distributions, descriptive measures, probability, probability distributions, sampling, estimation, tests of hypotheses, regression and correlation, with applications to business.

STAT 1053. Introduction to Statistics in Social Science. 3 Credits.
Lecture (3 hours), laboratory (1 hour). Frequency distributions, descriptive measures, probability, sampling, estimation, tests of hypotheses, regression and correlation, with applications to social sciences.

STAT 1091. Principles-Statistical Methods. 3 Credits.

STAT 1111. Business and Economic Statistics I. 3 Credits.
Descriptive statistics, graphical methods, probability, special distributions, random variables, sampling, estimation and confidence intervals, hypothesis testing, correlation and regression.

STAT 1127. Statistics for the Biological Sciences. 3 Credits.
Introduction to statistical techniques and reasoning applicable to the biomedical and related sciences. Properties of basic probability functions: binomial, Poisson, and normal. Data analysis, inference, and experimental design.

STAT 1129. Introduction to Computing. 3 Credits.
Introduction to elements of computer programming and problem-solving using Pascal. Hands-on experience will be acquired through computer programming projects, including some simple statistical applications.

STAT 2105. Statistics in the Behavioral Sciences. 3 Credits.
Lecture (3 hours), laboratory (1 hour). Advanced study of statistical techniques for research problems. Analysis of variance, correlation techniques, nonparametric techniques, sampling theory. Prerequisite: an introductory statistics course and satisfactory performance on a placement examination.

STAT 2112. Business and Economic Statistics II. 3 Credits.
Continuation of STAT 1111. Emphasis on techniques of regression, chi-square, nonparametric inference, index numbers, time series, decision analysis, and other topics relevant to economics and business. Prerequisite: STAT 1111.

STAT 2118. Regression Analysis. 3 Credits.
Lecture (3 hours), laboratory (1 hour). Simple and multiple linear regression, partial correlation, residual analysis, stepwise model building, multicollinearity and diagnostic methods, indicator variables. Prerequisites: STAT 1111 or equivalent.

STAT 2123. Introduction to Econometrics. 3 Credits.
Same as Econ 2123.

STAT 2183. Intermediate Stat Lab/Packages. 3 Credits.
Application of program packages (e.g., SAS, SPSS) to the solution of one-, two- and k-sample parametric and nonparametric statistical problems. Basic concepts in data preparation, modification, analysis and interpretation of results. Prerequisite: an introductory statistics course.

STAT 2183W. Intermediate Statistical Laboratory: Statistical Computing Packages. 3 Credits.
Application of program packages (e.g., SAS, SPSS) to the solution of one-, two- and k-sample parametric and nonparametric statistical problems. Basic concepts in data preparation, modification, analysis and interpretation of results. Prerequisite: an introductory statistics course.

STAT 3119. Analysis of Variance. 3 Credits.
Lecture (3 hours), laboratory (1 hour). Introduction to the design of experiments and analysis of variance; randomized block, factorial, Latin square designs, and analysis of covariance. Prerequisite: STAT 2118.

STAT 3187. Introduction to Sampling. 3 Credits.
Problems of sampling and sample design. Simple random, stratified, systematic, cluster, and multistate designs; control of sampling and non-sampling errors. Prerequisite: STAT 1051 .

STAT 4157. Introduction to Mathematical Statistics I. 3 Credits.
Basic concepts of probability theory, including random variables, independence, distribution theory, and sampling theory. Prerequisite: MATH 1232 .

STAT 4158. Introduction to Mathematical Statistics II. 3 Credits.
Continuation of STAT 4157. Inference procedures, including estimation, hypothesis testing, regression analysis, and experimental design. Prerequisite: MATH 1232 .

STAT 4181. Applied Time Series Analysis. 3 Credits.
Autoregressive integrated moving average (ARIMA) modeling and forecasting of univariate time series. Estimation of spectral density functions, white noise tests, and tests for periodicities. Theory and applications using SAS. Prerequisite: MATH 2233, STAT 4157– STAT 4158 or STAT 2118.

STAT 4188. Nonparametric Stat Inference. 3 Credits.
Statistical inference when the form of the underlying distribution is not fully specified. Nonparametric procedures for estimation and testing hypotheses. An introduction to robust procedures. Prerequisite: STAT 1051 .

STAT 4189. Mathematical Probability and Applications I. 3 Credits.
Probability theory, including combinatorial analysis, conditional probability, and stochastic independence. Random variables and their distributions; laws of large numbers and central limit theorem. Application of concepts to elementary stochastic processes (coin-tossing sequences, branching processes, Markov chains). Prerequisite: MATH 1232 .

STAT 4190. Mathematical Probability and Applications II. 3 Credits.
Continuation of STAT 4189. Probability theory, including combinatorial analysis, conditional probability, and stochastic independence. Random variables and their distributions; laws of large numbers and central limit theorem. Application of concepts to elementary stochastic processes (coin-tossing sequences, branching processes, Markov chains). Prerequisite: MATH 1232 .

STAT 4195. Reading and Research. 1-12 Credits.
May be repeated once for credit. Admission by permission of department chair.

STAT 4197. Fundamentals of SAS Programming for Data Management. 3 Credits.
Fundamentals of the SAS system for data management, statistical analysis, and report writing. Data modification; programming; file handling; and macro writing. Prerequisite: An introductory statistics course and STAT 1129.

STAT 4198. Special Topics. 3 Credits.
Topic to be announced in the Schedule of Classes. May be repeated for credit provided the content differs.

STAT 6104. Statistics in Management, Administration, and Policy Studies. 3 Credits.
Introductory study of statistical techniques for research problems. For graduate students in fields other than statistics who have no previous statistics training. May not be taken by graduate students in statistics.

STAT 6197. Fundamentals of SAS Programming for Data Management. 3 Credits.
Fundamentals of Statistical Analysis System (SAS) software for data management, statistical analysis, and report writing. Data modification, programming, file handling, and macro writing. Recommended background: An introductory statistics course and knowledge of computer programming.

STAT 6201. Mathematical Statistics I. 3 Credits.
Probability, distribution theory, sampling theory, estimation, sufficient statistics, hypothesis testing, analysis of variance, multivariate normal distribution. Prerequisite: MATH 2233, MATH 2184.

STAT 6202. Mathematical Statistics II. 3 Credits.
Continuation of STAT 6201. Probability, distribution theory, sampling theory, estimation, sufficient statistics, hypothesis testing, analysis of variance, multivariate normal distribution. Prerequisite: MATH 2233, MATH 2184.

STAT 6207. Methods of Statistical Computing I. 3 Credits.
Error analysis, computational aspects of linear models, sweep operator, random number generation, simulation, resampling. Optimization, numerical integration (Gaussian quadrature, Simpson's rule); E–M algorithm. Prerequisite: STAT 2118, STAT 4157– STAT 4158; MATH 2184; knowledge of a programming language.

STAT 6208. Methods of Statistical Computing II. 3 Credits.
Numerical linear algebra, matrix decomposition and eigenvalue problems. Smoothing and density estimation. Graphics, interactive and dynamic techniques for data display. Object-oriented programming. Prerequisite: STAT 2118, STAT 4157– STAT 4158; MATH 2184; knowledge of a programming language.

STAT 6210. Data Analysis. 3 Credits.
Review of statistical principles of data analysis, using computerized statistical procedures. Multiple regression and the general linear model, analysis of contingency tables and categorical data, logistic regression for qualitative responses. Prerequisite: STAT 2118, STAT 4157 or STAT 6201, and STAT 2183 .

STAT 6213. Intermediate Probability and Stochastic Processes. 3 Credits.
Discrete and continuous random variables and their distributions, conditional distributions and conditional expectation, generating functions and their applications, convergence of random variables; introduction to Brownian motion, homogeneous and nonhomogeneous Poisson processes and martingales. Prerequisite: STAT 6201– STAT 6202 .

STAT 6214. Applied Linear Models. 3 Credits.
Introduction to regression techniques for discrete and continuous response variables. The course includes a computing component using SAS and S> Prerequisite: MATH 2233 and MATH 2184.

STAT 6215. Applied Multivariate Analysis I. 3 Credits.
Application of multivariate statistical techniques to multidimensional research data from the behavioral, social, biological, medical, and physical sciences. Prerequisite: STAT 3119, STAT 4157– STAT 4158; MATH 2184.

STAT 6216. Applied Multivariate Analysis II. 3 Credits.
Continuation of STAT 6215. Application of multivariate statistical techniques to multidimensional research data from the behavioral, social, biological, medical, and physical sciences. Prerequisite: STAT 3119, STAT 4157– STAT 4158; MATH 2184.

STAT 6217. Design of Experiments. 3 Credits.
Design and analysis of single- and multiple-factor experiments. Includes block designs, repeated measures, factorial and fractional factorial experiments, response surface experimentation. Prerequisite: STAT 4157–STAT 4158; MATH 2184.

STAT 6218. Linear Models. 3 Credits.
Theory of the general linear parametric model. Includes least squares estimation, multiple comparisons procedures, variance components estimation. Prerequisite: STAT 6201– STAT 6202; MATH 2184.

STAT 6221. Design of Experiments for Behavioral Sciences. 3 Credits.
Applications of advanced experimental design to research problems in behavioral sciences and education. Prerequisite: STAT 2105 or STAT 2118 and permission of instructor. Not open to graduate students in statistics.

STAT 6223. Bayesian Statistics: Theory and Applications. 3 Credits.
An overview of Bayesian statistics, including its foundational issues, decision under uncertainty, linear models, expert opinion, and computational issues. Prerequisite: STAT 6201–STAT 6202.

STAT 6227. Survival Analysis. 3 Credits.
Parametric and nonparametric methods for the analysis of events observed in time (survival data), including Kaplan–Meier estimate of survival functions, logrank and generalized Wilcoxon tests, the Cox proportional hazards model and an introduction to counting processes. Prerequisite: STAT 6201–STAT 6202 or permission of instructor.

STAT 6231. Contingency Table Analysis. 3 Credits.
A study of the theoretical bases underlying the analysis of categorical data. Measures and tests of association; Mantel-Haenszel procedure; weighted least squares and maximum likelihood estimators in linear models; estimating equations; logistic regression; loglinear models. Prerequisite: STAT 6201–STAT 6202.

STAT 6233. Questionnaire Design. 3 Credits.
Questionnaire development from the perspective of cognitive techniques. Questionnaire issues range from choosing the mode of data collection (mail, telephone, or in-person) to selecting the respondent to the differences between asking attitude and factual questions. Pretesting the instrument chosen.

STAT 6234. Intermediate Statistical Laboratory: Statistical Computing Packages. 3 Credits.
Application of program packages (e.g., SAS, SPSS) to the solution of one-, two- and k-sample parametric and nonparametric statistical problems. Basic concepts in data preparation, modification, analysis and interpretation of results. Prerequisite: an introductory statistics course.

STAT 6236. Applied Sampling Techniques. 3 Credits.
Problems of sampling and sample design. Simple random, stratified, systematic, cluster, and multistate designs; control of sampling and non-sampling errors. Prerequisite: STAT 1051.

STAT 6238. Survey Management. 3 Credits.
Tools used in the management of a survey operation from the initial customer contacts through training, fieldwork, data processing, data analysis, report writing, and presentation of results. Issues in budgeting, staffing, and scheduling, with emphasis on quality management.

STAT 6242. Regression Graphics/Nonparametric Regression. 3 Credits.
Linear regression, nonparametric regression, smoothing techniques, additive models, regression trees, neural networks, and dimension reduction methods. Prerequisite: STAT 2118; MATH 2233, MATH 2184.

STAT 6251. Risk and Reliability. 3 Credits.

STAT 6252. Statistical Methods in Bioinformatics and Computational Biology. 3 Credits.

STAT 6253. Legal Statistics. 3 Credits.

STAT 6254. Statistical Genetics. 3 Credits.

STAT 6282. Foundational Issues in Risk Analysis. 3 Credits.
Descriptive statistics, classical probability, Venn diagrams, conditional probability, Bayes' law and law of total probability. Independence and interdependence, discrete and continuous random variables. Probability models, correlation, interpretation of probability (physical, logical, personal, and subjective). The likelihood function and personal probability. Statistical inference (frequentist and Bayesian).

STAT 6283. Essentials of Risk Analysis. 3 Credits.
Utility and risk. The psychology of risk. Decision trees and decision making under uncertainty. Fault and event trees. Decision trees in risk, safety analysis, infrastructure protection. Simulating rare events. The failure rate functions. The cumulative hazard and survival function. Univariate and multivariate failure models. Causal, cascading, and interdependent failure events. Graphical analysis. Network survivability assessments.

STAT 6284. 9/11 Case Studies. 3 Credits.
Focus on 9/11-like risks to U.S. Critical Infrastructure Key Resources (CIKR). Critical overview of many approaches used in estimating risk in the CIKR arena. Real-time statistical and computer risk modeling. Topics include 18 CIKR sectors, basic risk models for CIKR assets, risk of complex targets and systems, and current state of practice.

STAT 6285. Case Studies: Environmental, Health, and Financial Risk. 3 Credits.
Risks encountered in financial markets, sustainability and climate change, and drug safety and health delivery systems. Development of models and reliable tools for optimal decision-making.

STAT 6287. Modern Theory of Sample Surveys. 3 Credits.
Application of statistical theory to the sampling of finite populations. Simple, stratified, cluster, double and subsampling. Special topics, including super-populations and randomized response. Prerequisite: STAT 4157– STAT 4158 .

STAT 6289. Topics in Statistics. 3 Credits.

STAT 6290. Principles of Demography. 3 Credits.
Introduction to basic demographic perspectives and data; methods for analysis of population size, distribution, and composition; determinants and consequences of population trends. Departmental prerequisite waived. Same as ECON 6290.

STAT 6291. Methods of Demographic Analysis. 3 Credits.
Basic methods for analysis of mortality, natality, and migration; population estimates and projections; estimation of demographic measures from incomplete data. Departmental prerequisite waived. Same as ECON 6291.

STAT 6295. Reading and Research. 3 Credits.
May be repeated once for credit.

STAT 6298. Seminar: Special Topics. 3 Credits.

STAT 6998. Thesis Research. 3 Credits.

STAT 6999. Thesis Research. 3 Credits.

STAT 8226. Advanced Biostatistical Methods. 3 Credits.
Statistical methods for the analysis of longitudinal data: nonparametric, fixed effects, mixed effects, generalized estimating equations. Methods for the analysis of emerging data: group sequential analysis, Brownian motion, Bayesian methods, and stochastic curtailment. Other advanced topics of current research in biostatistics. Prerequisite: STAT 6201–STAT 6202 or permission of instructor.

STAT 8257. Probability. 3 Credits.
Probabilistic foundations of statistics, probability distributions, random variables, moments, characteristic functions, modes of convergence, limit theorems, probability bounds. Prerequisite: STAT 6201– STAT 6202, knowledge of calculus through functions of several variables and series.

STAT 8258. Distribution Theory. 3 Credits.
Special distributions of statistics, small and large sample theory, order statistics, and spacings. Prerequisite: STAT 8257.

STAT 8259. Advanced Probability. 3 Credits.
Conditional expectation and martingales; weak convergence in general metric spaces and functional central limit theorems for i.i.d. random variables and martingales; applications to biostatistics. Prerequisite: STAT 8257 or an equivalent measure-theoretic introduction to probability.

STAT 8262. Nonparametric Inference. 3 Credits.
Inference when the form of the underlying distribution is unspecified. Prerequisite: STAT 6201– STAT 6202.

STAT 8263. Advanced Statistical Theory I. 3 Credits.
Decision theoretic estimation, classical point estimation, hypothesis testing. Prerequisite: STAT 6201– STAT 6202.

STAT 8264. Advanced Statistical Theory II. 3 Credits.
Asymptotic theory, hypothesis testing, confidence regions. Prerequisite: STAT 8257, STAT 8263.

STAT 8265. Multivariate Analysis. 3 Credits.
Multivariate normal distribution. Hotelling's T2 and generalized T20, Wishart distribution, discrimination and classification. Prerequisite: STAT 6201– STAT 6202.

STAT 8266. Topics-Multivariate Analysis. 3 Credits.

STAT 8271. Foundational and Philosophical Issues in Statistics. 3 Credits.
Axiomatic underpinnings of Bayesian statistics, including subjective probability, belief, utility, decision and games, likelihood principle, and stopping rules. Examples from legal, forensic, biological, and engineering sciences. Students are expected to have a background in computer science, economics, mathematics, or operations research. Prerequisite: STAT 6201– STAT 6202.

STAT 8273. Stochastic Processes I. 3 Credits.
Fundamental notions of Markov chains and processes, generating functions, recurrence, limit theorems, random walks, Poisson processes, birth and death processes, applications. Prerequisite: STAT 6201– STAT 6202.

STAT 8274. Stochastic Processes II. 3 Credits.
Continuation of STAT 8273. Fundamental notions of Markov chains and processes, generating functions, recurrence, limit theorems, random walks, Poisson processes, birth and death processes, applications. Prerequisites: STAT 6201– STAT 6202.

STAT 8281. Advanced Time Series Analysis. 3 Credits.
Autoregressive integrated moving average (ARIMA) modeling and forecasting of univariate and multivariate time series. Statespace or Kalman filter models, spectral analysis of multiple time series. Theory and applications using the University computer. Prerequisite: MATH 2233, STAT 6201– STAT 6202 .

STAT 8288. Modern Theory/Sample Surveys. 3 Credits.

STAT 8289. Seminar. 3 Credits.
Admission by permission of instructor.

STAT 8375. Econometrics I. 3 Credits.
Statistical foundations for econometrics; standard methods of estimation and inference for classical and generalized regression models. Same as ECON 8375.

STAT 8376. Econometrics II. 3 Credits.
Topics may include asymptotic theory, statistical endogeneity, instrumental variables estimation, discrete and limited dependent variable models, and time-series models. Same as ECON 8376. Prerequisite: STAT 8375.

STAT 8998. Advanced Reading and Research. 1-12 Credits.
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

STAT 8999. Dissertation Research. 3-12 Credits.
Limited to Doctor of Philosophy candidates. May be repeated for credit.

STRATEGIC MANAGEMENT AND PUBLIC POLICY (SMPP)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SMPP 4900. Special Topics. 1-3 Credits.
Experimental offering; new course topics and teaching methods.

SMPP 4900W. Special Topics. 3 Credits.
Topics vary by semester. May be repeated for credit provided topics differ. Consult the Schedule of Classes for more details.

SMPP 4995. Independent Study. 1-12 Credits.
Assigned topics. Admission by prior permission of advisor. May be repeated once for credit.

SMPP 6201. Business and Public Policy. 3 Credits.

SMPP 6202. Business-Government Relations. 3 Credits.
Historical and philosophical foundations of the business–government relationship. Regulation, international trade, and corporate political activities. Public policy issues facing business and the business community's political response. Prerequisite: MBAD 6284 .

SMPP 6203. Fed Gov't Regulation-Society. 3 Credits.

SMPP 6205. Business Representation and Lobbying. 3 Credits.
Strategies, tactics, and techniques used by business in representing itself to the legislative and executive branches and regulatory agencies of the federal government. Legal and practical constraints. Ethical considerations.

SMPP 6206. Applied Microeconomics. 3 Credits.
Applications of economic theory to public and private decisions with emphasis on public policy analysis. Focus on market structure and its implications. Imperfect information, common property, public goods and externalities. Economic analysis of government behavior and legal institutions. Prerequisite: ECON 6217 or ECON 6219 and MBAD 6222 .

SMPP 6207. Environment, Energy, Technology, and Society. 3 Credits.
The identification, examination, and evaluation of how environment, energy, and technology are interrelated and how these interactions influence policy formulation and implementation at the international, national, regional, industrial, and organizational levels. Same as PPPA 6067.

SMPP 6208. Macroeconomic Policy and Business. 3 Credits.
Determination of national income, employment, inflation, and interest rates. The role of expectations in the economy. Impact of government purchases, tax policy, and deficits. Monetary policy institutions. The global economy and exchange rates. Prerequisite: ECON 6218 or 6219 and MBAD 6222.

SMPP 6209. Seminar: Business Economics and Public Policy. 3 Credits.
Analysis and discussion of selected issues by students and representatives of government and business. Prerequisite: SMPP 6202 or MBAD 6284.

SMPP 6210. Strategic Environmental Management. 3 Credits.
Examination and analysis of the orientation and actions of private, public, and nonprofit sectors in relation to their natural environments. Emphasis on organizational interaction and effectiveness, particularly regarding business firms and industry, on issues of environmental quality and sustainability.

SMPP 6211. Corp. Env. Mg. in Dev. Nations. 3 Credits.

SMPP 6212. Business Law: Enterprise Org. 3 Credits.

SMPP 6213. Management of Strategic Issues. 3 Credits.
The body of management theory and practice that has evolved to identify, analyze, and resolve strategic organizational issues. Methodology of the field; applications to critical issues in labor relations, energy and pollution, marketing and consumerism, business–government relations, and the global economy.

SMPP 6214. Consultative Processes. 3 Credits.
Theories and methods of planning, introducing, and coping with change in management through the helping process. Intended both for managers seeking an understanding of the consultative approach to planned change and for persons in staff or consultative roles seeking understanding of the consultative process. Same as MGT 6214/ TSTD 6214.

SMPP 6215. Corporate Governance and Ethics. 3 Credits.
The theory, practice, and public policy environment of corporate governance. Purpose, functioning, and responsibilities of boards of directors. Power, control, and compensation of corporate management. Shareholders and stakeholders. Corporate governance in comparative national settings. Same as ACCY 6801.

SMPP 6216. Public Policy, Governance, and the Global Market. 3 Credits.
The socioeconomic foundations of government regulation and public policy cooperation for the governance of firms, markets and globalization. The evolution of national, transatlantic and multilaterial frameworks for market and civil society governance, international competition policy cooperation, regulatory harmonization and industry standards. (Same as PPPA 6018).

SMPP 6217. Strategy and International Political Economy. 3 Credits.
Case-based study of the interactions of firms within their broader business environment; how firms pursue an integrated approach to strategic management by combining elements of non-market strategy and concepts from traditional market strategy.

SMPP 6241. GlobalCorporateResponsibility. 3 Credits.

SMPP 6271. Corporate Envir Mgmt & Policy. 1.5 Credit.

SMPP 6290. Special Topics. 1-3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated once for credit.

SMPP 6291. Ethics and Business. 3 Credits.
An in-depth, comprehensive exploration, analysis, and evaluation of specific for profit and non-profit organization values, approaches, and outcomes related to multiple ethical ideals, systems, and practices.

SMPP 6292. Co-Curricular Activities in Responsible Management. 0 Credits.
This 0-credit course is required for students taking the Graduate Certificate in Responsible Management. The three components include completing a project or case study with an organization or faculty member related to the CRM mission; attending a series of seminars, panel discussions, or other pre-approved events relating to responsible management and submitting written reports; and completing designated community service hours. Restricted to GWSB Graduate Students Admitted to the Graduate Certificate in Responsible Management.

SMPP 6293. American Business History. 3 Credits.
The history of American business institutions in manufacturing, distribution, transportation, and finance. Particular attention will be given to the period since industrialization, with consideration of business institutions in their economic, legal, governmental, and social contexts. Same as HIST 6322.

SMPP 6295. Interm Qual&Quant Analysis. 3 Credits.

SMPP 6297. International Management Experience. 3-6 Credits.
Same as FINA 6297/ IBUS6297/ MGT 6297/ MKTG 6297. May be repeated for credit.

SMPP 6298. Directed Readings and Research. 1-6 Credits.
Supervised readings or research. Admission by prior permission of instructor. May be repeated once for credit.

SMPP 6299. Thesis Seminar. 3 Credits.

SMPP 6999. Thesis Research. 3 Credits.

SMPP 8311. Seminar: PublicÝPrivate Sector Institutions and Relationships. 3 Credits.
An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Same as PPPA 8111. Prerequisite: doctoral degree candidate status.

SMPP 8321. Seminar in Strategic Management. 3 Credits.
Develops understanding of the major research streams in strategic management; exposure to theoretical research frameworks and methodological issues and approaches.

SMPP 8331. Seminar in Business and Public Policy. 3 Credits.
Develops understanding of the major research streams in business and public policy; exposure to theoretical research frameworks and methodological issues and approaches.

SMPP 8391. Seminar:Business Management. 3 Credits.
Examination of major current issues, both theoretical and empirical, affecting the development of the business enterprise. Topics to be announced. Emphasis on policy and strategic issues affecting the total enterprise. (Offered as the demand warrants).

SMPP 8998. Advanced Readings and Research. 1-12 Credits.
Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

SMPP 8999. Dissertation Research. 1-12 Credits.
Limited to doctoral candidates. May be repeated for credit.

SUSTAINABILITY (SUST)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SUST 1001. Introduction to Sustainability. 3 Credits.
The concept of sustainability is both broad and specific as it is applied to areas ranging from social systems to law, engineering, public health, and natural systems. The course considers goals, principles, and practical applications, with a multidisciplinary perspective on major environmental and social issues growing out of these concerns.

SUST 2002. The Sustainable City. 3 Credits.
This course will explore the connection between cities and sustainability. We consider sustainability from a variety of theoretical and practical perspectives and examine some of the most pressing and critical issues that must be addressed in order to create a sustainable city.

SUST 2003. The Sustainable Plate. 3 Credits.
The course will focus on how our dietary choices affect not only our health but the environment and those involved in the production of food. In this class we will explore the sustainable plate– how does dinner affect the future of the environment, economy, and society– from an interdisciplinary perspective.

SUST 3002. Climate Change and Policy. 3 Credits.
Climate change from an interdisciplinary perspective. Mitigation, adaptation, and intervention from the perspectives of public policy, economics, psychology, and public health. Climate modeling, green infrastructure, carbon capture and storage, climate justice, and international and multilateral environmental agreements. Recommended background: SUST 1001.

SUST 3095. Sustainability Fieldwork. 0-3 Credits.
Research in the field that might include such efforts as wildlife management, pollution evaluation, or surveys. Students complete a series of reflection essays throughout the semester.

SUST 3096. Research in Sustainability. 1-3 Credits.
Directed research with a GW faculty member or in a study abroad experience that might include laboratory research, archival work, or literature reviews. The faculty member directing the research will assign additional work, such as papers and assigned reading, as appropriate.

SUST 3097. Culminating Experience in Sustainability. 1-3 Credits.
A paid or unpaid internship, directed research, or community service with an organization engaged in one or more of the three major goals of sustainability: economic development, social equality, or environmental protection. Students complete a series of reflection essays and other assignments throughout the semester. Prerequisite: SUST 1001.

SUST 3098. Community Service in SUST. 0-3 Credits.
Volunteer service with a nonprofit organization or federal agency working to implement sustainability or sustainability policy. Students complete a series of reflection essays and other assignments throughout the semester. Prerequisites: SUST 1001 and by permission of instructor.

TEACHER EDUCATION (TRED)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

TRED 6365. Persp & Res in Teach Comp Sci. 3 Credits.

THEATRE AND DANCE (TRDA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

TRDA 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

TRDA 1015. Understanding the Dance. 3 Credits.
The art of dance—a lecture and experiential approach to its cultural importance, history, and creative processes. The contributions of the choreographer and dancer to society. Attendance at performances and presentations, and viewing video. Laboratory fee.

TRDA 1020. Women and the Creative Process. 3 Credits.
Consideration of questions of aesthetics and creativity through the study of art produced by women since the mid-20th century. The creation, meaning, and impact of work across the fields of visual art, dance, theatre, and music.

TRDA 1025. Understanding the Theatre. 3 Credits.
The art of the theatre; its literature, history, aesthetics, and mechanics. Contributions of the playwright, actor, director, and designer. Attendance at assigned theatrical performances.

TRDA 1035. Theatre Production. 3 Credits.
Understanding of the basic elements of theatrical production (performance, technical and management) and the collaborative artist/artisan process through discussion, observation, and practical application. Laboratory fee.

TRDA 1151. Beginning/Intermediate Ballet. 1 Credit.
Introduction to modern dance technique inclusive of basic concepts of dynamic alignment, stretch, strength, improvisation and musicality. Laboratory fee.

TRDA 1152. Beginning Modern/Postmodern Dance. 1 Credit.
Introduction to modern dance technique inclusive of basic concepts of dynamic alignment, stretch, strength, improvisation and musicality. Laboratory fee.

TRDA 1153. Beginning/Intermediate Modern/Postmodern Dance. 1 Credit.
Introduction to modern dance technique inclusive of basic concepts of dynamic alignment, stretch, strength, improvisation and musicality. Laboratory fee.

TRDA 1170. Intermediate Modern/Postmodern Dance I. 2-3 Credits.
Recommended for students with previous dance experience in jazz, ballet, hip hop, modern, or other styles. May be repeated for credit. Laboratory fee.

TRDA 1171. Intermediate Modern/Postmodern Dance II. 2-3 Credits.
Continuation of TRDA 1170. Recommended for students with previous dance experience in jazz, ballet, hip hop, modern, or other styles. May be repeated for credit. Prerequisite: TRDA 1170, or permission of instructor. Laboratory fee.

TRDA 1214. Beginning Acting. 3 Credits.
An introduction to the process of acting. Students will learn to make choices using various acting techniques to create characters and learn about the process.

TRDA 1240. Performance Theory. 3 Credits.
Examination of the ways in which the practices and heuristics of performance have been used to understand a wide range of cultural activities; expansion of the notion of aesthetic performance proper to include sources, subjects, and forms historically considered non-dramatic; and underlying questions concerning what performance is, what it does, and what value it holds.

TRDA 1330. Basics of Production Design. 3 Credits.
Basic elements of production design and technical execution. Laboratory required. Laboratory fee.

TRDA 2160. Intermediate Ballet II. 2-3 Credits.
May be repeated for credit. Prerequisite: TRDA 1151, or permission of instructor. Laboratory fee.

TRDA 2172. Intermediate/Advanced Modern/Postmodern Dance I. 2-3 Credits.
May be repeated for credit. Prerequisite: TRDA 1171, or permission of instructor. Laboratory fee.

TRDA 2173. Intermediate/Advanced Modern/Postmodern Dance II. 2-3 Credits.
Continuation of TRDA 2172. May be repeated for credit. Prerequisite: TRDA 2172, or permission of instructor. Laboratory fee.

TRDA 2179. Contact Improvisation. 2 Credits.
A movement form that arises from the point of contact between partners who explore gravity, space, and timing in the spontaneous moment-to-moment exchange of the dance. Exploring the improvisational state of body/mind through the use of imagery, tuning the senses, mindfulness practices, and play. Laboratory fee.

TRDA 2180. Movement Improvisation/Perform. 3 Credits.
Exploring the body and its surroundings in movement, use of language, narrative, environments and contexts for creative expression, developing event and performance structures from improvisation. May be repeated for credit. Laboratory fee.

TRDA 2185. Trends in Performance. 3 Credits.
Study of the theory and practice of contemporary performance art movements and artists; political and artistic activism; scripting and scoring to create performance works based on a single art discipline or interdisciplinary arts. Laboratory fee.

TRDA 2188. African Dance. 1 Credit.
African/Caribbean dance styles and techniques, with warm-ups and center floor work of long and short movement phrases. Basic/modern/jazz terminology and definitions appropriate to intermediate/advanced/African dance are used. Emphasis on alignment, execution, musical phrasing, and the importance of rhythmic timing and nuance.

TRDA 2189. World Dance. 3 Credits.

TRDA 2190. Gender/Indian Classical Dance. 3 Credits.

TRDA 2191. Dance History. 3 Credits.
The history of Western theatrical dance from the late 18th century to the present. The major choreographers and their dance works through readings, lectures, video, and discussion.

TRDA 2191W. Dance History. 3 Credits.
The history of Western theatrical dance from the late 18th century to the present. The major choreographers and their dance works through readings, lectures, video, and discussion.

TRDA 2192. Repertory/Performance. 1,2 Credit.
Participation in the processes of learning and performing dance repertory or new dance works. Audition required. Laboratory required. May be repeated for credit. Laboratory fee.

TRDA 2193. Dance Styles I. 1-12 Credits.
Forms of theatrical dance other than ballet or modern, including African dance, Angola Capoeira, music theatre, Spanish dance, world dance, Middle Eastern dance, and others. May be repeated for credit provided the topic differs. Laboratory fee.

TRDA 2194. Dance Styles II. 1-12 Credits.
Continuation of TRDA 2193. Forms of theatrical dance other than ballet or modern, including African dance, Angola Capoeira, music theatre, Spanish dance, world dance, Middle Eastern dance, and others. May be repeated for credit provided the topic differs. Laboratory fee.

TRDA 2195. Global Dance History. 3 Credits.
The role of dance globally in relation to socio-cultural and artistic histories. Importance of certain artists and dance forms contextualized by major world events as seen through the geography of immigration. Perspectives from the Americas, Africa, the Middle East, and Asia.

TRDA 2215. Intermediate Acting. 3 Credits.
Students continue to develop acting techniques introduced in TRDA 1214 through scripted scene work. Students learn to make choices through text exploration, use various acting techniques to create characters and develop clear character relationships, and stage completed scenes. Prerequisites: TRDA 1214 or HONR 2059.

TRDA 2216. Scene Study: Voice & Character. 3 Credits.
The practice and application of voice production with reference to skeletal alignment, breathing, resonance, and articulation. Emphasis on the process of voice production and its application to performance through work on scenes and monologues. Prerequisite: TRDA 2215. Laboratory fee.

TRDA 2240. Play Analysis. 3 Credits.
Traditional and nontraditional (Aristotelian and non-Aristotelian) approaches to the analysis of dramatic literature; literary and theatrical techniques used by playwrights. Same as ENGL 2240.

TRDA 2250. Dramatic Writing. 3 Credits.
A workshop in playwriting and screenwriting, with emphasis on dramatic structure. Same as ENGL 2250. Recommended preparation: Engl 1210 and two semesters of literature courses.

TRDA 2339. Theatre Practicum. 1 Credit.
Participation in department mainstage productions in a production or management capacity under the supervision of a member of the faculty. Prerequisite: TRDA 1330. After two practicums have been completed, participation may also include performance positions, for which TRDA 1214 is prerequisite. May be repeated for a total of 6 credits. Laboratory fee.

TRDA 3131W. Theatre of Social Change. 3 Credits.
Focuses on theatre of social change as practiced in the second half of the 20th and in the early 21st centuries; exploring additional case studies from South Africa, Europe, and the US.

TRDA 3156. Dance & Arts Management. 3 Credits.
Examination of dance in Washington area communities. Students are required to site visit and engage with individuals and organizations that focus on dance as it pertains to performance, therapy, management, and education. Participation in activities with a dance artist/practitioner or with a producing/service organization is required. Laboratory fee.

TRDA 3174. Advanced Modern/Postmodern Dance I. 2-3 Credits.
May be repeated for credit. Prerequisite: TRDA 2173, or permission of instructor. Laboratory fee.

TRDA 3175. Advanced Modern/Postmodern Dance II. 2-3 Credits.
Continuation of TRDA 3174. May be repeated for credit. Prerequisite: TRDA 3174, or permission of instructor. Laboratory fee.

TRDA 3182. Dance Composition I. 3 Credits.
Problems in structural and conceptual aspects of constructing dances and shaping and forming movement materials. Prerequisite: TRDA 2180; recommended: TRDA 2185. Laboratory fee.

TRDA 3183. Dance Composition II. 3 Credits.
Continuation of TRDA 3182. Emphasis on intention and content in making dances. Prerequisite: TRDA 2180; recommended: TRDA 2185. Laboratory fee.

TRDA 3186. Dance Anatomy & Kinesiology. 3 Credits.
An experiential and theoretical approach to dynamic anatomy and kinesiology as they pertain to the dancer. The student is encouraged to reach full movement potential in relation to contemporary dance techniques, performance, and injury prevention. Laboratory fee.

TRDA 3222. Topics in Advanced Acting. 3 Credits.
The actor's approach to various styles and genres and to non-literary theatrical forms. Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Studio fee. Prerequisite: TRDA 2215.

TRDA 3223. Physical Performance Skills. 3 Credits.
Introduction to a variety of techniques needed by actors and performers, including mime, clowning, slapstick, mask work, and basic stage combat skills. Prerequisite: TRDA 2215. Laboratory fee.

TRDA 3229. Audition Techniques. 3 Credits.
All aspects of the audition process, including selection and rehearsal of audition monologues and handling of cold reading. Laboratory fee. Prerequisite: TRDA 2215.

TRDA 3240. Introduction to Dramaturgy. 3 Credits.
Fundamentals of classical and contemporary dramaturgical practice, including analyzing plays, doing research, supporting directors and actors in rehearsal, writing program notes, and leading post-show discussions. Same as ENGL 3240.

TRDA 3245. History of the Theatre I. 3 Credits.
A dramaturg's approach to case studies of theatre in historical context. Ancient Greece through the 17th century.

TRDA 3245W. History of the Theatre I. 3 Credits.
A dramaturg's approach to case studies of theatre in historical context. Ancient Greece through the 17th century.

TRDA 3246. History of the Theatre II. 3 Credits.
Continuation of TRDA 3245. A dramaturg's approach to case studies of theatre in historical context. The 18th century through the present.

TRDA 3246W. History of the Theatre II. 3 Credits.
Continuation of TRDA 3245. A dramaturg's approach to case studies of theatre in historical context. The 18th century through the present.

TRDA 3248. Theatre Criticism. 3 Credits.
Discussion and witnessing of plays in performance, resulting in written criticism modeled on contemporary journalistic practices. Prerequisite: TRDA 3245 or TRDA 3246 or TRDA 2240/ ENGL 2240. Laboratory fee.

TRDA 3248W. Theatre Criticism. 3 Credits.
Discussion and witnessing of plays in performance, resulting in written criticism modeled on contemporary journalistic practices. Prerequisite: TRDA 3245 or TRDA 3246 or TRDA 2240/ ENGL 2240. Laboratory fee.

TRDA 3250. Intermediate Dramatic Writing. 3 Credits.
A workshop developing scripts for both theatre and film. Same as ENGL 3250. Prerequisite: ENGL 2250 or equivalent. May be repeated for credit with departmental approval.

TRDA 3331. Introduction to Lighting. 3 Credits.
Theories and practical application of lighting for theatre and dance. Laboratory fee. Prerequisite: TRDA 1330.

TRDA 3332. Theatrical Makeup Design. 3 Credits.
Theory and practice in the art of stage makeup design, including latex and crepe hair. Materials fee. Prerequisite: TRDA 1330.

TRDA 3333. Stage Management. 3 Credits.
The role and function of the stage manager in theatrical production. The basic skills needed to begin work in stage management. Emphasis on organization, documentation, and dissemination of information. Prerequisite: TRDA 1330. Laboratory fee.

TRDA 3334. Introduction to Audio Design. 3 Credits.
The basic elements of audio design and production through discussion, observation, and practical application. Laboratory required. Laboratory fee. Prerequisites: TRDA 1330.

TRDA 3335. Introduction to Scene Design. 3 Credits.
Fundamental study of scenic design, including historic overview, basic draw-ing, and rendering techniques, through the use of various mediums and script analysis. Laboratory fee. Prerequisite: TRDA 1330.

TRDA 3336. Introduction to Costuming. 3 Credits.
History of fashion in Western civilization from ancient Greece to the 20th century. Fundamental study of costume construction through specific projects. Costume construction. Prerequisite: TRDA 1330. Laboratory fee.

TRDA 3710W. Contemporary Drama. 3 Credits.

TRDA 4184. Choreography and Performance. 1-3 Credits.
Create a dance or a performance work of individual design, including casting, rehearsal procedures, staging aspects, and public presentation. Prerequisite: TRDA 3182; recommended: TRDA 1330, TRDA 2185. May be repeated for credit. Laboratory fee.

TRDA 4191. Paris Modernism & the Arts. 3 Credits.

TRDA 4204. Personal Aesthetics II: The Environment. 3 Credits.
This course fosters individual investigation of movement research and studio practice in order to develop an individual dance aesthetic.TRDA 6204 Personal Aesthetics – Environment (2-3) engages the artist/student in creative activities general related to alternative spaces and events related to "live" art, performance art, dance and related arts with less formal production/presentation elements. Prerequisites: M.F.A. candidacy or permission of instructor. (Same as TRDA 6204).

TRDA 4275. Directing for the Theatre. 3 Credits.
Fundamentals of script analysis, staging, casting, and rehearsal techniques. Prerequisite: TRDA 1214, TRDA 1330; TRDA 2240/ ENGL 2240 or TRDA 3240/ ENGL 3240. Laboratory fee.

TRDA 4338. Scene Painting. 3 Credits.
The techniques and materials used in creating character in the various elements of set design. Methods include set preparation, coating, mixing, palette preparation, spraying, transfer, texturing, finishing, and wallpapering. Prerequisite: TRDA 1330. Laboratory fee.

TRDA 4595. Selected Topics. 1-3 Credits.
Topics of current interest in theatre or dance. Topics (and course fee, when charged) announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

TRDA 4595W. Selected Topics. 1-3 Credits.
Topics of current interest in theatre or dance. Topics (and course fee, when charged) announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Laboratory fee.

TRDA 4596. Independent Study. 1-6 Credits.
Independent research and special projects. Open to qualified juniors or seniors majoring or minoring in theatre or dance. Before students are permitted to register for TRDA 4596, they must submit a written proposal of the plan of study and obtain approval of the faculty member who is directing the study and the department chair.

TRDA 4597. Senior Project. 3 Credits.
A capstone project related to the student's particular concentration. The project may be in the form of a performance, theoretical or realized design for the theatre, directorial project, playscript, stage management experience, dramaturgical project, choregraphic project, or other approved area. Restricted to TRDA majors with senior standing.

TRDA 4598. Internship. 3,6 Credits.
Open to qualified seniors majoring or minoring in theatre or dance. Work placements with not-for-profit and commercial theatre and dance organizations for an approved number of hours per week. Admission requires departmental approval. May be taken for a maximum of 6 credits.

TRDA 4599. Honors Thesis. 3 Credits.
Directed research and/or creative project. Open to qualified seniors by permission. Arrangements must be made with a sponsoring faculty member in the department and applications must be completed early in the second semester of the junior year.

TRDA 6200. Portfolio I:Performance. 1-5 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6201. Personal Aesthetics I: The Body. 5 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6202. Contemporary Dance History and Criticism. 4 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6203. Portfolio II: Choreography/Creativity. 1-5 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6204. Personal Aesthetics II: The Environment. 2 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6205. Choreography. 4 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6206. Dance Pedagogy. 4 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6207. Portfolio III: Artistic Initiative. 1-5 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6208. New Media & Dance. 5 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6209. Cultural Communities of Dance. 4 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6210. Personal Aesthetics III: Integration. 4 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6211. Career Networks in Dance. 4 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6212. Portfolio Review I: Performance. 1-5 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6213. Portfolio Review II: Choreography/Creativity. 1-5 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6214. Portfolio Review III: Artistic Initiatives. 1-5 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6296. Research Project I. 4 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6299. Research Project II. 5 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6331. Intermediate Lighting Design. 3 Credits.
Theory and execution of lighting design for theatre and dance. May be repeated for credit. Laboratory fee. Restricted to MFA candidates; permission of the instructor may be substituted.

TRDA 6335. Intermediate Scene Design. 3 Credits.
Development of advanced skills of scenic design, including script analysis, needs assessment, research techniques, conceptual design development, drawing and rendering techniques, preparation of construction documentation and fabrication management. Laboratory fee. Restricted to MFA candidates except by permission of the instructor.

TRDA 6336. Intermediate Costume. 3 Credits.
Basic techniques of costume design through specific projects. Various rendering techniques consistent with the historical period concerned. Laboratory fee. Restricted to MFA candidates; permission of the instructor may be substituted.

TRDA 6338. Scene Painting. 3 Credits.
Development the painting skills needed for the reproductive craft of theatrical painting. Restricted to MFA candidacy or permission of instructor.

TRDA 6340. Period Styles. 3 Credits.
A broad perspective of major European and American cultures through analysis of the interiors, furniture, textiles, fashion, and architecture of major civilizations and historical periods from Egypt to the present. Laboratory fee. Restricted to MFA candidates except by permission of the instructor.

TRDA 6342. Pattern Making. 3 Credits.
Pattern drafting and draping methods based on contemporary and historical clothing. Laboratory fee. Restricted to MFA candidacy or permission of instructor.

TRDA 6344. Production Drafting. 3 Credits.
Development of drafting skills for production. Ground plans and shop documents. Traditional hand drafting and computer assisted design. Laboratory fee. Restricted to MFA candidacy or permission of instructor.

TRDA 6346. Advanced Studies in Design: Collaborative Studies. 3 Credits.
Development of the skills needed to design and work within a collaborative or team-based environment through visual and verbal communication, script analysis, concept development, and research techniques. Laboratory fee. Restricted to MFA candidates or instructor's permission.

TRDA 6348. Techniques in Design Presentation. 3 Credits.
The various techniques used in costume and scenic design presentations, such as rendering with paint, pencil, ink, and electronic media. Restricted to MFA candidates; permission of instructor may be substituted.

TRDA 6595. Selected Topics. 1-3 Credits.
Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details. Restricted to MFA candidates; permission of instructor may be substituted.

TRDA 6596. Independent Research in TRDA. 1-12 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor. May be repeated for credit.

TRDA 6598. Internship. 1-12 Credits.
Internships with theatre companies or arts organizations, including conference and/or seminar. May be taken for a total of 12 credit hours. Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6998. Thesis Research. 3 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6999. Thesis Research. 3 Credits.
Prerequisite: M.F.A. candidacy and permission of instructor.

TOURISM STUDIES (TSTD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

TSTD 3001. Intro-Tourism/Hospitality Mgt. 3 Credits.
Historical overview and survey of the tourism and hospitality industry, with emphasis on the travel market, delivery of hospitality services, professional roles, and emerging trends.

TSTD 3002. Passenger Transportation Systm. 3 Credits.
Survey of passenger transportation modes. Emphasis on airline operations, marketing communications, and distribution channels.

TSTD 3101. Sport & Event Business Mgt. 3 Credits.
An overview of business opportunities related to sport and events. Emphasis on sport and event facilities and event management; product manufacturing, merchandising, and licensing; media and publications; and athlete representation.

TSTD 3102. Sport and Event Marketing. 3 Credits.
Application of marketing theories and practices to sport and events. Sponsorship, endorsement proposals, public relations, and promotional campaigns. Prerequisite: BADM 3401.

TSTD 3102W. Sport and Event Marketing. 3 Credits.
Application of marketing theories and practices to sport and events. Sponsorship, endorsement proposals, public relations, and promotional campaigns. Prerequisite: BADM 3401.

TSTD 3301. Hospitality Industry Managemnt. 3 Credits.
An overview of the basic principles and practices involved in the management, operation, marketing, and financing of hotels, restaurants, and other hospitality goods and services.

TSTD 3302. Financial Mgt-Tourism/Hospitly. 3 Credits.
Basic principles of planning and managing tourism resources, developments, and facilities in relation to investment constraints and opportunities. Financial monitoring and control of hospitality facilities and related leisure services. Prerequisite: BADM 3501.

TSTD 3303. International Experiences. 1-6 Credits.
Travel to a foreign country for study of a specific topic. May be repeated for credit with permission of the advisor.

TSTD 4101. Issues in Sport & Event Mgmt. 3 Credits.
A discussion of policies, procedures, organizational structures, issues, and trends in sport and events, from amateur to professional.

TSTD 4102. Practicum. 1-3 Credits.
Fieldwork, internship, and/or instructional practice, including conference and/or seminar. Admission by permission of instructor. May be repeated once for credit with permission of advisor.

TSTD 4301. Travel Marketing Communication. 3 Credits.
Review of basic advertising, public relations, and sales techniques, applied to the tourism and hospitality industry. Current practices and case studies.

TSTD 4900. Special Topics. 1-3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated once for credit.

TSTD 4995. Independent Study. 1-3 Credits.
Assigned topics. Admission by prior permission of advisor. May be repeated once for credit.

TSTD 6214. Consultative Processes. 1-6 Credits.
Theories and methods of planning, introducing, and coping with change in management through the helping process. Intended both for managers seeking an understanding of the consultative approach to planned change and for persons in staff or consultative roles seeking understanding of the consultative process. Same as MGT 6214/ SMPP 6214.

TSTD 6220. International Hotel Management. 3 Credits.
The study of multinational hospitality operations, with emphasis on U.S. corporate involvement in and planning for overseas expansions. Political, economic, cultural, financial, and legal aspects inherent in the international business environment.

TSTD 6221. Hotel/Resort Market Analysis. 3 Credits.
Analysis of market demand for accommodation in a tourism destination; valuation methods for determining market value of a hotel/resort project; project management for hotel/resort development.

TSTD 6230. Organization and Management of Airlines. 3 Credits.
Overview of domestic and international passenger air transportation systems. Analysis of planning, financing, operating, marketing, and evaluating airline transportation systems. Legal and regulatory aspects of airline operations. Development of infrastructure and related support services.

TSTD 6249. Sustainable Destination Development. 3 Credits.
Relationship of tourism and sustainable development; specific emphasis on cultural, environmental, and economic impacts and trends.

TSTD 6250. Destination Management. 1.5 Credit.
Organization and management concepts, theory, and issues, stressing application of theory through analysis of case examples drawn from the tourism and hospitality industry. Prerequisite: TSTD 3001 .

TSTD 6251. Quantitative Applications in Tourism/ Hospitality Management. 3 Credits.
Application of quantitative methods in tourism and hospitality management research. Procedures and methodology for collecting data, summarizing and interpreting data, and drawing conclusions based on the data.

TSTD 6260. Destination Economics. 3 Credits.
Tourism development approaches, contexts, and consequences for local/regional destinations; application of financial management concepts to the feasibility study of a proposed tourism-related facility; and evaluation of the sustainability of a tourism development strategy.

TSTD 6261. Tourism Planning. 3 Credits.
Integrated planning for tourism organizations; development of comprehensive tourism projects; consideration of basic concepts, approaches, and models.

TSTD 6262. Tourism Policy Analysis. 1.5 Credit.
Components of tourism policy, including development of tools for tourism policy analysis and description of tourism organizations in the government and private sector.

TSTD 6263. Destination Marketing. 3 Credits.
Concepts and techniques employed in marketing tourism industry services and development of the annual marketing plan.

TSTD 6264. Sport Marketing. 3 Credits.
Application of marketing theories to sport and events. Case examples of marketing athletes, teams, facilities, sport products and organizations, as well as using sport or events as a marketing tool for products. Writing sponsorship and endorsement proposals and incorporating sport into an integrated marketing plan. Prerequisite: MBAD 6273 .

TSTD 6265. Sport Law: Contracts and Negotiations. 3 Credits.
Examination of legislation and specific case law as related to professional and amateur athletes, sport events, licensed merchandise, broadcast and sponsorship rights. Topics include labor and anti-trust law; contract negotiation, specifications, and interpretation.

TSTD 6266. Sport and Event Facility Management. 3 Credits.
Financing, market analysis, design, operations, and marketing of sport and event facilities from stadiums and arenas to amphitheaters and convention centers.

TSTD 6267. Sport Media and Communications. 3 Credits.
Concepts and practices of sport public relations, media relations and management, the Internet, and other media utilized in sports. Press releases, publications, crisis management, and press operations.

TSTD 6270. Tourism and Hospitality Management Research. 3 Credits.
Survey research and other research methods and their applications to tourism, hospitality, sport, event, or related management.

TSTD 6276. Risk Management for Events and Meetings. 3 Credits.
Risk and liability issues that may arise in the planning and management of events, meetings, conventions, and exhibitions. Preventative and responsive measures designed to minimize adverse impacts on event stakeholders.

TSTD 6277. Event Management. 3 Credits.
An introduction to the theoretical and practical foundations of event management. Fundamentals of planning, budgeting, and evaluating events. Prerequisite: M.T.A. candidacy or permission of instructor.

TSTD 6278. Conference and Exposition Management. 3 Credits.
Site selection, program planning and management, exhibits, selection and use of facility, volunteers, and budget management.

TSTD 6279. Event Entertainment Management. 3 Credits.
Event entertainment, including designing and planning the entertainment component of an event, as well as managing and marketing entertainers in an event context.

TSTD 6280. Advanced Workshop. 1-6 Credits.
Workshops with emphasis on contemporary issues and opportunities; development of advanced professional competencies. May be repeated for credit with permission of advisor.

TSTD 6282. International Experiences. 1-6 Credits.
Travel to a foreign country for study of specific topics. May be repeated for credit with approval of advisor.

TSTD 6283. Practicum. 1-3 Credits.
For graduate students enrolled in a degree program or field offered through the department. Fieldwork, internship, and/or instructional practice, including conference and/or seminar. May be repeated once for credit with permission of advisor.

TSTD 6290. Special Topics. 1-3 Credits.
Experimental offering; new course topics and teaching methods. May be repeated once for credit.

TSTD 6293. Independent Study. 1-6 Credits.

TSTD 6296. Travel Information Management Systems. 3 Credits.
Database utilization, information analysis, reservation systems, computer applications including the Internet, and related travel management systems.

TSTD 6297. Advanced Topical Studies. 3 Credits.
Required capstone experience for tourism administration students who do not select the thesis option. Analysis of case situations involving policy formulation or management decision making; emphasis on applied strategic planning and management approaches.

TSTD 6298. Directed Reading and Research. 1-3 Credits.
Supervised readings or research. Admission by prior permission of instructor. May be repeated for credit.

TSTD 6998. Thesis Research. 3-6 Credits.

TSTD 6999. Thesis Research. 3 Credits.

TURKISH (TURK)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

TURK 1001. Beginning Turkish I. 0-4 Credits.
Fundamentals of speaking, understanding, reading, and writing of Modern Standard Turkish. Laboratory fee.

TURK 1002. Beginning Turkish II. 0-4 Credits.
Continuation of TURK 1001. Fundamentals of speaking, understanding, reading, and writing of Modern Standard Turkish. Laboratory fee.

TURK 2001. Intermediate Turkish I. 4 Credits.
Further development of speaking, understanding, reading, and writing skills of Modern Standard Turkish. Prerequisite: TURK 1001– TURK 1002 . Laboratory fee.

TURK 2002. Intermediate Turkish II. 4 Credits.
Continuation of TURK 2001. Further development of speaking, understanding, reading, and writing skills of Modern Standard Turkish. Prerequisite: TURK 1001– TURK 1002 . Laboratory fee.

TURK 3001. Advanced Turkish. 3 Credits.
This course is designated to develop proficiency in Turkish at the advanced level. Instruction and class activities are oriented toward proficiency goals. In-class practice will require extensive student involvement in interactive activities with peers as well as preparation and homework assignments outside of class. Students in this class will be afforded the opportunity to improve their writing skill, learn and use Turkish connectors, to construct cohesive paragraphs. They will be also able to practice, speaking, listening, and reading Turkish in a variety of contexts and situations that they likely encounter in Turkey.

TURK 3302. Media Turkish. 3 Credits.
This course exposes students to various types of mass media available in Turkey. Through this exposure, students will learn to analyze and use the Turkish language in step with the linguistic realities of contemporary Turkey. Newspapers and magazine articles will be read and analyzed for style and organization, and their contents will be debated and scrutinized for hidden biases. Newscasts will include current events, news bulletin, interviews, and documentaries.

TRANSLATIONAL HEALTH SCIENCES (THS)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

THS 8101. Foundations in Translational Health Sciences. 3 Credits.
The study of translational research, implementation and dissemination science, and collaboration and team science within the context of current health legislation. Restricted to PhD in the field of translational health sciences degree candidates; instructor's permission may be substituted.

THS 8103. Principles of Collaboration and Team Science. 3 Credits.
Foundational and practical principles of collaboration and team science. Restricted to Doctorate in occupational therapy or PhD in the field of translational health sciences degree candidates; instructor's permission may be substituted. (Same as HSCI 6285).

THS 8105. Translational Health Sciences in Complex Health Systems. 3 Credits.
An analysis of health systems as complex adaptive systems, including barriers, facilitators, and opportunities for change and innovation. Restricted to PhD in the field of translational health sciences degree candidates; instructor's permission may be substituted.

THS 8107. Program Theory and Health Innovations. 3 Credits.
Program theory as the basis for designing health and educational innovations that can be tested using scientific methods, replicated in practice, and used to inform policy. Restricted to students in the PhD in translational health sciences degree program in good standing or with instructor's permission.

THS 8109. Implementation Science and Innovation Leadership. 3 Credits.
Introduction to implementation science, the study of processes affecting uptake of evidence into healthcare, with emphasis on innovation leadership for systemic change. Restricted to students in the PhD in translational health sciences degree program in good standing or with instructor's permission.

THS 8121. Advanced Study Design for Translational Research. 3 Credits.
Advanced measurement and design topics needed for translational health science research. Restricted to students in the PhD in translational health sciences degree program in good standing or with instructor's permission.

THS 8123. Qualitative Methods in Translational Health Sciences. 3 Credits.
Qualitative methods and designs applicable to translational health science research problems; qualitative epistemology, methods, data collection, and data analysis. Restricted to students in the PhD in translational health sciences degree program in good standing or with instructor's permission.

THS 8125. Advanced Statistical Methods for Clinical and Translational Research. 3 Credits.
Advanced data management and analytic techniques required for testing hypotheses in translational health research. Restricted to students in the PhD in translational health sciences degree program in good standing or with instructor's permission. Recommended background: Completion of graduate-level epidemiology and biostatistics courses.

THS 8201. Learning Theory and Models for Knowledge Translation in Health Systems I. 3 Credits.
Introduction to the theories and models of learning and knowledge translation to facilitate behavior change. Restricted to students in the PhD in translational health sciences degree program in good standing.

THS 8203. Bioethical Implications of Health Research. 3 Credits.
Role of ethics theories and bioethics principles in health research. Restricted to students in the PhD in translational health sciences degree program in good standing or with instructor's permission.

THS 8205. Learning Theory and Models for Knowledge Translation in Health Systems II. 3 Credits.
Application of theories and models of learning and knowledge translation to the design and evaluation of interventions for learning and behavior change. Restricted to students in the PhD in translational health sciences degree program in good standing. Recommended background: Completion of THS 8201.

THS 8221. Mixed Methods Research in Translational Health Sciences. 3 Credits.
Use of mixed methods as a legitimate design tradition to address translational research questions. Restricted to students in the PhD in translational health sciences degree program in good standing or with instructor's permission.

THS 8272. Integrating Qualitative and Quantitative Designs in Mixed Methods Research. 3 Credits.
Mixed methods research procedures for data collection, analysis, and strategies. Qualitative research traditions considered as the basis for integrating qualitative and quantitative design components. Focus on maintaining the scientific rigor of the predominant design tradition while building in flexibility to address complex translational questions. Restricted to PhD in Translational Health Sciences candidates. (Same as OT 8272).

THS 8274. Using Program Theory to Develop and Evaluate Health Intervention Programs. 3 Credits.
Translational approaches to practice require health intervention programs that are evidence-based, have a theoretical foundation, and are based on strategies to support fidelity. Designing health intervention programs that can be tested using scientific methods, replicated in practice, and inform policy. Restricted to Major restriction: PhD in Translational Health Sciences students only. (Same as OT 8274).

THS 8961. Proposal Defense Preparation. 0-3 Credits.
Preparation for successful completion of the dissertation proposal and defense process Restricted to students in the PhD in translational health sciences degree program.

THS 8992. Directed Study. 1 Credit.
May be repeated for credit. Restricted to students in the PhD in translational health sciences degree program.

THS 8996. Dissertation Seminar I. 3 Credits.
Limited to Doctor of Philosophy candidates. Restricted to students in the PhD in translational health sciences degree program with a successfully defended dissertation proposal. Recommended background: Doctoral students prepare for the first three chapters of their dissertation.

THS 8997. Dissertation Seminar II. 3 Credits.
Preparation for fourth chapter of dissertation. Restricted to students in the PhD in translational health sciences degree program with a successfully defended dissertation proposal.

THS 8998. Dissertation Seminar III. 3 Credits.
Preparation for fifth chapter of dissertation. Restricted to students in the PhD in translational health sciences degree program with a successfully defended dissertation proposal.

UNIVERSITY WRITING (UW)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

UW 1010. College Academic English. 3 Credits.

UW 1015. Writing Sem. Summer Scholars. 3 Credits.

UW 1020. University Writing. 4 Credits.
University-level, independent research and writing. Learning to frame research questions, identify and analyze supportive and contradictory evidence, employ a variety of research methods, and use the ideas of other writers appropriately. Developing strategies to draft and revise clear, engaging prose for a variety of purposes and audiences. Thematically oriented seminars; texts and course topics vary among instructors. For topics see www.gwu.edu/~uwp/fyw/uw20-courses.html.

UW 2020. Advanced Topics in Writing. 3 Credits.
For a variety of purposes and audiences, students frame scholarly research questions, identify and analyze supportive and contradictory evidence, employ a variety of research methods, and use the ideas of other writers appropriately. Focus on the norms of writing in particular fields, including rhetorical approaches and stylistic conventions.

UW 2020W. Advanced Topics in Writing. 3 Credits.
For a variety of purposes and audiences, students frame scholarly research questions, identify and analyze supportive and contradictory evidence, employ a variety of research methods, and use the ideas of other writers appropriately. Focus on the norms of writing in particular fields, including rhetorical approaches and stylistic conventions.

UW 2031. Equality & the Law. 3 Credits.
Introduction to how lawyers and legal scholars research and write about specific disputes that arise in the context of complex social issues. The institutional assumptions about the content and style of legal writings. Briefs, legal memoranda, law review articles, resolutions, and many other specialized legal writing forms.

UW 2031W. Equality & the Law. 3 Credits.

UW 2111. Preparation for Peer Tutors in Writing. 3 Credits.
For undergraduates accepted as tutors in the Writing Center: study and practice of techniques for prewriting, writing, and revision; readings on collaborative learning, the composing process, composition theory, cognitive psychology, critical thinking, and the teaching of writing; observation and exercises in writing, peer review, and tutoring. Limited to 15 students.

UW 2111W. Preparation for Peer Tutors in Writing. 3 Credits.
For undergraduates accepted as tutors in the Writing Center: study and practice of techniques for prewriting, writing, and revision; readings on collaborative learning, the composing process, composition theory, cognitive psychology, critical thinking, and the teaching of writing; observation and exercises in writing, peer review, and tutoring. Limited to 15 students.

UW 6213. Theory/Prac. Teaching Writing. 3 Credits.

VIETNAMESE (VIET)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

VIET 1001. Beginning Vietnamese I. 4 Credits.
Fundamentals of grammar and pronunciation, with an introduction to reading and writing.

VIET 1002. Beginning Vietnamese II. 4 Credits.
Continuation of VIET 1001. Fundamentals of grammar and pronunciation, with an introduction to reading and writing.

VIET 1003. Intermediate Vietnamese I. 4 Credits.
Continuation of grammar, with emphasis on speaking, reading, and writing.

VIET 1004. Intermediate Vietnamese II. 4 Credits.
Continuation of VIET 2003. Continuation of grammar, with emphasis on speaking, reading, and writing.

WOMEN AND LEADERSHIP PROGRAM (WLP)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

WLP 1020. WLP Humanities Seminar. 3 Credits.
A writing-intensive seminar that emphasizes critical reading skills, concepts of disciplinarity, and processes of producing and legitimating knowledge. Texts and emphasis vary according to cohort.

WLP 1110. Women and Leadership I Symposium (I). 1 Credit.
A series of special programs that complements WLP 1101– WLP 1102. Concurrent registration in WLP 1101– WLP 1102 is required.

WLP 1111. Women and Leadership I Symposium (II). 1 Credit.
Continuation of WLP 1110. A series of special programs that complements WLP 1101– WLP 1102. Concurrent registration in WLP 1101– WLP 1102 is required.

WLP 4198. WLP Independent Study. 3 Credits.

WOMEN'S STUDIES (WSTU)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

WSTU 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to First-year students in CCAS.

WSTU 1020. Approaches to Women's History. 3 Credits.
Exploration of critical periods of intellectual and cultural change in Western societies as influenced by and affecting women. Examination of images of women and of changing ideal types of femininity and masculinity. Aspects of law, religion, art, culture, work, and politics in relation to these topics. Same as HIST 1020.

WSTU 2120. Intro to Women's Studies. 3 Credits.
A multidisciplinary examination of historical conditions, cultural norms, and social institutions that define women's status in Western culture. Experiences of girls and women in various racial–ethnic, class, and age groups. Alternative visions for women's (and, by implication, men's) roles and status.

WSTU 2120W. Intro to Women's Studies. 3 Credits.
A multidisciplinary examination of historical conditions, cultural norms, and social institutions that define women's status in Western culture. Experiences of girls and women in various racial–ethnic, class, and age groups. Alternative visions for women's (and, by implication, men's) roles and status. Sophomore standing required.

WSTU 2121. The Anthropology of Gender: Cross-Cultural Perspectives. 3 Credits.
Anthropological representations of gender relations in "other" cultures have provided important case material for feminist theorizing of sex differences and gender roles and statuses. How a cross-cultural approach can inform our understanding of gender. Same as ANTH 2501.

WSTU 2125. Varieties of Feminist Theory. 3 Credits.
Classical and contemporary texts on feminist explanations of women's status. Relationships within the sex/gender system and arrangements based on class and race. Evaluation, through the lens of feminist theory, of several academic disciplines in the sciences, social sciences, and humanities. Prerequisite: WSTU 1020 or WSTU 2120 or permission of instructor.

WSTU 2135. A Study of Women and Media. 3 Credits.
The role media plays in women's lives. The limits and effects of a "dominant" media; representations of women in print media and television, especially advertising, and in books and film. How women have attempted to articulate a culture that serves their personal, political, and social interests.

WSTU 2380. Sexuality in US Cultural Hist. 3 Credits.
Examination of the changing social organization and meaning of sexual practices and desires in American culture, with particular attention to the relationship between sexuality and gendered racial and class identities and politics. Same as AMST 2380/ HIST 2380.

WSTU 3136. Chinese Women in Myth, Literature, and Film. 3 Credits.
Women's position in Chinese cultural and political life from prehistoric myth to the present time. Confucian writing, traditional theatre, and films and novels set in China. A general survey of Chinese history establishes the context for discussions of cultural and political phenomena, such as foot binding and the one-child policy. Course conducted in English. Same as CHIN 3136.

WSTU 3136W. Chinese Women in Myth, Literature, and Film. 3 Credits.
Women's position in Chinese cultural and political life from prehistoric myth to the present time. Confucian writing, traditional theatre, and films and novels set in China. A general survey of Chinese history establishes the context for discussions of cultural and political phenomena, such as foot binding and the one-child policy. Course conducted in English. (Same as CHIN 3136W).

WSTU 3170. Selected Topics. 0-4 Credits.
Examination and analysis of central issues in women's studies, such as women and difference, women in media, women and violence, athletics and gender. Topic changes each semester; may be repeated for credit.

WSTU 3170W. Selected Topics. 0-4 Credits.
Examination and analysis of central issues in women's studies, such as women and difference, women in media, women and violence, athletics and gender. Topic changes each semester; may be repeated for credit.

WSTU 3195. Undergraduate Research. 1-3 Credits.
A written proposal approved by the member of the faculty who will supervise the research is required prior to registration.

WSTU 3235. Women and Law. 3 Credits.
Contemporary legal issues that affect women in the United States. Using legal texts and related articles, the course considers a range of theories and documents that are relevant to issues such as violence against women, marriage and divorce, employment, immigration, and reproductive rights.

WSTU 3281. Women in Judaism. 3 Credits.
Jewish women's spirituality as reflected in personal writings, ritual, liturgy, and midrash. Jewish women's history and legal status. Same as REL 3281.

WSTU 3352. Women in the United States I. 3 Credits.
Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. (Same as AMST 3352, HIST 3352).

WSTU 3352W. Women in the United States I. 3 Credits.
Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. Same as HIST 3352/ AMST 3352.

WSTU 3353. Women in the United States II. 3 Credits.
Continuation of WSTU 3352. Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. (Same as AMST 3353, HIST 3353).

WSTU 3362. African American Women's History. 3 Credits.
Addresses the history of African American women's labor, cultural expression, institution-building, activism and strategies to combat oppression from the antebellum period through the late 20th century. Investigates the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement and African American women's experiences. (Same as HIST 3362, AMST 3362).

WSTU 3362W. African American Women's History. 3 Credits.
Addresses the history of African American women's labor, cultural expression, institution-building, activism and strategies to combat oppression from the antebellum period through the late 20th century. Investigates the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement and African American women's experiences. (Same as HIST 3362W, AMST 3362W).

WSTU 3410. Lesbian History and Culture. 3 Credits.
Examination of lesbian identity, community, and legal rights from a scholarly feminist perspective.

WSTU 3435. Queer Politics. 3 Credits.
The history of "Lesbian, Gay, Bisexual, Transgender, and Queer" (LGBTQ) politics in the United States. Analysis of influences and intersections of race and ethnicity, class, gender identity and expression, sexuality, sex, and age. Contemporary policy debates relevant to Queer politics.

WSTU 3470. Sexuality and Law. 3 Credits.
Exploration of the ways in which the law has affected individuals' ability to express their sexuality, with a primary focus on sexual orientation and issues such as marriage, adoption, voting rights, sexual harassment, and military service.

WSTU 3481. Women in Islam. 3 Credits.
The ways in which Islam has articulated gender identity and male–female relationships, and conversely, how women have constructed, interpreted, and articulated Islam and their places within it. Same as REL 3481.

WSTU 3530. Women in Africa. 3 Credits.
African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. Same as HIST 3530.

WSTU 3820. Global Domestic Labor. 3 Credits.
Consideration of women's paid and unpaid domestic labor, including care work, in the context of global and globalizing political and cultural economies.

WSTU 3845. Global Women's Prison. 3 Credits.
This course examines women's confinement and incarceration in the context of global and globalizing political and cultural economies.

WSTU 3881. Women, Gender, and Religion in China. 3 Credits.
A historical introduction to the concepts of body, gender, and womanhood in Confucian, Daoist, Buddhist, and popular Chinese religious traditions. Women's roles in religious ritual and practices; the influence of Christianity and modernity. Same as REL 3881.

WSTU 3981. Women in Western Religion. 3 Credits.

WSTU 4183. Practicum in Women's Studies. 3 Credits.
Study of the changing status of women through supervised placement in public and private agencies engaged in policymaking, education, political action, and research. Usually for seniors. Placement arrangements must be made the semester prior to registration; departmental permission is required. (Same as WSTU 6283).

WSTU 4199. Senior Seminar. 3 Credits.
For students completing a major or minor in women's studies. Writings of contemporary scholars and writers whose work provides critical frameworks for feminist scholarship and research. Individual or collaborative research projects are presented and submitted as written papers.

WSTU 6220. Fundamentals of Feminist Theory. 3 Credits.
A survey of historical theories significant to feminist thought, such as liberalism, socialism, evolution, psychoanalysis, and gendered spheres of social action. How these theories were revived and revised by the Second Wave of feminism since the 1960s. Brief examination of postmodernist and Third Wave feminist theorizing.

WSTU 6221. Research Issues in Women's Studies. 3 Credits.
Analysis of the contribution of feminist or gender-relations perspectives from humanities and social science disciplines to the issues and methods of social research and social policy and practice. Topics include a review of feminist frameworks, a critique and re-evaluation of traditional academic disciplines, and analysis of current research on and for women.

WSTU 6225. Contemporary Feminist Theory. 3 Credits.
Developments in feminist theory in the past ten years, with a primary focus on American feminism and its relationship to queer theory and sexuality studies.

WSTU 6230. Global Feminisms. 3 Credits.
The individuals, groups, and policies that shape global agenda for women; local and international fora in which global feminisms are forged.

WSTU 6238. Feminist Ethics and Policy Implications. 3 Credits.
Feminist critiques of traditional ethical reasoning; alternative feminist ethical frameworks examined and applied to contemporary social problems (e.g., respecting cultural differences, dependency, disability). Same as PHIL 6238. Prerequisite: Phil 2125 or 2131 or permission of instructor.

WSTU 6240. Women and Public Policy. 3 Credits.
Analysis of gender-related U.S. policy issues, such as domestic violence, military service, abortion rights, equal employment opportunity, child and dependent care, welfare, social security, and international development assistance.

WSTU 6241. Women and the Law. 3 Credits.
Legal status of women in the United States on both the federal and state levels. Emphasis on constitutional equality, employment law, family law, reproduction and sexuality, and the criminal justice system.

WSTU 6251. Women and Writing. 3 Credits.
Selected topics in the traditions, theory, and texts of women's literary production and culture. Same as ENGL 6540.

WSTU 6257. Gender and Sexuality. 3 Credits.
Study of new theoretical and methodological approaches developed in the anthropology of gender. Topics include postcolonialism, sexuality, and literary representations of gender. Same as ANTH 6501.

WSTU 6265. Women, Welfare & Poverty. 3 Credits.
Examination of how the causes and consequences of poverty differ for women and men; how race, class, and gender shape policy responses to poverty. The history of family assistance policy in the United States and the impact of various welfare reform efforts. Same as SOC 6265.

WSTU 6266. Gender & Criminal Justice. 3 Credits.
How understandings, practices, and theories of gender shape the workings of criminal justice systems, including issues of criminality and responses to crime, victimization and violence, and definitions of illegal behaviors. Same as SOC 6266.

WSTU 6268. Race, Gender and Class. 3 Credits.
How social structures are constructed through race, gender, and class and how they shape experience. The intersections of race, gender, and class in education, science, politics, labor markets, and social welfare policies. Same as SOC 6268.

WSTU 6270. Seminar: Selected Topics. 3 Credits.
Investigation of a current policy issue of particular concern to women, or consideration of women's status in a particular social system. Topics have included women and health; sexualities; women and Judaism; black women; gender, race, and class. May be repeated for credit.

WSTU 6271. Gender and Society. 3 Credits.
Examination of current empirical and theoretical work on gender as an organizing principle of social relations. Consideration of the relationship of gender to sex and sexuality. Same as SOC 6271.

WSTU 6280. Independent Study. 3 Credits.
May be repeated for credit. Arrangements must be made with sponsoring faculty member prior to registration.

WSTU 6283. Practicum in Women's Studies. 3-6 Credits.
Study of the changing status of women through supervised assignment to public and private agencies engaged in policymaking, education, political action, and research. Placement arrangements must be made the semester prior to registration. Graduate students may take the course for either 3 or 6 credits, with substantial additional research and writing of a case study required for 6 credits. (Same as WSTU 4183).

WSTU 6295. Independent Research in Women's Studies. 1-3 Credits.
Individual library or field research. Arrangements must be made with the sponsoring faculty member prior to registration; a written proposal is required.

WSTU 6430. Gender, Sexuality, and American Culture. 3 Credits.
The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. Pre-Columbian settlement to 1876. Same as AMST 6430/ HIST 6430.

WSTU 6431. Gender, Sexuality, and American Culture. 3 Credits.
Continuation of WSTU 6430. The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. 1877 to present. Same as AMST 6431/ HIST 6431.

WSTU 6435. Readings on Women in American History. 3 Credits.
Important works in American women's history; evolution of the field in historiographical context. Same as AMST6435/HIST 6435.

WSTU 6998. Thesis Research. 3 Credits.

WSTU 6999. Thesis Research. 3 Credits.

WSTU 8275. Women and Health. 3 Credits.
Theoretical and empirical analyses of women's health: how women's health is constructed by medical, psychological, and critical theorists; how sexism, racism, and classism contribute to women's health problems; and identification of conditions that lead to optimal health and well-being. Same as PSYC 8275.

YIDDISH (YDSH)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

YDSH 1001. Yiddish for Reading and Conversation I. 3 Credits.
Grammatical essentials of the language, appropriate reading selections, conversational exercises for beginners.

YDSH 1002. Yiddish for Reading and Conversation II. 3 Credits.
Continuation of YDSH 1001. Grammatical essentials of the language, appropriate reading selections, conversational exercises for beginners.

BIOLOGY ELECTIVES

Biology Electives

Systems category	
BISC 2208	Genetics Laboratory *
BISC 2213	Biology of Cancer
BISC 2214	Developmental Biology *
BISC 2220	Developmental Neurobiology
BISC 2318	Histology *
BISC 2320	Neural Circuits and Behavior
BISC 2580	Biotechnology
BISC 2580W	Biotechnology
BISC 2583	Biology of Proteins
BISC 3122	Human Physiology
BISC 3123	Human Physiology Lab *
BISC 3165	Biochemistry I
BISC 3209	Molecular Biology *
BISC 3210	Nanobiotechnology
BISC 3211	Nanobiotechnology Laboratory *
BISC 3212	Immunology
BISC 3262	Biochemistry Laboratory *
BISC 3263	Special Topics in Biochemistry
BISC 3320	Human Neurobiology
BISC 4132	Advanced Cellular-Molecular Biology

BISC 6205	Current Topics in Cell Smith, Donaldson, Eleftherianos, Jeremic
BISC 6218	Innate Immunity
BISC 6219	Host-Microbe Interactions
Organisms category	
BISC 2000	Sophomore Colloquium
BISC 2305	Plant Biology
BISC 2330	Invertebrate Zoology *
BISC 2331	Insect Biology
BISC 2335	Insect Biology Lab *
BISC 2332	Comparative Vertebrate Anatomy *
BISC 2333	Evolution and Extinction of Dinosaurs
BISC 2334W	Integrative Biology of Fishes
BISC 2337	Introductory Microbiology *
BISC 2337W	Introductory Microbiology *
BISC 2339	Parasitology *
BISC 6215	Vertebrate Phylogeny *
BISC 6249	Seminar: Developmental Biology
Evolution, Ecology, and Environment category	
BISC 2451	History of Life
BISC 3450	Evolutionary Medicine
BISC 3450W	Evolutionary Medicine
BISC 2452	Animal Behavior
BISC 2453	Animal Behavior Lab *
BISC 2454	General Ecology *
BISC 3458	Plant Comparative Structure and Function
BISC 3459	Field Biology *
BISC 3460	Conservation Biology
BISC 3461	Plant-Animal Interactions
BISC 3462	Plant¾Animal Interactions Laboratory *
BISC 3464	Ecology and Evolution of Societies
BISC 2467	Marine Biology *
BISC 6210	Methods of Study of Evolution
BISC 6211	Biogeography/Coevolution
BISC 6243	Seminar: Ecology
Quantitative category	
MATH 1231	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
STAT 1091	Principles-Statistical Methods
STAT 1127	Statistics for the Biological Sciences
BISC 2584	Introduction to Bioinformatics

*Indicates laboratory course

CCAS ADMISSION REQUIREMENTS

Admission Criteria

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs). Applicants must hold an undergraduate degree from an accredited institution of higher learning. Applicants should have a strong academic background, usually with a major, or equivalent, in the field in which they intend to study for an advanced degree. Normally, a *B* average or equivalent from an accredited college is required. With evidence of special promise, such as high Graduate Record Examination scores, an applicant whose academic record falls short of a *B* average may be accepted on a conditional basis. Meeting the minimum requirements does not assure acceptance. The departments may, and often do, set higher admission standards. Undergraduates who apply in their senior year must provide evidence of the completion of their baccalaureate work before registration is permitted. Graduate courses taken prior to admission while in nondegree status are not used in assessing admissibility to degree programs and may not be transferable into those programs.

Readmission

A student who wishes to resume a graduate program that had been interrupted for a period of two years or more must file a new application form and provide supporting documentation to be considered for readmission. Readmission is not guaranteed, and the application is subject to review by the department concerned and/or the dean. The student may be required to take additional course work and qualifying examinations on the course work completed.

CCAS GENERAL EDUCATION REQUIREMENTS

In addition to the University General Education Requirement, undergraduate students in Columbian College must complete a further, College-specific general education curriculum–Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two writing-in-the-disciplines (WID) approved courses;
- Humanities—one approved course in the humanities that involves critical thinking skills;
- Mathematics or Statistics—one approved course in either mathematics or statistics;
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry; and,
- Social Sciences—two approved courses in the social sciences

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context;
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries;
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement);
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action;
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement; and,
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC may also be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

University General Education and G-PAC Courses

- Arts (p. 1491)
- Global or Cross-Cultural (p. 1492)
- Humanities (p. 1494)
- Local/Civic Engagement (p. 1498)
- Mathematics or Statistics (p. 1498)
- Natural or physical laboratory sciences (p. 1498)
- Oral Communication (p. 1499)
- Social Sciences (p. 1500)
- Writing (p. 1501)

Arts

AH 1031	Survey of Art and Architecture I
AH 1032	Survey of Art and Architecture II
AH 2071	Introduction to the Arts in America
AH 2154	American Architecture I
AH 2155	American Architecture II
AMST 1100	Politics and Film
AMST 2071	Introduction to the Arts in America
AMST 2520	American Architecture I
AMST 2521	American Architecture II
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts
CHIN 3173	Chinese Drama and Theatre
ENGL 1210	Introduction to Creative Writing
ENGL 2210	Techniques in Creative Writing
FA 1401	Painting: Visual Thinking
FA 1501	Black & White Photography
FA 1502	Color Photography
FA 1601	New Media: Digital Art
ITAL 4183	History of Italian Film
MUS 1103	Music in the Western World
MUS 1104	Topics in Music

MUS 1105	Introduction to Musical Thought and Practice
MUS 2101	Harmony
MUS 2122	Music in the US
or MUS 2122W	Music in the US
SLAV 2785	Introduction to Russian Cinema I
SLAV 2786	Introduction to Russian Cinema II
TRDA 1020	Women and the Creative Process
TRDA 1214	Beginning Acting
TRDA 2191	Dance History
or TRDA 2191W	Dance History
TRDA 2195	Global Dance History
TRDA 3245	History of the Theatre I
or TRDA 3245W	History of the Theatre I
TRDA 3246	History of the Theatre II
or TRDA 3246W	History of the Theatre II

Global or Cross-Cultural

AMST 1200	The Sixties in America
AMST 2010	Early American Cultural History (same as HIST 2010)
AMST 2011	Modern American Cultural History (same as HIST 2011)
AMST 2120W	Freedom in American Thought and Popular Culture (same as PSC 2120W)
AMST 2210	The African American Experience
AMST 2320	U.S. Media and Cultural History (same as HIST 2320)
AMST 2350	U.S. Religion and Politics (same as HIST 2350)
AMST 2380	Sexuality in US History (same as HIST 2380/HIST 2380W)
AMST 2410	20th-Century U.S. Immigration (same as HIST 2410)
AMST 2440	The American City (same as HIST 2440)
AMST 2710	The United States in Global Context, 1898–Present (same as HIST 2710)
AMST 2730	World War II in History and Memory (same as HIST 2730/HIST 2730W)
or AMST 2730W	World War II in History and Memory
AMST 2750W	Latinos in the United States (same as HIST 2750/HIST 2750W)
AMST 3352	Women in the United States to 1865 (same as HIST 3352/HIST 3352W and WSTU 3352/WSTU 3352W)
or AMST 3352W	Women in the United States to 1865
ANTH 1002	Sociocultural Anthropology
or ANTH 1002W	Sociocultural Anthropology
ANTH 1003	Archaeology
ANTH 1004	Language in Culture and Society
ANTH 2008	Foundations of Anthropological Thought
or ANTH 2008W	Foundations of Anthropology
ANTH 2750	Latinos in the United States (same as AMST 2750W)
or ANTH 2750W	Latinos in the United States
ANTH 3838	Theory and Practice in Archaeology
or ANTH 3838W	Theory and Practice in Archaeology
CHIN 3111	Chinese Literature in Translation
CHIN 3112	Chinese Literature in Translation
CHIN 3123	Introduction to Chinese Linguistics
CHIN 3124	Introduction to Chinese Linguistics
CHIN 3163	Taiwanese Literature and Film
CHIN 3173	Chinese Drama and Theatre
CLAS 2113	The Roman World to 337 A.D. (same as HIST 2113)
EALL 3811	Confucian Literature in East Asia (same as REL 2811)
EALL 3814	Religion and Philosophy in East Asia (same as REL 2814)
or EALL 3814W	Religion and Philosophy in East Asia
ENGL 1330	Myths of Britain
or ENGL 1330W	Myths of Britain

ENGL 1340	Essential Shakespeare
or ENGL 1340W	Essential Shakespeare
ENGL 1610	Introduction to Black American Literature I
or ENGL 1610W	Introduction to Black American Literature I
ENGL 1611	Introduction to Black American Literature II
or ENGL 1611W	Introduction to Black American Literature II
ENGL 1710	Introduction to Postcolonial Literature and Film I
or ENGL 1710W	Introduction to Postcolonial Literature and Film I
ENGL 1711	Introduction to Postcolonial Literature and Film II
or ENGL 1711W	Introduction to Postcolonial Literature and Film II
FREN 2006	Language, Culture & Society II
FREN 3020	Contemporary France
FREN 3100	Introduction to French Literature
or FREN 3100W	Introduction to French Literature
FREN 4540	19th-Century French Literature and Culture
GEOG 1001	Introduction to Human Geography
GER 2091	Introduction to German Literature—in English I
GER 2092	Introduction to German Literature—in English II
GER 2161	German Culture—in English I
GER 2162	German Culture—in English II
GREK 1001	Beginning Classical Greek I
HIST 1011	World History, 1500-Present
HIST 1110	European Civilization in Its World Context
HIST 1120	European Civilization in Its World Context
or HIST 1120W	European Civilization in its World Context
HIST 1121	The War of Ideas in European and International History, 1750–Present
HIST 1310	Introduction to American History
HIST 1311	Introduction to American History
HIST 2010	Early American Cultural History (same as AMST 2010)
HIST 2011	Modern American Cultural History (same as AMST 2011)
HIST 2050	History of Jewish Civilization: From the Bible to Modernity
HIST 2124	19th-Century Europe
HIST 2125	20th-Century Europe
HIST 2131	History of England Since 1689
HIST 2141	History of France Since 1814
HIST 2160	History of Germany
HIST 2312	The American Civil War and Reconstruction, 1850-1877
HIST 2313	History of the American West
HIST 2320	U.S. Media and Cultural History (same as AMST 2320)
HIST 2321	U.S. History, 1890-1945
HIST 2322	U.S. History since 1945
HIST 2350	U.S. Religion and Politics (same as AMST 2350)
HIST 2380	Sexuality in US Cultural Hist (same as AMST 2380 and WSTU 2380)
HIST 2410	20th-Century U.S. Immigration (same as AMST 2410)
HIST 2440	The American City (same as AMST 2440)
HIST 2710	The United States in Global Context, 1898–Present (same as AMST 2710)
HIST 2730	World War II in History and Memory (same as AMST 2730/2730W)
or HIST 2730W	World War II History & Memory
HIST 3044W	The Price of Freedom: Normandy 1944
HIST 3352	Women in the United States to 1865 (same as AMST 3352/AMST 3352W and WSTU 3352/3352W)
or HIST 3352W	Women in the United States I

HIST 3360	African American History to 1865 (same as AMST 3360)
HIST 3361	African American History Since 1865 (same as AMST 3361)
HIST 3811	The Middle East in the 20th Century
or HIST 3811W	Middle East in 20th Century
ITAL 4380	Italian Journeys Medieval to Postmodern
JAPN 3111	Japanese Literature in Translation
JAPN 3112	Japanese Literature in Translation
KOR 3111	Korean Literature in Translation
KOR 3112	Korean Literature in Translation
KOR 3123	Introduction to Korean Linguistics
KOR 3124	Introduction to Korean Linguistics
PHIL 2125	Philosophy of Race and Gender
or PHIL 2125W	Philosophy of Race and Gender
PHIL 2134	Philosophy of Human Rights
PSC 1001	Introduction to Comparative Politics
or PSC 1001W	Intro to Comparative Politics
PSC 1012W	Introduction to Politics II
PSC 2120W	Freedom in American Thought and Popular Culture (same as AMST 2120W)
PSTD 1010	Introduction to Peace Studies and Conflict Resolution
REL 1010	The New Testament
or REL 1010W	The New Testament
REL 2165	The Gospels
REL 2169	Lost Gospels
REL 2562	Mythologies of India
REL 2811	Confucian Literature in East Asia (same as EALL 2811)
REL 2814	Religion and Philosophy in East Asia (same as EALL 2814/EALL 2814W)
REL 2981	Women in Western Religion (same as WSTU 3981)
REL 3149	Biblical Issues
or REL 3149W	Biblical Issues
REL 3151	The Historical Jesus
or REL 3151W	The Historical Jesus
REL 3161	The Life and Thought of Paul
or REL 3161W	The Life and Thought of Paul
REL 3923	Violence and Peace in Judaism, Christianity, and Islam
SPAN 2005	Advanced Spanish I
SPAN 2006	Advanced Spanish II
SPAN 2056	Intensive Advanced Spanish
SPAN 3100	Readings in Spanish and Latin American Literature
SPHR 1071	Foundations of Human Communication
or SPHR 1071W	Foundations of Human Communication
SPHR 1084	Perspectives in Deaf Culture
WSTU 2380	Sexuality in US Cultural Hist (same as AMST 2380 and HIST 2380)
WSTU 3352	Women in the United States I (same as AMST 3352/3352W and HIST 3352/3352W)
WSTU 3981	Women in Western Religion (same as REL 2981)

Note: Global or Cross-Cultural courses can double count with an analysis/communication requirement.

Humanities

AMST 1050	Explorations in American Culture
AMST 1160	Race, Gender and Law
AMST 1200	The Sixties in America
AMST 2010	Early American Cultural History (same as HIST 2010)
AMST 2011	Modern American Cultural History (same as HIST 2011)
AMST 2020	Washington, D.C.: History, Culture, and Politics (same as HIST 2020/ HIST 2020W)
or AMST 2020W	Washington, D.C.: History, Culture, and Politics
AMST 2120W	Freedom in American Thought and Popular Culture (same as PSC 2120W)

AMST 2210	The African American Experience
AMST 2320	U.S. Media and Cultural History (same as HIST 2320)
AMST 2350	U.S. Religion and Politics (same as HIST 2350)
AMST 2380	Sexuality in US History (same as HIST 2380 and WSTU 2380)
AMST 2410	20th-Century U.S. Immigration (same as HIST 2410)
AMST 2440	The American City (same as HIST 2440)
AMST 2710	The United States in Global Context, 1898–Present (same as HIST 2710)
AMST 2730	World War II in History and Memory (same as HIST 2730/HIST 2730W)
or AMST 2730W	World War II in History and Memory
AMST 2750W	Latinos in the United States (same as ANTH 2750/ANTH 2750W)
AMST 3352	Women in the United States to 1865 (same as HIST 3352/HIST 3352W and WSTU 3352 and WSTU 3352W)
or AMST 3352W	Women in the United States to 1865
ANTH 2750	Latinos in the United States (same as AMST 2750W)
or ANTH 2750W	Latinos in the United States
CHIN 3111	Chinese Literature in Translation
CHIN 3112	Chinese Literature in Translation
CHIN 3123	Introduction to Chinese Linguistics
CHIN 3124	Introduction to Chinese Linguistics
CHIN 3163	Taiwanese Literature and Film
CLAS 2107	Greek and Roman Drama
CLAS 2113	The Roman World to 337 A.D. (same as HIST 2113)
EALL 3811	Confucian Literature in East Asia (same as REL 2811)
EALL 3814	Religion and Philosophy in East Asia (same as REL 2814)
or EALL 3814W	Religion and Philosophy in East Asia
ENGL 1050	Introduction to Literary Studies
ENGL 1315	Literature and the Financial Imagination
ENGL 1320	Literature of the Americas
or ENGL 1320W	Literature of the Americas
ENGL 1330	Myths of Britain
or ENGL 1330W	Myths of Britain
ENGL 1340	Essential Shakespeare
or ENGL 1340W	Essential Shakespeare
ENGL 1351	Shakespeare Seminar
ENGL 1410	Introduction to English Literature I
or ENGL 1410W	Introduction to English Literature I
ENGL 1411	Introduction to English Literature II
or ENGL 1411W	Introduction to English Literature II
ENGL 1510	Introduction to American Literature I
or ENGL 1510W	Introduction to American Literature I
ENGL 1511	Introduction to American Literature II
or ENGL 1511W	Introduction to American Literature II
ENGL 1610	Introduction to Black American Literature I
or ENGL 1610W	Introduction to Black American Literature I
ENGL 1611	Introduction to Black American Literature II
or ENGL 1611W	Introduction to Black American Literature II
ENGL 1710	Introduction to Postcolonial Literature and Film I
or ENGL 1710W	Introduction to Postcolonial Literature and Film I
ENGL 1711	Introduction to Postcolonial Literature and Film II
or ENGL 1711W	Introduction to Postcolonial Literature and Film II
ENGL 3446	Shakespearean London
ENGL 3910	Disability Studies
FREN 2006	Language, Culture & Society II
FREN 3020	Contemporary France
FREN 3100	Introduction to French Literature

or FREN 3100W	Introduction to French Literature
FREN 4540	19th-Century French Literature and Culture
GER 2091	Introduction to German Literature—in English I
GER 2092	Introduction to German Literature—in English II
GER 2161	German Culture—in English I
GER 2162	German Culture—in English II
GREK 1001	Beginning Classical Greek I
HIST 1011	World History, 1500-Present
HIST 1110	European Civilization in Its World Context
HIST 1120	European Civilization in Its World Context
or HIST 1120W	European Civilization in its World Context
HIST 1121	The War of Ideas in European and International History, 1750–Present
HIST 1310	Introduction to American History
HIST 1311	Introduction to American History
HIST 2010	Early American Cultural History (same as AMST 2010)
HIST 2011	Modern American Cultural History (same as AMST 2011)
HIST 2020	Washington, D.C.: History, Culture, and Politics (same as AMST 2020/ AMST 2020W)
or HIST 2020W	Washington, D.C.: History, Culture, and Politics
HIST 2050	History of Jewish Civilization: From the Bible to Modernity
HIST 2124	19th-Century Europe
HIST 2125	20th-Century Europe
HIST 2131	History of England Since 1689
HIST 2141	History of France Since 1814
HIST 2160	History of Germany
HIST 2312	The American Civil War and Reconstruction, 1850-1877
HIST 2320	U.S. Media and Cultural History (same as AMST 2320)
HIST 2321	U.S. History, 1890-1945
HIST 2322	U.S. History since 1945
HIST 2350	U.S. Religion and Politics (same as AMST 2350)
HIST 2380	Sexuality in US Cultural Hist (same as AMST 2380 and WSTU 2380)
HIST 2410	20th-Century U.S. Immigration (same as AMST 2410)
HIST 2440	The American City (same as AMST 2440)
HIST 2710	The United States in Global Context, 1898–Present (same as AMST 2710)
HIST 2730	World War II in History and Memory (same as AMST 2730/2730W)
or HIST 2730W	World War II History & Memory
HIST 3044W	The Price of Freedom: Normandy 1944
HIST 3352	Women in the United States to 1865 (same as AMST 3552/AMST 3552W and WSTU 3552/3552W)
or HIST 3352W	Women in the United States I
HIST 3360	African American History to 1865 (same as AMST 3360)
HIST 3361	African American History Since 1865 (same as HIST 3661)
HIST 3611	History of Modern China
HIST 3630	History of Korea
HIST 3811	The Middle East in the 20th Century
or HIST 3311W	The Jacksonian Era and the Rise of Mass Politics
HONR 1016	Honors Proseminar: Origins and Evolution of Modern Thought
HONR 2053	Honors Proseminar: Arts and Humanities
or HONR 2053W	Honors Proseminar: Arts and World Cultures
ITAL 4380	Italian Journeys Medieval to Postmodern
JAPN 3111	Japanese Literature in Translation

JAPN 3112	Japanese Literature in Translation
KOR 3111	Korean Literature in Translation
KOR 3112	Korean Literature in Translation
KOR 3123	Introduction to Korean Linguistics
KOR 3124	Introduction to Korean Linguistics
LATN 2001	Intermediate Latin
LATN 3001	Major Latin Authors I
or LATN 3001W	Major Latin Authors I
LATN 3002	Major Latin Authors II
or LATN 3002W	Major Latin Authors II
PHIL 1051	Introduction to Philosophy
PHIL 1153	The Meaning of Mind
PHIL 2124	Philosophies of Disability
or PHIL 2124W	Philosophies of Disability
PHIL 2125	Philosophy of Race and Gender
or PHIL 2125W	Philosophy of Race and Gender
PHIL 2131	Ethics: Theory and Applications
PHIL 2132	Social and Political Philosophy
PHIL 2133	Philosophy and Nonviolence
PHIL 2134	Philosophy of Human Rights
PHIL 2136	Contemporary Issues in Ethics
PHIL 2281	Philosophy of the Environment
PHIL 3142	Philosophy of Law
or PHIL 3142W	Philosophy of Law
PHIL 3151	Philosophy and Science
PHIL 3153	Mind, Brain, and Artificial Intelligence
PSC 2120W	Freedom in American Thought and Popular Culture (same as AMST 2120W)
PSTD 1010	Introduction to Peace Studies and Conflict Resolution
REL 1010	The New Testament
or REL 1010W	The New Testament
REL 2165	The Gospels
REL 2169	Lost Gospels
REL 2201	Judaism
REL 2301	Christianity
REL 2314	Contemporary Philosophy of Religion
REL 2401	Islam
REL 2501	Hinduism
REL 2562	Mythologies of India
REL 2811	Confucian Literature in East Asia (same as EALL 2811)
REL 2814	Religion and Philosophy in East Asia (same as EALL 2814/EALL 2814W)
REL 2981	Women in Western Religion (same as WSTU 3981)
REL 3149	Biblical Issues
or REL 3149W	Biblical Issues
REL 3151	The Historical Jesus
or REL 3151W	The Historical Jesus
REL 3161	The Life and Thought of Paul
or REL 3161W	The Life and Thought of Paul
REL 3405	Shi'ite Islam
REL 3614	Buddhist Philosophy
REL 3923	Violence and Peace in Judaism, Christianity, and Islam
SPAN 2005	Advanced Spanish I
SPAN 2006	Advanced Spanish II
SPAN 2056	Intensive Advanced Spanish
SPAN 3100	Readings in Spanish and Latin American Literature
WLP 1020	WLP Humanities Seminar
WSTU 2380	Sexuality in US Cultural Hist (same as AMST 2380 and HIST 2380)
WSTU 3352	Women in the United States I (same as AMST 3352/AMST 3352W and HIST 3352/HIST 3352W)
or WSTU 3352W	Women in the United States I

WSTU 3981	Women in Western Religion (same as REL 2981)

Language courses require placement tests.

Local/Civic Engagement

AMST 2020	Washington, D.C.: History, Culture, and Politics (same as HIST 2020/ HIST 2020W)
or AMST 2020W	Washington, D.C.: History, Culture, and Politics
BISC 1007	Food, Nutrition, and Service
BISC 1008	Understanding Organisms through Service Learning
CHEM 1003	Contemporary Science for Nonscience Majors
GEOG 1003	Society and Environment
HIST 2020	Washington, D.C.: History, Culture, and Politics (same as AMST 2020/ AMST 2020W)
or HIST 2020W	Washington, D.C.: History, Culture, and Politics
PHIL 2133	Philosophy and Nonviolence
PHIL 2136	Contemporary Issues in Ethics
PHIL 2281	Philosophy of the Environment
PHIL 3142	Philosophy of Law
or PHIL 3142W	Philosophy of Law
PSC 1002	Introduction to American Politics and Government
or PSC 1002W	Intro-American Politics & Govt
PSC 1011	Introduction to Politics I
SOC 1002	The Sociological Imagination
SOC 2169	Urban Sociology
SUST 1001	Introduction to Sustainability

Note: Local/civil engagement courses can double count with an analysis/communication requirement.

Mathematics or Statistics

MATH 1007	Mathematics and Politics
MATH 1009	Mathematical Ideas I
MATH 1010	Mathematical Ideas II
MATH 1051	Finite Mathematics for the Social and Management Sciences
MATH 1221	Calculus with Precalculus II *
MATH 1231	Single-Variable Calculus I *
MATH 1232	Single-Variable Calculus II
MATH 1252	Calculus for the Social and Management Sciences *
MATH 2233	Multivariable Calculus
STAT 1051	Introduction to Business and Economic Statistics *
STAT 1053	Introduction to Statistics in Social Science *
STAT 1111	Business and Economic Statistics I *
STAT 1127	Statistics for the Biological Sciences *
STAT 2112	Business and Economic Statistics II
STAT 2118	Regression Analysis

*MATH 1221, 1231, and 1252 are equivalent courses. STAT 1051, 1053, 1111, and 1127 are equivalent courses. Credit cannot be earned for more than one in either group.

Natural or Physical Laboratory Sciences

ANTH 1001	Biological Anthropology
ANTH 3412	Hominin Evolution
ASTR 1001	Stars, Planets, and Life in the Universe
ASTR 1002	Origins of the Cosmos
BISC 1005	The Biology of Nutrition and Health *
BISC 1006	The Ecology and Evolution of Organisms *
BISC 1007	Food, Nutrition, and Service *
BISC 1008	Understanding Organisms through Service Learning *
BISC 1111	Introductory Biology: Cells and Molecules
BISC 1112	Introductory Biology: The Biology of Organisms
CHEM 1003	Contemporary Science for Nonscience Majors
CHEM 1004	Contemporary Science for Nonscience Majors

CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I **
CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II **
GEOG 1002	Introduction to Physical Geography
GEOL 1001	Physical Geology ***
GEOL 1002	Historical Geology
GEOL 1005	Environmental Geology ***
GEOL 1006	Science & the Environment
HONR 1033	Honors Proseminar: Scientific Reasoning and Discovery
HONR 1034	Honors Proseminar: Scientific Reasoning and Discovery
PHYS 1003	Physics for Future Presidents
PHYS 1007	Music and Physics
PHYS 1011	General Physics I
PHYS 1012	General Physics II
PHYS 1021	University Physics I
PHYS 1022	University Physics II
PHYS 1025	University Physics I with Biological Applications
PHYS 1026	University Physics II with Biological Applications

*BISC 1005 and 1007 are equivalent courses; BISC 1006 and BISC 1008 are equivalent courses. Credit cannot be earned for both.

**To fulfill the G-PAC requirement, CHEM 2151 and CHEM 2153 must both be taken; same applies to CHEM 2152 and CHEM 2154.
***GEOL 1001 and GEOL 1005 are equivalent courses; credit cannot be earned for both.

Oral Communication

AMST 2010	Early American Cultural History (same as HIST 2010)
ANTH 1004	Language in Culture and Society
ANTH 2008	Foundations of Anthropological Thought
or ANTH 2008W	Foundations of Anthropology
ANTH 2502	Anthropology of Science and Technology: 21st-Century Brave New Worlds
ANTH 3838	Theory and Practice in Archaeology
or ANTH 3838W	Theory and Practice in Archaeology
COMM 1040	Public Communication
COMM 1041	Interpersonal Communication
ECON 4198W	Proseminar in Economics
ENGL 1510	Introduction to American Literature I
or ENGL 1510W	Introduction to American Literature I
ENGL 1710	Introduction to Postcolonial Literature and Film I
or ENGL 1710W	Introduction to Postcolonial Literature and Film I
ENGL 1711	Introduction to Postcolonial Literature and Film II
or ENGL 1711W	Introduction to Postcolonial Literature and Film II
ENGL 3481	The Eighteenth Century II
or ENGL 3481W	The Eighteenth Century II
ENGL 3620	American Poetry I
FREN 2005	Language, Culture & Society I
FREN 2006	Language, Culture & Society II
FREN 3020	Contemporary France
GER 2091	Introduction to German Literature–in English I
GER 2092	Introduction to German Literature–in English II
GER 2161	German Culture–in English I
HIST 1110	European Civilization in Its World Context
HIST 2010	Early American Cultural History (same AMST 2010)
HIST 2050	History of Jewish Civilization: From the Bible to Modernity

HIST 3044W	The Price of Freedom: Normandy 1944
ITAL 4380	Italian Journeys Medieval to Postmodern
MUS 2122	Music in the US
or MUS 2122W	Music in the US
PHIL 2124	Philosophies of Disability
or PHIL 2124W	Philosophies of Disability
PHIL 2133	Philosophy and Nonviolence
PHIL 2134	Philosophy of Human Rights
PHIL 4198	Proseminar
or PHIL 4198W	Proseminar in Philosophy
PSTD 1010	Introduction to Peace Studies and Conflict Resolution
REL 1010	The New Testament
or REL 1010W	The New Testament
SPAN 2006	Advanced Spanish II
SPAN 2056	Intensive Advanced Spanish
SPAN 3022	Advanced Oral Proficiency: Environmental and Social Sustainability in Latin America
SPAN 3100	Readings in Spanish and Latin American Literature

Note: Oral Communications courses can count toward analytic, perspective, WID, and major requirements.

Social Sciences

ANTH 1002	Sociocultural Anthropology
or ANTH 1002W	Sociocultural Anthropology
ANTH 1003	Archaeology
ANTH 1004	Language in Culture and Society
ANTH 2008	Foundations of Anthropological Thought
or ANTH 2008W	Foundations of Anthropology
ANTH 2502	Anthropology of Science and Technology: 21st-Century Brave New Worlds
ANTH 3838	Theory and Practice in Archaeology
or ANTH 3838W	Theory and Practice in Archaeology
COMM 1025	Introduction to Communication Studies
COMM 1040	Public Communication
COMM 1041	Interpersonal Communication
ECON 1011	Principles of Economics I
ECON 1012	Principles of Economics II
GEOG 1001	Introduction to Human Geography
GEOG 1003	Society and Environment
HONR 2043	Honors Microeconomics
HONR 2044	Honors Macroeconomics
HONR 2047	Honors Proseminar: Social and Behavioral Sciences
or HONR 2047W	Honors Proseminar: Social and Behavioral Science
PSC 1001	Introduction to Comparative Politics
or PSC 1001W	Intro to Comparative Politics
PSC 1002	Introduction to American Politics and Government
or PSC 1002W	Intro-American Politics & Govt
PSC 1011	Introduction to Politics I
PSC 1012W	Introduction to Politics II
PSYC 2011	Abnormal Psychology *
or PSYC 2011W	Abnormal Psychology
PSYC 2012	Social Psychology *
PSYC 2013	Developmental Psychology *
PSYC 2014	Cognitive Psychology *
PSYC 2015	Biological Psychology *
SMPA 1050	Media in a Free Society
SMPA 2101	Journalism: Theory & Practice
SMPA 2102	Introduction to Political Communication
SOC 1002	The Sociological Imagination
SOC 2101	Social Research Methods
SOC 2102	Techniques of Data Analysis
SOC 2103	Classical Sociological Theory

or SOC 2103W	Classical Sociological Theory
SOC 2104	Contemporary Sociological Theory
or SOC 2104W	Contemporary Sociological Theory
SOC 2169	Urban Sociology
SPHR 1071	Foundations of Human Communication
or SPHR 1071W	Foundations of Human Communication
SPHR 1084	Perspectives in Deaf Culture
SUST 1001	Introduction to Sustainability

*PSYC 1001 is a prerequisite for all Psychology courses.

Writing

UW 1020	University Writing
or HONR 1015	Honors Proseminar: UW 1020: Origins and Evolution of Modern Thought

CPS CERTIFICATE PROGRAMS

Undergraduate certificates

- Cyber Attacks and Cyber Threats Analysis
- Investigation of Cyber Security Incidents (p. 871)
- Protection and Defense of Computer Networks (p. 872)

Graduate certificates

The College of Professional Studies offers the following graduate certificates. Requirements are listed on the College of Professional Studies website (http://www.cps.gwu.edu). In addition to those listed, graduate certificates in political management and strategic governance and in strategic communications campaigns are offered in Spanish to closed cohorts of students in Latin America and in Spain.

- Climate Change Management and Policy (p. 872)
- Digital Politics (p. 872)
- Global Public Relations (p. 873)
- Health Care Corporate Compliance (p. 873)
- Justice and Public Safety Information Management (p. 874)
- Landscape Design (p. 874)
- PACs and Political Management (p. 874)
- Paralegal Studies (p. 875)
- Strategic Management and Executive Leadership for Law Enforcement
- Sustainable Landscapes (p. 876)
- Sustainable Urban Planning (p. 876) (p. 876)

CPS GRADUATE PROGRAMS

Master's programs

Admission Requirements

Applicants must hold a baccalaureate degree from a regionally accredited institution of higher learning or international equivalent. Applicants should have a strong academic background, normally with a *B* grade-point average or above (3.0 GPA on a 4.0 scale). Additional application requirements can be found on the Graduate Programs Finder (http://www.gwu.edu/all-graduate-programs).

- Master of Professional Studies in the field of b (p. 851)ioinformatics and biotechnology
- Master of Professional Studies in the field of cybersecurity strategy and information management (p. 852)
- Master of Professional Studies in the field of homeland security (p. 852)
- Master of Professional Studies in the field of landscape design (p. 854)
- Master of Professional Studies in the field of law firm management (p. 854)
- Master of Professional Studies in the field of paralegal studies (p. 855)
- Master of Professional Studies in the field of paralegal studies with a concentration in health care corporate compliance (p. 857)
- Master of Professional Studies in the field of publishing (p. 858)
- Master of Professional Studies in the field of sustainable urban planning (p. 859)

The Graduate School of Political Management, through the College of Professional Studies, offers the following:

- Master of Professional Studies in the field of advocacy in the global environment (p. 862)
- Master of Professional Studies in the field of legislative affairs (p. 863)
- Master of Professional Studies in the field of political management (p. 864)
- Master of Professional Studies in the field of political communication and governance ((p. 869)*Offered in Spanish only*)
- Master of Professional Studies in the field of strategic public relations (p. 870)
- Dual Master of Professional Studies in the field of political management and graduate certificate in survey design and analysis (p. 870)

CPS UNDERGADUATE PROGRAMS

Bachelor's completion programs

- Bachelor of Professional Studies with a major in cybersecurity (p. 847)
- Bachelor of Professional Studies with a major in integrated information science and technology (p. 847)
- Bachelor of Professional Studies with a major in police and security studies (p. 848)

Dual degree programs

- Bachelor of Arts with a major in political communication and Master of Professional Studies in the field of political management (p. 849)
- Bachelor of Arts with a major in political science and Master of Professional Studies in the field of advocacy in the global environment (p. 849)
- Bachelor of Arts with a major in political science and Master of Professional Studies in the field of legislative affairs (p. 850)
- Bachelor of Arts with a major in political science and Master of Professional Studies in the field of political management (p. 850)

CHEMISTRY, BA PREREQUISITES

Code	Title	Credits
Prerequisite courses for the Bachelor of Arts degree:		
CHEM 1111 & CHEM 1112	General Chemistry I and General Chemistry II	
CHEM 2122 & CHEM 2123W	Introductory Quantitative Analysis and Introductory Quantitative Analysis Laboratory	
MATH 1231 & MATH 1232	Single-Variable Calculus I and Single-Variable Calculus II	
PHYS 1021 & PHYS 1022	University Physics I and University Physics II	
or PHYS 1025	University Physics I with Biological Applications	

CHEMISTRY, BS PREREQUISITES

Code	Title	Credits
Prerequisite courses for the Bachelor of Science degree:		
CHEM 1111 & CHEM 1112	General Chemistry I and General Chemistry II	
CHEM 2122 & CHEM 2123W	Introductory Quantitative Analysis and Introductory Quantitative Analysis Laboratory	
MATH 1231 & MATH 1232	Single-Variable Calculus I and Single-Variable Calculus II	
PHYS 1021 & PHYS 1022	University Physics I and University Physics II	
or PHYS 1025	University Physics I with Biological Applications	
Two additional semesters of approved course work in the natural sciences or mathematics, such as one of the following:		
BISC 1111 & BISC 1112	Introductory Biology: Cells and Molecules and Introductory Biology: The Biology of Organisms	
GEOL 1001	Physical Geology	
or GEOL 1005	Environmental Geology	
GEOL 1002	Historical Geology	
Note: GEOL 1001 and GEOL 1005 cannot both be taken towards the undergraduate degree for credit.		

CIVIL ENGINEERING ELECTIVES

Engineering electives	
CE 4810	Research
CE 4820	Special Topics
CE 6102	Application of Probability Methods in Civil Engineering
CE 6201	Advanced Strength of Materials
CE 6202	Methods of Structural Analysis
CE 6203	Reliability Analysis of Engineering Structures
CE 6204	Analysis of Plates & Shells
CE 6205	Theory of Structural Stability
CE 6206	Continuum Mechanics
CE 6207	Theory of Elasticity I
CE 6208	Plasticity
CE 6209	Mechanics of Composite Materials
CE 6301	Design of Reinforced Concrete Structures

CE 6302	Prestressed Concrete Structures
CE 6320	Design of Metal Structures
CE 6321	Advanced Metal Structures
CE 6401	Fundamentals of Soil Behavior
CE 6402	Theoretical Soil Mechanics
CE 6403	Geotechnical Engineering
CE 6404	Geotechnical Earthquake Engineering
CE 6405	Rock Engineering
CE 6501	Environmental Chemistry
CE 6502	Advanced Sanitary Engineering Design
CE 6503	Principles of Environmental Engineering
CE 6504	Water and Wastewater Treatment Processes
CE 6505	Environmental Impact Assessment
CE 6506	Microbiology for Environmental Engineers
CE 6507	Advanced Treatment Processes
CE 6508	Industrial Waste Treatment
CE 6509	Introduction to Hazardous Wastes
CE 6601	Open Channel Flow
CE 6602	Hydraulic Engineering
CE 6603	Design of Dams
CE 6604	Advanced Hydrology
CE 6605	Ground Water and Seepage
CE 6606	Mechanics of Water Waves
CE 6607	Water Resources Planning and Control
CE 6608	Hydraulic Modeling
CE 6609	Numerical Methods in Environmental and Water Resources
CE 6610	Pollution Transport Systems
CE 6701	Analytical Mechanics
CE 6702	Vehicle Dynamics
CE 6705	Nonlinear Finite Element Modeling and Simulation
CE 6706	Pavement & Runway Design
CE 6707	Systems Dynamics Modeling and Control
CE 6721	Traffic Engineering and Highway Safety
CE 6722	Intelligent Transportation Systems
CE 6800	Special Topics
EMSE 6410	Survey of Finance and Engineering Economics

CORCORAN 4-YEAR PLAN

First year, fall semester	
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts
CFN 1090	First Year Studio I
UW 1020	University Writing
Major requirement	
Studio elective	
First year, spring semester	
CAH 1091	Art History II: Historical Perspectives in the Visual Arts
CFN 1091	First Year Studio II
Elective	
G-PAC: Social sciences, humanities, or math requirement	
Major requirement	
Second year, fall semester	
G-PAC: Social sciences, math, or humanities requirement	
Major requirement	
Studio elective	
Studio elective	
Second year, spring semester	
G-PAC: Natural or physical science requirement	
G-PAC: Social sciences or humanities requirement	
Major requirement	
Studio elective	

Third year, fall semester	
Art history requirement	
G-PAC: Natural or physical science requirement	
Major requirement	
Studio elective	
Third year, spring semester	
Art history requirement	
G-PAC: Social sciences, humanities, or math requirement	
Studio elective	
Studio elective	
Fourth year, fall semester	
Art history requirement	
G-PAC: Social sciences, humanities, or math requirement	
Thesis I requirement	
Studio elective	
Studio elective	
Fourth year, spring semester	
Major requirement	
Studio elective	
Studio elective	
Studio or other elective	
Thesis II requirement	

DRPH GRADUATION REQUIREMENTS

Graduation Requirements

1. Graduate credit requirement: 48 graduate credits are required.
2. Course requirements: successful completion of the foundational and research methods courses. The program-specific specialty field courses and the professional leadership credits are required.
3. Comprehensive exam: Once the course of study is completed, students are required to pass the comprehensive exam to be officially admitted to the candidacy phase.
4. Dissertation: PUBH 8422 Advanced Health Care and Public Health Research Design plus 6-9 dissertation research credits are required. Once the proposal has been successfully defended and dissertation research credits have been met, the oral defense may be scheduled.
5. Grade point requirement: A 3.0 (B average) overall grade-point average is required.
6. Time limit requirement: The degree must be completed within seven (7) years.
7. No transfer credits are accepted.

DISCLAIMER

Information in this Bulletin is generally accurate as of August 2016. The University reserves the right to change courses, programs, fees, and the academic calendar, or to make other changes deemed necessary or desirable, giving advance notice of change when possible.

ESIA CURRICULUM REQUIREMENTS FOR THE FIRST TWO YEARS

Curriculum Requirements for the First Two Years

Curriculum requirements that Elliott School students should try to address in their freshman and sophomore years are listed below. Consult the Elliott School Undergraduate General Requirements (http://elliott.gwu.edu/undergraduate-programs/requirements) before choosing courses to fulfill these requirements. Information on credit by examination or waiving curriculum requirements is available from academic advisors in the Elliott School.

As a basis for all Elliott School Bachelor of Arts programs, students take:

IAFF 1005	Introduction to International Affairs: A Washington Perspective
ECON 1011	Principles of Economics I *
ECON 1012	Principles of Economics II *
PSC 1001	Introduction to Comparative Politics *
HIST 1011	World History, 1500-Present **
ANTH 1002	Sociocultural Anthropology *
or GEOG 1001	Introduction to Human Geography
UW 1020	University Writing *
One course in mathematics ***	
One course in science (lab required) ***	
Humanities/Creative Arts (9 credits of humanities or 6 credits of humanities plus 3 credits of creative arts courses) ***	

Third year proficiency in a modern foreign language ***

*These courses satisfy many of the University General Education Requirement (p. 38).
** While HIST 1011 satisfies the university general education requirement in humanities, it does not meet the Elliott School's school-specific requirement for humanities/creative arts. A list of courses that fulfill the humanities and creative arts requirements (p. 38) can be found online.
***Additional university- and school-specific general education courses are required for all Elliott School undergraduates. A list of the courses that fulfill the quantitative reasoning, scientific reasoning, humanities and /or creative arts requirements can be found on the Elliott School Undergraduate Programs website (http://elliott.gwu.edu/undergraduate-programs/supporting-courses).

ESIA GRADUATE CERTIFICATE PROGRAMS

The Elliott School of International Affairs offers a series of graduate certificates covering topics of specialized interest. The certificate programs are open to all graduate students presently enrolled in the Elliott School, Columbian College of Arts and Sciences, Graduate School of Education and Human Development, School of Business, and Milken Institute School of Public Health. The programs are also open to graduate students from other universities, individuals who have already earned a graduate degree, and individuals with a bachelor's degree and a minimum of eight years of relevant professional work experience. Applicants who have less than eight years of work experience are eligible to apply but must submit the same application materials required of other M.A. degree programs. Transfer credit from non-GW institutions is not accepted into any graduate certificate program. No more than 6 credits of graduate course work taken in any degree or non-degree status within the University, including the Elliott School, may be included in any graduate certificate program. Additional information is available in the Elliott School Graduate Admissions office (http://elliott.gwu.edu/graduate-admissions).

Graduate certificate programs

- Graduate certificate in global gender policy (p. 758)
- Graduate certificate in international science and technology policy (p. 758)
- Graduate certificate in nuclear policy (p. 759)

ESIA GRADUATE PROGRAM REQUIREMENTS

Master's programs

- Master of Arts in the field of Asian studies (p. 717)
- Master of Arts in the field of European and Eurasian studies (p. 724)
- Master of Arts in the field of global communication (p. 729)
- Master of Arts in the field of international affairs (p. 734)
- Master of Arts in the field of international development studies (p. 747)
- Master of Arts in the field of international science and technology policy (p. 750)
- Master of Arts in the field of international trade and investment policy (p. 751)
- Master of Arts in the field of Latin American and hemispheric studies (p. 752)
- Master of Arts in the field of Middle East studies (p. 753)
- Master of Arts in the field of security policy studies (p. 754)
- Master of International Policy and Practice (p. 756)
- Master of International Studies (p. 756)

Combined programs

- Dual Master of Arts and Master of Public Health (p. 757)
- Joint Master of Arts and Juris Doctor (p. 757)
- Joint Master of Arts and Master of Business Administration (p. 757)

ESIA MA GENERAL REQUIREMENTS

General Requirements for Master of Arts Degree Programs

Programs leading to the master of arts degree require a minimum of 40 credits of graduate course work, which includes a capstone project. By the end of the first semester in residence, candidates for the degree are required to submit to the Office of Academic Advising and Student Services for final approval a plan of study that includes fields, supporting course work, and any other required information as endorsed by the program director. Degrees are awarded after the student has completed the required course work, an acceptable capstone project, and satisfied the foreign language requirement (if relevant).

Students with sufficient academic backgrounds may waive a core course with approval of a designated faculty member from the department concerned. A course waiver does not reduce the number of credits required for the degree. Under special circumstances, upper-level undergraduate courses may be counted toward the master's degree; registration for graduate credit must be approved at the beginning of the course by the program director, the instructor, and the Office of Academic Advising and Student Services. The student who takes an undergraduate course for graduate credit is expected, by arrangement with the instructor, to do work at the graduate level in addition to the regular work of the course. Normally, no more than 9 credits of approved undergraduate course work

may be taken for credit toward a graduate degree. Academic credit counted toward a previous degree may not be counted toward the master's degree.

All master's degree candidates must complete degree requirements within five years of their admission to the program. Students who are unable temporarily to continue their studies may request a leave of absence not to exceed one year. Extensions beyond the five-year period may be granted in exceptional circumstances, but the student will be required to register for Leave of Absence each semester.

Students are encouraged, and in some cases required, to take professional skills-based courses (IAFF 6502 Professional Skills I–IAFF 6503 Professional Skills II) and should consult their program guidelines for limits on the number of credits in these courses that can count toward their degree program. The maximum allowed by the Elliott School is 4 credits.

No more than a combined total of 6 graduate credits may be transferred from other accredited institutions or from non-degree status; these may be accepted only under limited conditions of time, grades earned, and relevance to the student's program. Foreign language course credit is not eligible for transfer.

Foreign Language Requirements

In most degree programs, a candidate for the master of arts must demonstrate reading and speaking proficiency in a modern foreign language. All students in regional programs (including those who are not native speakers of English) must demonstrate proficiency in a language appropriate to the study of the specific region. Students should consult their program guidelines for specific requirements, academic credit, and options for fulfilling the language requirement.

Capstone/Thesis Option

Every student must successfully complete a capstone or, with approval of the program director, a thesis near the conclusion of the master's program. For the capstone, the student must have a 3.0 grade-point average and must have completed or registered for 30 credits. If there is a lapse of time between completion of other course work and the capstone, the student must be continuously enrolled during this period. A student who fails to complete successfully the capstone may repeat it with the permission of the dean. If the student fails a second time, no further opportunity to complete the capstone will be permitted and the degree will not be conferred. Details concerning the capstone course vary across programs; students should consult their program guidelines for details.

For most programs, exceptional students may write a thesis, in addition to the capstone, if they qualify by having a minimum 3.5 grade-point average for at least 20 credits of course work in their program and developing a formal thesis proposal approved by their prospective thesis advisor and the program director.

The thesis subject should be selected as early as possible so as to permit effective integration with the student's course work. A student will not be permitted to register for (IAFF 6998 Thesis–IAFF 6999 Thesis) until the thesis subject has been formally submitted to the Office of Academic Advising. The subject must be approved by the member of the full-time faculty under whom the thesis is to be written, a second member of the faculty who will serve as a reader, and the student's program director. The thesis in its final form must have the approval of the thesis director and one other reader. All theses must be submitted electronically by May 1 prior to the student's final academic year and meet the formatting and other requirements set forth at GW's Electronic Theses and Dissertations Submission website (http://library.gwu.edu/etds).

Payment of tuition for thesis research entitles the candidate, during the period of registration, to the advice and direction of the thesis director and the other reader. In case a thesis is unfinished, the student must maintain continuous enrollment and is allowed one calendar year to complete it. If the preparation of the thesis extends beyond the additional calendar year, the student must register for the entire 6 credits of thesis again and pay tuition as for a repeated course.

ESIA UNDERGRADUATE PROGRAMS

Bachelor's programs

- Bachelor of Arts with a major in Asian studies (p. 709)
- Bachelor of Arts with a major in international affairs (p. 711)
- Bachelor of Arts with a major in Latin American and hemispheric studies (p. 712)
- Bachelor of Arts with a major in Middle East studies (p. 713)

Minors

- Minors (p. 714)

EDUCATION SPECIALIST

The Degree of Education Specialist

The program of advanced study leading to the degree of education specialist (Ed.S.) is for students with a master's degree in education who seek further professional preparation. The program is available in the fields of educational leadership and administration, counseling, curriculum and instruction, higher education administration, human and organizational learning, and special education.

Admission Requirements

The following are required for entrance to an education specialist program: an undergraduate degree and a master of arts in education and human development (M.A.Ed.&H.D.) or its equivalent from a regionally accredited institution, two years of pertinent experience in an education or human development field, and a graduate scholastic average of at least 3.3 and, in

some programs, an acceptable score on either the Graduate Record Examination or Miller Analogies Test. Two letters of recommendation, one from a professional supervisor and one from the most recent graduate faculty advisor, are required, along with a statement of professional goals. Each applicant must be interviewed and recommended by a faculty advisor in the major field.

Programs of Study and Degree Requirements

Individual programs are developed, through a plan of study worked out with a faculty advisor, to fit the candidate's skills, interests, and career goals. A minimum of 30 credits beyond the requirements for an M.A.Ed.&H.D. degree is required. At least 21 credits of this work must be taken in residence at GW. A maximum of five calendar years is allowed for completion of the program.

At least 12 of the required 30 credits must be in appropriate graduate courses in education selected from the following areas: (1) foundations and cognate study, (2) background and general principles of the field of study, and (3) an area of specialization. A graduate-level research methods course must be included in the program if it was not completed in previous graduate work.

The Comprehensive Examination

Successful completion of a six-hour written or oral examination or its equivalent, at the option of the major field advisor, is required. Candidates taking the examination must be registered for at least 1 credit in the semester it is to be taken and submit an online comprehensive examination application by the published deadline.

Education Specialist Programs

- Education Specialist in the field of educational leadership and administration (p. 539)
- Education Specialist in the field of special education (p. 539)

EXPLANATION OF COURSE NUMBERS

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GESHD CERTIFICATE PROGRAMS

The Graduate School of Education and Human Development offers the following graduate certificate programs. Graduate certificates do not constitute eligibility for an initial license or assure admission to a subsequent degree program. Courses taken as part of a certificate program may be applied toward advanced credentials or endorsements added to an initial license.

Graduate Certificates

- Assessment, Testing, and Measurement in Education (p. 551)
- Autism Spectrum Disorders (p. 551)
- Brain Injury: Educational and Transition Services (p. 552)
- Counseling and Life Transitions (p. 552)
- Design and Assessment of Adult Learning (p. 553)
- E-Learning (p. 554)
- Global Leadership in Teams and Organizations (p. 554)
- Incorporating International Perspectives in Education (p. 554)
- Instructional Design (p. 555)
- Integrating Technology into Education (p. 555)
- Job Development and Placement (p. 556)
- Leadership Development (p. 556)
- Leadership in Educational Technology (p. 556)
- Multimedia Development (p. 557)
- Organizational Learning and Change (p. 557)
- Secondary Special Education and Transition Services (p. 557)
- Special Education for Culturally and Linguistically Diverse Learners (p. 558)
- STEM Master Teacher (p. 558)
- Teaching English to Speakers of Other Languages (p. 559)
- Training and Educational Technology (p. 559)

Post-Master's Certificates

- Counseling (p. 552)
- Educational Leadership and Administration (p. 553)

GSEHD DOCTORAL PROGRAMS

The Degree of Doctor of Philosophy

A Ph.D. in the field of counseling is accredited by the Council for Accreditation of Counseling and Related Educational Programs.

The Ph.D. in the field of educational science is designed to create opportunities for cross-disciplinary education research by concentrating on critical national and global problems in which education and human development play a significant role. To adequately address such critical national and global problems, scholars require both a strong foundation in

educational science as well as theoretical and disciplinary grounding in multiple disciplines. The Ph.D. program is distinguished by four characteristics: (a) candidates apply to a cross-disciplinary research team (CRT) that is focused on a critical problem related to education, (b) approaches to the research problems require a cross-disciplinary lens, (c) students engage in research throughout their program, and (d) candidates aspire to careers in which the production of research is paramount.

Admission Requirements

A master's degree from a regionally accredited institution is required. Materials to be submitted include: official transcripts, GRE scores, TOEFL scores (for international applicants), three letters of recommendation, and a statement of purpose. Each program has more specific details about these materials and additional requirements. Selection is competitive and is based on the applicant's past achievements, perceived potential, and fit to the goals and mission of the program.

The Degree of Doctor of Education

The Graduate School of Education and Human Development offers programs of advanced study leading to the degree of Doctor of Education (Ed.D.). These programs provide major fields of study in curriculum and instruction, special education, educational administration and policy studies, human and organizational learning, and higher education administration. Supporting fields are available in educational administration, higher education administration, counseling, curriculum and instruction, education policy, elementary education, human development, human and organizational learning, international education, program evaluation, secondary education, special education, supervision, and teacher education. With the approval of a student's program planning committee, course work may be taken in or from other departments of the University and through the Consortium. All programs require a doctoral dissertation in the major field of study.

All doctoral programs are designed to accommodate the needs of full-time students as well as working professionals who must pursue their studies on a part-time basis. Required graduate courses, with few exceptions, are offered in the late afternoon and evening. In some programs, courses are offered at off-campus locations.

Admission Requirements

The applicant must have adequate preparation for advanced study, including the undergraduate degree and graduate work from a regionally accredited institution in the content area that supports his or her objective. This graduate work must be comparable to that required for the degree of Master of Arts in Education and Human Development at this University. Students with a master's degree in a field other than education may be considered for doctoral study provided that the degree and previous experience are judged relevant by the major field program faculty.

For an application to be considered by the major field program faculty, an applicant must have a minimum graduate scholastic average of 3.3 on a scale of 4.0 and an acceptable score on the Miller Analogies Test or Graduate Record Examination. In the field of human organizational learning, the Graduate Management Admissions Test is acceptable as well. Programs often set higher admissions standards, and the number of new doctoral students in each program is limited. All applicants must have an interview with faculty members in the major field. Students receiving favorable recommendations from the major field faculty are admitted to precandidacy for the degree.

Precandidacy and Candidacy

The Doctor of Education program is divided into two stages: precandidacy and candidacy. In general, the degree program requires three or more years of full-time study beyond the master's degree or the equivalent in part-time study. Course work and the comprehensive examination must be completed within five years, and the entire program must be completed within eight years. The minimum residency requirement in degree status for the Ed.D. is 36 credits of course work in the precandidacy stage and 12 to 24 credits of dissertation research in the candidacy stage. In most cases, course work beyond the minimum is required.

In the precandidacy stage, all course work in the program must be completed and the comprehensive examination passed. Course work toward the doctorate is established on the basis of a framework of seven domains: knowledge of foundations; critical literature review; research methods; clarity of thought, as expressed both in speech and in writing; professional development; technological skills; and depth of knowledge of the specialty area. A program plan of study is developed between the doctoral student and a doctoral study advising team, generally consisting of two members of the program faculty.

The comprehensive examination is generally a two-day examination held each semester and taken upon completion of all precandidacy course work. Students taking the examination must be registered for at least 1 credit in the semester it is to be taken and must file an online application in the dean's office by the published deadline.

The candidacy stage of doctoral study begins after successful completion of the content course work *and* the comprehensive examination. A doctoral research dissertation committee is established and the candidate develops a dissertation proposal (this may be while registered in Pre-Dissertation Seminar). Upon successful completion of course work listed on the approved program plan of study, students must register for dissertation research at the rate of 3 or 6 credits each fall and spring semester. A minimum of 12 dissertation research credits are required for graduation. Students who have not defended their dissertation after 12 credits continue to register at the rate of 3 or 6 credits until they have reached 24 credits of dissertation research. Once they have reached their 24 credit maximum, they must register each subsequent fall and spring

semester for 1 credit of Continuing Research until completion of their degree program with the successful defense of the dissertation to the Dissertation Oral Examination Committee. The accepted dissertation is submitted electronically, with a processing fee paid directly to Proquest/UMI.

Detailed information on the Ed.D. program and its administration is available in the GSEHD Doctoral Student Handbook (http://gsehd.gwu.edu/sites/default/files/2014%20-%202015%20Doctoral%20Handbook.pdf). Students completing their degree program should refer to the section on Graduation Requirements, Participating in the Commencement Ceremony, under University Regulations.

Doctoral programs

- Doctor of Education in the field of curriculum and instruction (p. 541)
- Doctor of Education in the field of educational administration and policy studies (p. 542)
- Doctor of Education in the field of higher education administration (p. 544)
- Doctor of Education in the field of human and organizational learning (p. 545)
- Doctor of Education in the field of special education (p. 547)
- Doctor of Philosophy in the field of counseling (p. 548)
- Doctor of Philosophy in the field of educational science (p. 549)

GSEHD MASTER'S PROGRAMS

Teacher Certification Preparation Programs

Programs are available to prepare students for teacher licensure in elementary, secondary, and special education through the Master of Arts in the field of education and human development, Master of Education, and Education Specialist degree programs. Students who plan to prepare for licensure must apply to the appropriate degree program. These degree programs are also available to credentialed teachers seeking additional endorsements.

In accordance with the 2008 Higher Education Opportunity Act, Title II, Section 205, The George Washington University Graduate School of Education and Human Development provides required information in response to any request by potential applicants, guidance counselors, and prospective employers. Visit the School's website (http://gsehd.gwu.edu) for additional information.

Master of Arts in Teaching

- Master of Arts in Teaching in the field of museum education (p. 530)

Master of Education

- Master of Education in the field of elementary education (p. 527)
- Master of Education in the field of secondary education (p. 534)

Master of Arts in Education and Human Development

- Master of Arts in Education and Human Development individualized program (p. 529)
- Master of Arts in Education and Human Development in the field of assessment, testing, and measurement in education (p. 520)
- Master of Arts in Education and Human Development in the field of clinical mental health counseling (p. 521)
- Master of Arts in Education and Human Development in the field of clinical rehabilitation counseling (p. 521)
- Master of Arts in Education and Human Development in the field of curriculum and instruction (p. 522)
- Master of Arts in Education and Human Development in the field of curriculum and instruction, concentration in elementary education (p. 522)
- Master of Arts in Education and Human Development in the field of curriculum and instruction, concentration in interdisciplinary studies of literacy and reading education (p. 523)
- Master of Arts in Education and Human Development in the field of curriculum and instruction, concentration in secondary education (p. 524)
- Master of Arts in Education and Human Development in the field of early childhood special education (p. 524)
- Master of Arts in Education and Human Development in the field of educational leadership and administration (p. 526)
- Master of Arts in Education and Human Development in the field of education policy studies (p. 525)
- Master of Arts in Education and Human Development in the field of educational technology leadership (p. 526)
- Master of Arts in Education and Human Development in the field of experiential education and Jewish cultural arts (p. 528)
- Master of Arts in Education and Human Development in the field of higher education administration (p. 528)
- Master of Arts in Education and Human Development in the field of international education (p. 530)
- Master of Arts in Education and Human Development in the field of organizational leadership and learning (p. 531)
- Master of Arts in Education and Human Development in the field of rehabilitation counseling (p. 532)
- Master of Arts in Education and Human Development in the field of school counseling (p. 533)
- Master of Arts in Education and Human Development in the field of secondary special education and transition services (p. 535)
- Master of Arts in Education and Human Development in the field of special education for children with emotional and behavioral disabilities (p. 537)

- Master of Arts in Education and Human Development in the field of special education for culturally and linguistically diverse learners

Joint Program

- Master of Arts in Education and Human Development in the field of Educational Policy and Juris Doctor (p. 550)

GWSB CERTIFICATE PROGRAMS

Post-Master's Certificate Program for School of Business Alumni

The School of Business offers a post-master's graduate certificate designed to assist master's degree alumni of the school in keeping apace of an ever-changing business climate. Participants may undertake a 12-credit program of study in an existing School of Business field or from a series of specially designed program offerings. Further information is available from the Office of the Dean.

Graduate Certificate Programs

In addition, the School of Business offers graduate certificate programs of study in the following fields:

- Graduate certificate in business analytics (p. 489)
- Graduate certificate in walkable urban development (p. 491)
- Graduate certificate in nonprofit management (p. 489)
- Graduate certificate in responsible management (p. 490)
- SAS certificate in business analytics (p. 491)

GWSB GRADUATE PROGRAMS

Master's programs

- Master of Accountancy (p. 469)
- Master of Science in Business Analytics (p. 470)
- Master of Science in Finance (p. 470)
- Master of Science in Information Systems Technology (p. 471)
- Master of Science in Government Contracts (p. 472)
- Master of Science in Project Management (p. 472)
- Master of Tourism Administration (p. 473)

Master of Business Administration programs

- Global Master of Business Administration (p. 474)
- Healthcare Master of Business Administration (p. 480)
- Professional Master of Business Administration (p. 481)
- World Executive Master of Business Administration (p. 487)

Combined degree programs

- Joint Master of Business Administration/Juris Doctor with the Law School (p. 488)
- Joint Master of Business Administration/Master of Arts with a focus on international business with the Elliott School of International Affairs (p. 488)
- Joint Master of Business Administration/Master of Science in Finance (p. 488)
- Joint Master of Business Administration/Master of Science in Government Contracts
- Dual Master of Business Administration/Master of Science in Information Systems Technology (p. 504)
- Joint Master of Business Administration/Master of Science in Project Management (p. 488)

Doctoral program

- Doctor of Philosophy in the field of business administration (p. 488)

GWSB UNDERGRADUATE PROGRAMS

Bachelor's programs

- Bachelor of Accountancy (http://bulletin.gwu.edu/business/undergraduate-programs/accountancy)
- Bachelor of Business Administration (p. 452)
  - concentration in accountancy (p. 456)
  - concentration in business analytics (p. 456)
  - concentration in business economics and public policy (p. 457)
  - concentration in finance (p. 458)
  - concentration in information systems and technology management (p. 459)
  - concentration in innovation and entrepreneurship (p. 460)
  - concentration in international business (p. 460)
  - concentration in marketing (p. 461)
  - concentration in sport, event, and hospitality management (p. 462)
  - concentration in individualized field (p. 459)
- Bachelor of Science with a major in finance (p. 463)

Combined programs

- Dual degree programs (p. 467)

Minor

- Minor in business administration (p. 468)

MFS CORE REQUIREMENTS

The program of study consists of 37 credits including:

Core requirements (16 credits):	
FORS 6004	Fundamentals of Forensic Science I
FORS 6005	Fundamentals of Forensic Science II

FORS 6020	Ethics, Professional Responsibility, and Quality Assurance
FORS 6224	Criminal Law for Forensic Scientists
FORS 6225	Statistics for Forensic Scientists
FORS 6292	Graduate Seminar (taken twice) *

MPH GRADUATION REQUIREMENTS

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits
2. Course requirements: Successful completion of core and program-specific courses
3. Grade point requirement: 3.0 (B average) overall grade point average
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MS BIOSTATISTICS

Minimum Prerequisite Courses for Admission Consideration (or equivalents to these GW courses)

The courses listed below (or equivalents) are prerequisites for admission consideration and MUST appear on your transcript. Submit the MS Biostatistics program admission application only after having completed all of the following prerequisite courses:

MATH 1231	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
STAT 2118	Regression Analysis

Additional Course Requirements

The courses listed below are "Additional Course Requirements." Applicants lacking these courses (or equivalents to these GW courses) will be considered for admission, but, if admissible, will be admitted conditionally with the expectation that these courses will be satisfactorily completed within two semesters following matriculation in the program. These credits do not count as credit toward the 33-credit graduation requirement, nor are grades earned in these additional courses reflected in the overall grade-point average.

MATH 2184	Linear Algebra I
MATH 2233	Multivariable Calculus
One of the following:	
STAT 1129	Introduction to Computing
STAT 2183	Intermediate Stat Lab/Packages
PUBH 6249	StatPackages/DataMgt&DataAnlys

Program Requirements

Required core courses:

Required statistics core courses:	
STAT 6201	Mathematical Statistics I
STAT 6202	Mathematical Statistics II
STAT 6210	Data Analysis
STAT 6227	Survival Analysis
PUBH 6265	Design of Medical Studies
PUBH 6266	Biostatistical Methods (Basis for Master's Comprehensive Examination)
Required public health core courses:	
PUBH 6001	Biological Concepts in Public Health
PUBH 6003	Principles and Practices of Epidemiology
PUBH 6099	Topics in Public Health

Approved elective courses:

6 credits from the following:	
Approved statistics elective courses:	
STAT 3187	Introduction to Sampling
STAT 4181	Applied Time Series Analysis
STAT 4188	Nonparametric Stat Inference
STAT 6215	Applied Multivariate Analysis I
STAT 6216	Applied Multivariate Analysis II
STAT 6217	Design of Experiments
STAT 6223	Bayesian Statistics: Theory and Applications
STAT 6231	Contingency Table Analysis

STAT 6242	Regression Graphics/Nonparametric Regression
STAT 6287	Modern Theory of Sample Surveys
STAT 8226	Advanced Biostatistical Methods
STAT 8265	Multivariate Analysis
STAT 8273	Stochastic Processes I
STAT 8281	Advanced Time Series Analysis
STAT 8288	Modern Theory/Sample Surveys
Approved public health elective courses:	
PUBH 6004	Environmental and Occupational Health in a Sustainable World
PUBH 6006	Management and Policy Approaches to Public Health
PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6242	ClinicalEpid&Decision Analysis
PUBH 6244	Cancer Epidemiology
PUBH 6245	InfectiousDisease Epidemiology
PUBH 6250	Epidemiology of HIV/AIDS
Consulting	
PUBH 6258	Adv Topics/Biostat Consulting
PUBH 6283	Biostatistics Consulting Practicum

The Master's Comprehensive Examination

The Master's Comprehensive Examination is a written comprehensive examination in the field of Biostatistics and is based on the course content PUBH 6266 Biostatistical Methods It is administered by the faculty from the Department of Epidemiology and Biostatistics in the Milken Institute School of Public Health.

MS EXERCISE SCIENCE GRADUATION REQUIREMENTS

Graduation requirements

1. Graduate credit requirement: 36 graduate credits
2. Course requirements: successful completion of core and program specific courses
3. Examination requirement: pass the American College of Sports Medicine Clinical Exercise Specialist® certification examination (clinical exercise physiology only)
4. Grade point requirement: 3.0 (B average) overall grade point average
5. Time limit requirement: the degree must be completed within four years
6. Transfer credit policy: up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the M.S.E.S. Courses need to have been taken within the past three years from an accredited institution with a grade of B or better.

PHD BIOSTATISTICS

Specific admission requirements are shown on the Graduate Program Finder. (http://www.gwu.edu/all-graduate-programs)

Undergraduate course requirements (or equivalents to these GW courses) for admission consideration

MATH 1231	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
STAT 2118	Regression Analysis
MATH 2233	Multivariable Calculus

Additional course requirements* (or equivalents to these GW courses):

MATH 2184	Linear Algebra I
One of the following:	
STAT 1129	Introduction to Computing
STAT 2183	Intermediate Stat Lab/Packages
PUBH 6249	StatPackages/DataMgt&DataAnlys

* Applicants lacking these courses (or equivalents to these GW courses) will be considered for admission, but, if admissible, will be admitted conditionally with the expectation that these courses will be satisfactorily completed within two semesters following matriculation in the program. These credits do not count as credit toward the 72 credit graduation requirement nor are grades earned in additional courses reflected in the overall grade-point average.

Ph.D. in the field of biostatistics degree requirements: 72 credits of course work and research, with a minimum of 51 credits of courses and a minimum of 12 credits of dissertation research.

Required statistics and public health core courses:

Required statistics core courses:	
STAT 6201	Mathematical Statistics I

STAT 6202	Mathematical Statistics II
STAT 6210	Data Analysis
STAT 6213	Intermediate Probability and Stochastic Processes
PUBH 8365	Design of Medical Studies
PUBH 8366	Biostatistical Methods
STAT 8226	Advanced Biostatistical Methods
STAT 6227	Survival Analysis
STAT 8263	Advanced Statistical Theory I
Required public health core courses:	
PUBH 6001	Biological Concepts in Public Health
PUBH 6003	Principles and Practices of Epidemiology
PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6099	Topics in Public Health (may be repeated for credit)
One of the following:	
PUBH 6007	Social and Behavioral Approaches to Public Health
Approved elective courses:	
PUBH 6006	Management and Policy Approaches to Public Health
9 credits from the following:	
Approved statistics elective courses (at least 3 credits):	
STAT 6231	Contingency Table Analysis (recommended)
STAT 8262	Nonparametric Inference (recommended)
STAT 6214	Applied Linear Models (recommended)
STAT 6207	Methods of Statistical Computing I
STAT 6208	Methods of Statistical Computing II
STAT 6215	Applied Multivariate Analysis I
STAT 6216	Applied Multivariate Analysis II
STAT 6217	Design of Experiments
STAT 6218	Linear Models
STAT 6223	Bayesian Statistics: Theory and Applications
STAT 6242	Regression Graphics/Nonparametric Regression
STAT 6287	Modern Theory of Sample Surveys
STAT 6289	Topics in Statistics
STAT 8257	Probability
STAT 8258	Distribution Theory
STAT 8263	Advanced Statistical Theory I
STAT 8264	Advanced Statistical Theory II
STAT 8265	Multivariate Analysis
STAT 8273	Stochastic Processes I
STAT 8274	Stochastic Processes II
STAT 8281	Advanced Time Series Analysis
STAT 8288	Modern Theory/Sample Surveys
BIOS 8998	Advanced Reading and Research (see advisor)
Approved public health elective courses:	
PUBH 6242	ClinicalEpid&Decision Analysis (recommended)
PUBH 6245	InfectiousDisease Epidemiology
PUBH 8419	Measrmnt/PublHlth&HlthSrvcsRes
Consulting	
Note: May be waived by the Biostatistics Program Director, based on written documentation of prior equivalent course work or relevant work experience. Waiver of the consulting course increases the total number of electives by the number of consulting credits waived	
PUBH 6258	Adv Topics/Biostat Consulting
PUBH 6283	Biostatistics Consulting Practicum
Dissertation research:	
12-24 credits of the following:	
BIOS 8999	Dissertation Research

General and final examinations

The General Examination is given in two parts:

- Part I, is a written comprehensive examination based on the course content of STAT 6202 Mathematical

Statistics II STAT 6213 Intermediate Probability and Stochastic Processes (administered by faculty of the Department of Statistics), and PUBH 6266 Biostatistical Methods (administered by the faculty of the Department of Epidemiology and Biostatistics). Students are expected to take the comprehensive examination within 24 months from the date of enrollment in the program. In addition, students are required to make up any deficiencies prior to taking the examination, e.g., by enrolling in appropriate master's-level courses as needed. A student who fails to pass the comprehensive examination may, with the approval of the faculty, repeat the examination the following year. Failure on the second attempt will result in termination from the Ph.D. program.

- Part II, the research proposal, consists of an oral examination based on a written dissertation research proposal. As soon as feasible after successful completion of the comprehensive exam, students are encouraged to identify a dissertation advisor and a topic of research. The written dissertation proposal is then submitted to the student's Dissertation Research Committee, and the student will make an oral presentation of his or her proposal to the Committee. The Committee will determine the student's readiness to pursue and successfully complete the proposed research, in addition to the appropriateness of the specific problem for dissertation level research.

Upon successful completion of the required course work and both parts of the General Examination, the candidate will generally be recommended to the Associate Dean for Graduate Affairs of The Columbian College of Arts and Sciences (CCAS) for promotion to PhD Candidacy: the dissertation research. A candidate must file an approved dissertation research plan with the CCAS before being admitted to PhD Candidacy. Prior to completion of the General Examination, a student may register for at most 6 credits of BIOS 8999 Dissertation Research.

Consult with the Biostatistics program director or academic advisor for the dissertation guidelines.

Professional enhancement requirement (8 hours)

Professional enhancement activities supplement the academic curriculum and help prepare students to participate actively in the professional community. They enhance practical knowledge and awareness of public health issues – either in general or in a student's specific area of study.

Students can fulfill this requirement by attending workshops, seminars, or other relevant professional meetings, which are often held at SPH and in the metropolitan Washington, DC area. Examples of conference sponsors include the National Academy for State Health Policy, the Pan American Health Organization, the American Public Health Association, the American College of Healthcare Executives, the Area Health Education Center, the American College of Sports Medicine, and the National Athletic Trainer's Association. Opportunities for professional enhancement are regularly publicized via the SPH Listserv and through your department or advisor.

Students must submit documentation of professional enhancement activities to the Biostatistics academic advisor, which includes a prior approval, a description of the program agenda, and proof of attendance before applying for graduation.

PHD EPI GRADUATION REQUIREMENTS

Graduation Requirements

1. Program options: Students may choose either curriculum Plan A or curriculum Plan B for the Doctor of Philosophy degree in the field of epidemiology.
2. Graduate credit requirement: 72 graduate credits are required.
3. Prerequisites**:** Review official program guide for minimum prerequisite requirements for admission.
4. Comprehensive (General) exam
   a. A written comprehensive exam will be administered within 24 months from date of matriculation based on the course content of PUBH 6247 Design of Health Studies, PUBH 6252 Advanced Epidemiology Methods, and PUBH 8419 Measrmnt/PublHlth&HlthSrvcsRes. The exam is administered once per year in August.
   b. An oral presentation of the proposal for dissertation is made to the students' Dissertation Research Committee. The Committee will determine the student's readiness to pursue and complete the proposed research.
5. Dissertation: 12-21 credits of dissertation research are required. Students may register for up to 6 credits of PUBH 8999 Dissertation Research prior to completion of the proposal defense.
6. Grade point requirements: An overall GPA of 3.0 (B average) is required.
7. Time limit requirement: The degree must be completed in 8 years.
8. Transfer credit policy: Up to 24 credits from an applicable master's program may be approved to be transferred to the doctoral program. Credits must have been earned from an accredited institution with a grade point average of B or better.

SMHS CERTIFICATE PROGRAMS

Post-baccalaureate certificates

- Post-baccalaureate certificate in medical laboratory science (p. 804)
- Post-baccalaureate certificate in blood banking for medical laboratory science (p. 802)

- Post-baccalaureate certificate in chemistry for medical laboratory science (p. 803)
- Post-baccalaureate certificate in hematology for medical laboratory science (p. 804)
- Post-baccalaureate certificate in microbiology for medical laboratory science (p. 805)
- Post-baccalaureate certificate in pre-medicine (p. 805)

Graduate certificates

- Graduate certificate in clinical research administration (p. 805)
- Graduate certificate in clinical and translational research (p. 806)
- Graduate certificate in clinical research practice (p. 806)
- Graduate certificate in health care quality (p. 806)
- Graduate certificate in integrative medicine (p. 807)
- Graduate certificate in regulatory affairs (p. 807)

Undergraduate certificate (military contract)

- Undergraduate certificate in the field of health sciences laboratory science (p. 803)

SMHS GRADUATE PROGRAMS

Master's programs

- Master of Science in Health Sciences in the field of clinical management and leadership (p. 787)
- Master of Science in Health Sciences in the field of clinical microbiology (p. 788)
- Master of Science in Health Sciences in the field of clinical research administration
- Master of Science in Health Sciences in the field of clinical and translational research
- Master of Science in Health Sciences in the field of emergency medical services leadership
- Master of Science in Health Sciences in the field of health care quality (p. 790)
- Master of Science in Health Sciences in the field of immunohematology and biotechnology (p. 792)
- Master of Science in Health Sciences in the field of integrative medicine (p. 792)
- Master of Science in Health Sciences in the field of medical laboratory science (p. 793)
- Master of Science in Health Sciences in the field of molecular diagnostic science (p. 793)
- Master of Science in Health Sciences in the field of regulatory affairs (p. 795)
- Master of Science in Health Sciences in the field of physician assistant (p. 794)
- Master of Science in Health Sciences in the field of translational microbiology (p. 795)

Dual degree program

- Master of Science in Health Sciences in the field of physician assistant and Master of Public Health (Milken Institute School of Public Health) (p. 796)

Military contract programs

- Master of Science in Health Sciences in the field of immunohematology (p. 791)

Doctoral programs

- Doctor of Philosophy in the field of translational health sciences (p. 799)
- Doctor of Physical Therapy (p. 800)
- Advanced Practice Clinical Doctorate in Occupational Therapy (p. 801)

SMHS UNDERGRADUATE PROGRAMS

Associate's programs

- Associate in Science in the field of health sciences (p. 769)
- Associate in Science in the field of health sciences laboratory technology (p. 770)

Bachelor's programs

- Bachelor of Science in Health Sciences with a major in bioinformatics (p. 771)
- Bachelor of Science in Health Sciences with a major in clinical health sciences (p. 772)
- Bachelor of Science in Health Sciences with a major in clinical management and leadership (p. 773)
- Bachelor of Science in Health Sciences with a major in clinical research administration
- Bachelor of Science in Health Sciences in the field of cytotechnology (p. 775)**(military contract)**
- Bachelor of Science in Health Sciences with a major in emergency medical services management
- Bachelor of Science in Health Sciences with a major in health intervention and disaster response
- Bachelor of Science in Health Sciences with a major in medical informatics (p. 778)
- Bachelor of Science in Health Sciences with a major in medical laboratory science

Combined programs

- Bachelor of Science in Health Sciences and Master of Science in Health Sciences in the field of clinical management and leadership
- Bachelor of Science in Health Sciences in the field of clinical management and leadership and Master of Science in Health Sciences in the field of health care quality

- Bachelor of Science in Health Sciences and Master of Science in Health Sciences in the field of clinical research administration
- Bachelor of Science in Health Sciences in the field of clinical research administration and Master of Science in Health Science in the field of regulatory affairs
- Bachelor of Science in Health Sciences in the field of emergency medical services management and Master of Science in Health Sciences in the field of clinical management and leadership

Minors

- Minor in anatomy (p. 785)
- Minor in blood banking for medical laboratory science (p. 785)
- Minor in chemistry for medical laboratory science (p. 785)
- Minor in clinical research administration (p. 785)
- Minor in emergency health services
- Minor in health sciences (p. 786)
- Minor in hematology for medical laboratory science (p. 786)
- Minor in microbiology for medical laboratory science (p. 786)

SPH - EXERCISE SCIENCE GUIDED ELECTIVES

BISC 1112	Introductory Biology: The Biology of Organisms
BISC 2202	Cell Biology
BISC 2207	Genetics
BISC 2213	Biology of Cancer
BISC 2214	Developmental Biology
BISC 2220	Developmental Neurobiology
BISC 2320	Neural Circuits and Behavior
BISC 2322	Human Physiology
BISC 2337	Introductory Microbiology
or BISC 2337W	Introductory Microbiology
BISC 2581	Human Gross Anatomy
BISC 3165	Biochemistry I
BISC 3166	Biochemistry II
BISC 3209	Molecular Biology
BISC 3262	Biochemistry Laboratory
BISC 3263	Special Topics in Biochemistry
BISC 3320	Human Neurobiology
CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
CHEM 2151	Organic Chemistry I
CHEM 2153	Organic Chemistry Laboratory I
CHEM 2152	Organic Chemistry II
CHEM 2154	Organic Chemistry Laboratory II
CHEM 3165	Biochemistry I
CHEM 3262	Biochemistry Laboratory
CHEM 3166	Biochemistry II
or CHEM 3166W	Biochemistry II
EHS 1002	CPR & First Aid
EHS 1040	Emergncy Medical Tech-Basic
EHS 1041	EMT - Basic Lab
EHS 1058	EMT Instructor Development
EHS 2108	Emergncy Med Clinical Scribe
EXNS 1112	Current Issues in Coaching
EXNS 1114	Community Nutrition
EXNS 1117	Principles of Coaching (2 different courses)
EXNS 1118	Sport and Nutrition
EXNS 1119W	Children and Sport
EXNS 1199	Topics in Exercise and Nutrition Sciences
EXNS 2117	Sport Psychology
or EXNS 2117W	Sport Psychology
EXNS 2110	Injury Prevention and Control
EXNS 2121	Orthopaedic Taping and Bracing
EXNS 2122	Food Systems in Public Health
EXNS 3101	Independent Study
EXNS 3102	Applied Sport Psychology
EXNS 3117	Injury Assessment
EXNS 3118	Therapeutic Modalities in Sports Medicine

EXNS 3119	Therapeutic Exercise in Sports Medicine
EXNS 3121	Medical Issues in Sports Medicine
EXNS 3123W	Psychology of Injury and Rehabilitation
HLWL 1101	Special Topics
HLWL 1102	Stress Management
HLWL 1103	Issues in Men's Health
HLWL 1104	Outdoor and Environmental Education
HLWL 1105	Yoga & the Meaning of Life
HLWL 1106	Drug Awareness
HLWL 1108	Weight and Society
or HLWL 1108W	Weight and Society
HLWL 1109	Human Sexuality
HLWL 1110	Issues in Alternative Medicine
HLWL 1112	Issues in Women's Health
HLWL 1114	Personal Health and Wellness
HLWL 1117	Functional Fitness
HSCI 2112	Writing in the Health Sciences
HSCI 2102	Pathophysiology
PHYS 1011	General Physics I
PHYS 1012	General Physics II
PSYC 2011	Abnormal Psychology
or PSYC 2011W	Abnormal Psychology
PSYC 2013	Developmental Psychology
PSYC 2014	Cognitive Psychology
PSYC 2015	Biological Psychology
PUBH 1101	Introduction to Public Health & Health Svcs
PUBH 1102	History of Public Health
PUBH 2110	Public Health Biology
PUBH 2113	Impact of Culture upon Health
PUBH 2117	Service Learning in Public Health
PUBH 3137	Global Public Health Nutrition
PUBH 3151	Current Issues in Bioethics

SPH - GLOBAL ENVIRONMENTAL HEALTH

All students who select the global environmental health program enroll in core courses (15 credits), program-specific courses (17 credits), and electives (9 credits). The 45-credit degree program also includes a practicum (2 credits) and a culminating experience (2 credits) where students apply their didactic education in a real world setting.

Program Requirements

Required Core Courses	
PUBH 6001	Biological Concepts in Public Health
PUBH 6002	Biostatistical Applications for Public Health
PUBH 6003	Principles and Practices of Epidemiology
PUBH 6004	Environmental and Occupational Health in a Sustainable World
PUBH 6006	Management and Policy Approaches to Public Health
PUBH 6007	Social and Behavioral Approaches to Public Health
Required EOH Courses	
PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6126	Assessment&Control/Env Hazards
PUBH 6128	Global Environmental and Occupational Health
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health
Required GH Courses	
PUBH 6400	Global Health Frameworks
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6435	Global Health Program Development and Implementation
Electives	
9 credits from the following:	

PUBH 6123	Toxicology: Applications for Public Health Policy
PUBH 6132	Water, Sanitation, and Hygiene (WASH) in Low-Income Countries
PUBH 6125	Intro-Children's Health & Env
PUBH 6127	Germs: An Introduction to Environmental Health Microbiology
PUBH 6130	Sustainable Energy and the Environment
PUBH 6133	Social Dimensions in Climate Change and Health
PUBH 6134	Communicating Science for Public Health
PUBH 6262	Intro-Geog Information Systems
PUBH 6271	Disaster Epidemiology
PUBH 6435	Global Health Program Development and Implementation
PUBH 6437	Global Health Program Evaluation
PUBH 6480	Public Health in Complex Emergencies
Practicum and Culminating Experience	
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

SPH - GLOBAL ENVIRONMENTAL HEALTH COMPETENCIES

Upon completion of the master of public health (M.P.H.) in the field of global environmental health degree program, students should possess the following functional competencies:

Epidemiology and Biostatistics

Critically assess existing epidemiologic research.

- Summarize goals, design, methods, and results of published research.

PUBH 6015	Culminating Experience
PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health
PUBH 6400	Global Health Frameworks
PUBH 6411	Global Health Qualitative Research Methods

- Identify biases and evaluate the extent to which they threaten study validity.

PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health
PUBH 6411	Global Health Qualitative Research Methods

- Apply statistical principles to interpret epidemiologic data.

PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health

Design appropriate studies for investigating EOH problems.

- Identify appropriate resources and databases to plan and conduct studies.

PUBH 6015	Culminating Experience
PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6128	Global Environmental and Occupational Health
PUBH 6400	Global Health Frameworks
PUBH 6411	Global Health Qualitative Research Methods

- Given a research question, identify appropriate study design, choose appropriate study populations, describe relevant exposure assessment methods, identify appropriate data collection instruments and processes, and describe procedures for protecting human subjects.

PUBH 6015	Culminating Experience
PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6126	Assessment&Control/Env Hazards
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health
PUBH 6411	Global Health Qualitative Research Methods

Conceptualize and carry out data analysis to address study goals.

- Conceptualize research questions

PUBH 6015	Culminating Experience

PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6128	Global Environmental and Occupational Health
PUBH 6411	Global Health Qualitative Research Methods

- Utilize appropriate approaches to manage and analyze data

PUBH 6015	Culminating Experience
PUBH 6131	Applied Data Analysis in Environmental and Occupational Health
PUBH 6411	Global Health Qualitative Research Methods

Assess Global Environmental and Occupational Risks

Assess environmental and occupational exposures.

- Describe the principle of operation, capability, and limitations of assessment instrumentation.

PUBH 6126	Assessment&Control/Env Hazards

- Assess severity of potential hazards and select the appropriate instrument and measurement method.

PUBH 6126	Assessment&Control/Env Hazards

- Interpret exposure measurements to assess the severity of a chemical, physical, or biological hazard.

PUBH 6126	Assessment&Control/Env Hazards
PUBH 6435	Global Health Program Development and Implementation

- Compare exposure data against established occupational and environmental health standards and guidelines.

PUBH 6126	Assessment&Control/Env Hazards
PUBH 6128	Global Environmental and Occupational Health

- Evaluate the strengths and weaknesses of epidemiologic exposure assessments.

PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6128	Global Environmental and Occupational Health

Recommend strategies to prevent and control environmental and occupational exposures.

- Recommend appropriate control strategies, such as; environmental health interventions, protective equipment, behavior change campaigns, to mitigate health hazards.

PUBH 6126	Assessment&Control/Env Hazards
PUBH 6128	Global Environmental and Occupational Health
PUBH 6400	Global Health Frameworks

Global Environmental Health Policy Analysis

Synthesize scientific evidence in order to inform global environmental health policy and reduce and prevent environmental health related disease and injury.

- Describe the authority and approaches of global environmental health agencies.

PUBH 6128	Global Environmental and Occupational Health
PUBH 6435	Global Health Program Development and Implementation

- Apply the risk assessment, risk management, and Source-to-Effect frameworks.

PUBH 6126	Assessment&Control/Env Hazards
PUBH 6128	Global Environmental and Occupational Health

- Explain the role of scientific, economic, ethical, and political interests in development and implementation of global environmental health policy.

PUBH 6126	Assessment&Control/Env Hazards
PUBH 6128	Global Environmental and Occupational Health
PUBH 6400	Global Health Frameworks
PUBH 6435	Global Health Program Development and Implementation

Conduct policy analysis relevant to global environmental health problems.

- Discuss interventions used in global environmental health.

PUBH 6126	Assessment&Control/Env Hazards
PUBH 6128	Global Environmental and Occupational Health
PUBH 6400	Global Health Frameworks
PUBH 6435	Global Health Program Development and Implementation

- Analyze approaches used in global environmental health policy development.

PUBH 6128	Global Environmental and Occupational Health
PUBH 6400	Global Health Frameworks
PUBH 6435	Global Health Program Development and Implementation

- Analyze the role of global environmental health policies and politics in promoting sustainability.

PUBH 6128	Global Environmental and Occupational Health
PUBH 6435	Global Health Program Development and Implementation

Design, Implement, Monitor and Evaluate Global Environmental Health Programs

Synthesize relevant information in order to assess and manage environmental and occupational risks.

- Characterize political, social, cultural, religious and economic context to determine feasible interventions.

PUBH 6128	Global Environmental and Occupational Health
PUBH 6400	Global Health Frameworks
PUBH 6435	Global Health Program Development and Implementation

- Given a specific context, design a plan to collect relevant information to fully characterize global environmental health hazards and related human health effects.

PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6128	Global Environmental and Occupational Health
PUBH 6435	Global Health Program Development and Implementation

- Evaluate data to characterize potential global environmental health hazards, potential for human exposure and health effects.

PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6128	Global Environmental and Occupational Health
PUBH 6400	Global Health Frameworks
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6435	Global Health Program Development and Implementation

- Recommend possible approaches to reduce the risk and/or impact of exposure to global environmental health hazards, and evaluate these approaches with regard to ethical issues, technical feasibility, resource requirements, and policy context.

PUBH 6126	Assessment&Control/Env Hazards
PUBH 6128	Global Environmental and Occupational Health
PUBH 6400	Global Health Frameworks
PUBH 6435	Global Health Program Development and Implementation

- Communicate with relevant stakeholder groups about environmental and occupational health issues and recommendations, using appropriate terminology and data.

PUBH 6128	Global Environmental and Occupational Health
PUBH 6435	Global Health Program Development and Implementation

SPH - GLOBAL ENVIRONMENTAL HEALTH OVERVIEW

Program Director G. Gray
Practicum Director S. McCormick

Mission

The mission of the master of public health (M.P.H.) in the field of global environmental health degree program—a joint program between the Departments of Global Health and Environmental and Occupational Health—is to educate individuals who are committed to working in resource-poor settings and applying analytic skills to prevent or mitigate the adverse impact of environmental hazards on human health. The program has a particular focus on traditional environmental health hazards—that is, health risks that are a consequence of a lack of access to clean water, inadequate sanitation, poor hygiene, household air pollution, solid waste disposal, and vector-borne diseases such as malaria.

Goals

The program seeks to help train graduates who will hold a multidisciplinary knowledge base and skill set that will provide them with a framework for addressing environmental health issues from environmentally mediated disease in the poorest performing regions of the world. They will understand the scientific and cultural foundations of environmental health in order to assess environmental exposures and understand

the effects of these exposures on human health; interpret epidemiologic and other research findings related to global environmental health risks; and assume leadership roles in designing, implementing, and evaluating programs that focus on modification of environmental health-related behaviors at local, regional, national, and/or global levels.

Specific admission requirements can be found on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs). (http://www.gwu.edu/all-graduate-programs)

Visit the program website (https://publichealth.gwu.edu/programs/global-environmental-health-mph) for additional information.

SPH - UNIVERSITY GENERAL EDUCATION REQUIREMENTS

Required (26 credits)

UW 1020	University Writing
or HONR 1015	Honors Proseminar: UW 1020: Origins and Evolution of Modern Thought

Two writing-in the disciplines (WID) courses (may also be counted in another category)

One critical analysis in the humanities course

One quantitative reasoning course (must be satisfied with STAT 1051, STAT 1053, or STAT 1127 for Exercise Science majors)

One scientific reasoning course with laboratory experience (must be satisfied with BISC 1111 for Exercise Science majors)

Two critical analysis in the social sciences courses (must be satisfied with ANTH 1002, ANTH 1003, or ANTH 1004; and COMM 1040, or COMM 1041 for Exercise Science majors)

*A list of approved courses can be found on the General Education Requirement page (p. 38).

SPH COURSE NUMBER EXPLANATION

The letters and and range of numbers below indicate the department in which the course is offered.

PUBH 6000 - 6099: MPH Core & MPH@GW Program-Specific Courses
PUBH 6100 - 6199: Environmental and Occupational Health Courses
PUBH 6200 - 6299: Epidemiology and Biostatistics Courses
PUBH 6300 - 6399: Health Policy Courses
PUBH 6400 - 6499: Global Health Courses
PUBH 6500 - 6599: Prevention and Community Health Courses
PUBH 6600 - 6699: Public Health Nutrition and Miscellaneous Courses
PUBH 8000 - 9000: Doctoral Level Courses
EXSC 6000 - 7000: Exercise Science Courses
HSML 6200 - 6300: Health Services Management and Leadership Courses

SPH DRPH CORE COMPETENCIES

DrPH Core Competencies

The Doctor of Public Health (DrPH) Program prepares professionals to assume national and international leadership positions in environmental and occupational health, global health, health behavior, and health policy. The field of public health provides unique insights into the complex interrelationships between health, politics, and human development. It enables professionals to address public health issues by marshalling research and analytic skills to develop innovative approaches to understand health and to promote and advocate for improved health outcomes. Upon completion of the Doctor of Public Health (Dr.P.H.), students will demonstrate ability in these core competencies:

- Analyze a public health problem and determine appropriate sources of data and methods for problem identification, program planning, implementation, monitoring, and evaluation

Relevant courses

PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 8417	Qualitative Research Methods and Analysis
PUBH 8419	Measrmnt/PublHlth&HlthSrvcsRes

- Develop and analyze hypotheses that can be tested by appropriate quantitative or qualitative research designs and methodologies

Relevant courses

PUBH 6247	Design of Health Studies
PUBH 6252	Advanced Epidemiology Methods
PUBH 8416	Study Design & Evaluation Methods
PUBH 8417	Qualitative Research Methods and Analysis
PUBH 8422	Advanced Health Care and Public Health Research Design

- Synthesize and evaluate research conducted by others

Relevant courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8416	Study Design & Evaluation Methods
PUBH 8417	Qualitative Research Methods and Analysis
PUBH 8422	Advanced Health Care and Public Health Research Design

- Design strategies to accurately and effectively describe public health, economic, administrative, legal, social, political, and cultural implications of different health policy options

Relevant courses

PUBH 6247	Design of Health Studies
PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8417	Qualitative Research Methods and Analysis
PUBH 8419	Measrmnt/PublHlth&HlthSrvcsRes

- Design grant proposals to address public health problems

Relevant courses

PUBH 8416	Study Design & Evaluation Methods
PUBH 8422	Advanced Health Care and Public Health Research Design

- Present public health data and research syntheses to scientific and professional audiences and the public

Relevant courses

PUBH 8407	Advanced Topics: Health Leadership in International Settings
PUBH 8422	Advanced Health Care and Public Health Research Design

- Defend the feasibility and expected outcomes of different policy options and transform them into organizations, plans, processes, and programs

Relevant courses

PUBH 6247	Design of Health Studies
PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8417	Qualitative Research Methods and Analysis
PUBH 8422	Advanced Health Care and Public Health Research Design

- Appraise the dynamic forces that contribute to cultural diversity and develop responsive plans and programs

Relevant courses

PUBH 6247	Design of Health Studies
PUBH 6252	Advanced Epidemiology Methods
PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8417	Qualitative Research Methods and Analysis

- Assess the determinants of health and illness, factors that contribute to health promotion and disease prevention, and factors that influence the use and cost of public health services in a population

Relevant courses

PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6260	Adv DataAnalysis-Public Health

- Develop and defend a budget statement that presents programmatic fiscal requirements to achieve stated objectives

Relevant course

PUBH 8402	Ldrshp/PublicHlthPractc&Policy

- Describe the theory of organizational structure and its relation to professional practice

Relevant course

PUBH 6001	Biological Concepts in Public Health

- Support a culture of ethical standards of conduct in the research process and within organizations and communities

Relevant courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8416	Study Design & Evaluation Methods
PUBH 8422	Advanced Health Care and Public Health Research Design

- Lead a team of diverse professionals reflecting shared values and vision to achieve specific objectives

Relevant course

PUBH 8402	Ldrshp/PublicHlthPractc&Policy

SPH GRADUATE DEGREE PROGRAMS

Master of Public Health

- Master of Public Health in the field of biostatistics (p. 925)
- Master of Public Health in the field of community oriented primary care (p. 1003)
- Master of Public Health in the field of environmental health science and policy (p. 912)
- Master of Public Health in the field of epidemiology
- Master of Public Health in the field of global environmental health (p. 916)
- Master of Public Health in the field of global health communication (p. 955)
- Master of Public Health in the field of global health program design, monitoring, and evaluation (p. 962)
- Master of Public Health in the field of global health policy (p. 960)
- Master of Public Health in the field of global health epidemiology and disease control (p. 958)
- Master of Public Health in the field of health policy (p. 972)
- Master of Public Health in the field of health promotion (p. 1007)
- Master of Public Health in the field of maternal and child health (p. 1009)
- Master of Public Health in the field of physical activity in public health (p. 941)
- Master of Public Health in the field of public health communication and marketing (p. 1011)
- Master of Public Health in the field of public health nutrition (p. 944)
- Master of Public Health: MPH@GW (p. 900)

Master of Science

- Master of Science in the field of biostatistics (p. 930)
- Master of Science in the field of epidemiology (p. 931)
- Master of Science in the field of exercise science with a concentration in strength and conditioning (p. 947)
- Master of Science in the field of health policy (p. 978)
- Master of Science in the field of public health microbiology and emerging infectious diseases (p. 933)
- Master of Science in the field of management of health informatics and analytics (p. 979)

Master of Health Administration

- Master of Health Administration (p. 968)
- Master of Health Administration – online/executive program (p. 971)

Specialist program

- Health Services Administration Specialist (p. 979)

Joint/Dual programs

- Doctor of Medicine and Master of Public Health (p. 909)
- Juris Doctor/Master of Laws in the field of law and Master of Public Health (p. 909)
- Master of Arts in the field of international affairs and Master of Public Health (p. 899)
- Master of Health Administration with a certificate in health care corporate compliance (p. 902)
- Master of Public Health in the field of health policy with a certificate in health care corporate compliance (p. 907)
- Master of Science in Health Policy with a certificate in health care corporate compliance (p. 903)
- Master of Science in Health Sciences in the field of physicians assistant and Master of Public Health (p. 903)
- Peace Corp Masters International Program and Master of Public Health

Doctoral programs

- Doctor of Public Health in the field of environmental and occupational health (p. 920)
- Doctor of Public Health in the field of global health (p. 965)
- Doctor of Public Health in the field of health behavior (p. 1013)
- Doctor of Public Health in the field of health policy (p. 981)
- Doctor of Philosophy in the field of biostatistics (p. 935)
- Doctor of Philosophy in the field of epidemiology (p. 937)
- Doctor of Philosophy in the field of public policy and administration (health policy track) (p. 980)
- Doctor of Philosophy in the field of social and behavioral sciences in public health (p. 1014)

SPH UNDERGRADUATE PROGRAMS

Bachelor's programs

- Bachelor of Science with a major in exercise science (p. 885)
- Bachelor of Science with a major in exercise science, pre-athletic training/sports medicine concentration (p. 887)
- Bachelor of Science with a major in exercise science, pre-medical professional concentration (p. 890)
- Bachelor of Science with a major in exercise science, pre-physical therapy concentration (p. 892)
- Bachelor of Science with a major in public health (p. 895)

Combined program

- Dual Bachelor of Science in public health and Master of Public Health

Minors

- Minor in exercise science (p. 897)
- Minor in nutrition

- Minor in public health

INDEX

A

About the University 17
Academic Calendar 1017
Academy for Classical Acting (ACA) 1018
Accountancy (ACCY) 1019
Accountancy Department 491
Accountancy, Master of Accountancy 469
Adult-Gerontology Acute Care Nurse Practitioner, Dual Master of Science in Nursing and Doctor of Nursing Practice 836
Adult-Gerontology Acute Care Nurse Practitioner, Master of Science in Nursing 830
Adult-Gerontology Acute Care Nurse Practitioner, Post Master's Certificate 840
Adult-Gerontology Primary Care Nurse Practitioner, Master of Science in Nursing 831
Adult-Gerontology Primary Care Nurse Practitioner, Post Master's Certificate 840
Advanced Placement Equivalents 35
Advocacy in the Global Environment, Master of Professional Studies . 862
Africana Studies (AFST) 1021
Africana Studies Department 97
Africana Studies, Bachelor of Arts 97
Africana Studies, Minor 98
American Religious History, Doctor of Philosophy 275
American Studies (AMST) 1022
American Studies Department 99
American Studies, Bachelor of Arts 104
American Studies, Combined Program 105
American Studies, Doctor of Philosophy 105
American Studies, Master of Arts 105
American Studies, Minor 105
Anatomical and Translational Sciences, Graduate Certificates 109
Anatomical and Translational Sciences, Master of Science 108
Anatomy & Regenerative Biology (ANAT) 1027
Anatomy Department 106
Anatomy, Minor 785
Anthropology (ANTH) 1029
Anthropology Department 109
Anthropology, Bachelor of Arts 117
Anthropology, Combined Program 121
Anthropology, Doctor of Philosophy 125
Anthropology, Master of Arts 124
Anthropology, Minor 121
Applied Economics, Master of Arts 193
Applied Ethics, Minor 343
Applied Mathematics, Master of Science 292
Applied Science (APSC) 1036
Applied Science and Technology, Bachelor of Arts 667
Arabic (ARAB) 1037
Arabic and Hebrew Languages and Cultures, Minor 168
Arabic Studies, Bachelor of Arts 166
Arabic Studies, Minor 168
Archaeology, Bachelor of Arts 117
Archaeology, Minor 121
Art History (AH) 1038
Art History and Fine Arts, Bachelor of Arts 223
Art History and Fine Arts, Combined Minor 227
Art History, Bachelor of Arts 218
Art History, Master of Arts 227
Art History, Minor 226
Art Therapy (ARTH) 1043
Art Therapy Department 125
Art Therapy Practice, Master of Arts 128
Art Therapy, Master of Arts 128
Arts and Sciences, Columbian College of Arts and Sciences 73
Asian Studies, Bachelor of Arts 709
Asian Studies, Master of Arts 717
Assessment, Measurement, and Teaching in Education, Graduate Certificate 551
Assessment, Testing and Measurement in Education, Master of Arts in Education and Human Development 520
Associate in Science in the Field of Histotechnology 769
Astronomy (ASTR) 1045
Astronomy and Astrophysics, Bachelor of Science 348
Astronomy and Astrophysics, Minor 350
Autism Spectrum Disorders, Graduate Certificate 551

B

Biochemistry (BIOC) 1046
Biochemistry and Molecular Medicine Department 128
Biochemistry and Systems Biology, Doctor of Philosophy 143
Bioinformatics and Biotechnology, Master of Professional Studies 851
Bioinformatics, Bachelor of Science in Health Sciences 771
Biological Anthropology, Bachelor of Science 119
Biological Anthropology, Minor 122
Biological Science, Combined Program 141
Biological Sciences (BISC) 1047

Biological Sciences Department 131
Biological Sciences, Doctor of Philosophy 142
Biological Sciences, Master of Science 141
Biology Electives 1489
Biology, Bachelor of Arts 137
Biology, Bachelor of Science 139
Biology, Minor 141
Biomedical Engineering (BME) 1054
Biomedical Engineering and Regulatory Biomedical Engineering, Dual Bachelor of Science and Master of Engineering 600
Biomedical Engineering, Bachelor of Science 598
Biomedical Engineering, Doctor of Philosophy 601
Biomedical Engineering, Master of Science 595
Biomedical Engineering, Master of Science 601
Biomedical Engineering, Minor 599
Biomedical Sciences (BMSC) 1056
Biomedical Sciences Department 142
Biophysics, Bachelor of Science 349
Biophysics, Minor 350
Biostatistics (BIOS) 1057
Biostatistics Department 146
Biostatistics, Doctor of Philosophy (administered by the Department of Epidemiology and Biostatistics in the Milken Institute School of Public Health) 935
Biostatistics, Doctor of Philosophy (administered by the Department of Statistics in the Columbian College of Arts and Sciences) 148
Biostatistics, Master of Public Health 925
Biostatistics, Master of Science 146
Biostatistics, Master of Science 930
Blood Banking for Medical Laboratory Science, Minor 785
Blood Banking for Medical Laboratory Science, Post-baccalaureate Certificate 802
Bloodstain Pattern Analysis, Graduate Certificate 237
Brain Injury: Educational and Transition Services, Graduate Certificate 552
Budget and Public Finance, Graduate Certificate 392
Business Administration (BADM) 1058
Business Administration Department 452
Business Administration, Accountancy Concentration, Bachelor of Business Administration 456
Business Administration, Business Analytics Concentration, Bachelor of Business Administration 456
Business Administration, Business Economic and Public Policy Concentration, Bachelor of Business Administration 457
Business Administration, Doctor of Philosophy 488
Business Administration, Dual Master of Business Administration and Master of Arts 757
Business Administration, Finance Concentration, Bachelor of Business Administration 458
Business Administration, Individualized Concentration, Bachelor of Business Administration 459
Business Administration, Information Systems and Technology Management Concentration, Bachelor of Business Administration ... 459
Business Administration, International Business Concentration, Bachelor of Business Administration 460
Business Administration, Marketing Concentration, Bachelor of Business Administration 461
Business Administration, Minor 468
Business Administration, Professional Master of Business Administration 481
Business Administration, Sport, Event, and Hospitality Management Concentration, Bachelor of Business Administration 462
Business Analytics, Master of Science 470
Business, Combined Programs, School of Business 488
Business, School of Business 447

C

CCAS Admission Requirements 1490
CCAS General Education Requirements 1491
Certificate Programs, Columbian College of Arts and Sciences 84
Certificate Programs, School of Engineering and Applied Science 594
Certificate Programs, School of Nursing 818
Chemistry (CHEM) 1059
Chemistry Department 150
Chemistry for Medical Laboratory Science, Minor 785
Chemistry for Medical Laboratory Science, Post-baccalaureate Certificate 803
Chemistry, BA Prerequisites 1502
Chemistry, Bachelor of Arts 154
Chemistry, Bachelor of Science 156
Chemistry, BS Prerequisites 1502
Chemistry, Doctor of Philosophy 162
Chemistry, Forensic Chemistry Concentration, Dual Bachelor of Science and Master of Forensic Sciences 160
Chemistry, Master of Science 161
Chemistry, Minor 160
Chinese (CHIN) 1063
Chinese Language and Culture, Master of Arts 183
Chinese Language and Literature, Bachelor of Arts 179
Chinese Language and Literature, Minor 181
Civil and Environmental Engineering Department 602
Civil and Environmental Engineering, Master of Science 624

Civil Engineering (CE) 1066
Civil Engineering and Environmental Engineering, Dual Bachelor of Science and Master of Science 619
Civil Engineering and Structural Engineering, Dual Bachelor of Science and Master of Science 620
Civil Engineering and Transportation Engineering, Dual Bachelor of Science and Master of Science 622
Civil Engineering Electives 1502
Civil Engineering, Bachelor of Science 609
Civil Engineering, Environmental Engineering Option, Bachelor of Science 611
Civil Engineering, Medical Preparation Option, Bachelor of Science ..613
Civil Engineering, Sustainability Option, Bachelor of Science 615
Civil Engineering, Transportation Engineering Option, Bachelor of Science 617
Classical Acting Department 163
Classical Acting, Master of Fine Arts 165
Classical and Near Eastern Languages and Civilizations Department . 165
Classical Studies (CLAS) 1072
Classical Studies, Bachelor of Arts 167
Classical Studies, Minor 168
Climate Change Management and Policy, Graduate Certificate 872
Clinical and Translational Research, Graduate Certificate 806
Clinical and Translational Research, Master of Science in Health Sciences 789
Clinical Health Sciences, Bachelor of Science in Health Sciences 772
Clinical Management & Leadership (CML) 1073
Clinical Management and Leadership, Bachelor of Science in Health Sciences 773
Clinical Management and Leadership, Master of Science in Health Sciences 787
Clinical Mental Health Counseling, Master of Arts in Education and Human Development 521
Clinical Microbiology, Master of Science in Health Sciences 788
Clinical Psychology, Doctor of Psychology 372
Clinical Rehabilitation Counseling, Master of Arts in Education and Human Development 521
Clinical Research Admin (CRA) 1074
Clinical Research Administration, Bachelor of Science in Health Sciences 774
Clinical Research Administration, Graduate Certificate 805
Clinical Research Administration, Master of Science in Health Sciences 788
Clinical Research Administration, Minor 785
Clinical Research Practice, Graduate Certificate 806
College of Professional Studies (CPS) 1075
College of Professional Studies, Certificate Programs 871
College of Professional Studies, Graduate Programs 851
College of Professional Studies, Undergraduate Programs 846
Columbian College (CCAS) 1076
Combined Bachelor of Arts and Master of Arts (B.A./M.A.) and Bachelor of Arts and Master of Professional Studies (B.A./M.P.S.) 301
Combined Bachelor of Arts with a Major in Environmnental Studies and Master of Arts in the Field of Environmental Resource Policy 216
Combined Master of Science in the Field of Geography and Graduate Certificate in Geographical Information Systems 246
Communication (COMM) 1076
Communication Management, Master of Arts 318
Communication, Bachelor of Arts 314
Communication, Minor 317
Community Oriented Primary Care, Master of Public Health 1003
Computer Engineering, Bachelor of Science 655
Computer Engineering, Master of Science 661
Computer Engineering, Minor 660
Computer Science (CSCI) 1079
Computer Science Department 628
Computer Science, Bachelor of Arts 638
Computer Science, Bachelor of Science 640
Computer Science, Master of Science 643
Computer Science, Minor 642
Computer Security and Information Assurance, Graduate Certificate .644
Computer-Integrated Design in Mechanical and Aerospace Engineering, Graduate Certificate 699
Contexts of Environmental Policy, Graduate Certificate 213
Corcoran 4-Year Plan 1503
Corcoran Art and the Book (CBK) 1102
Corcoran Art Education (CED) 1117
Corcoran Art History (CAH) 1088
Corcoran Arts & Humanities (CAS) 1096
Corcoran Ceramics (CCR) 1111
Corcoran Continuing Education (CCE) 1105
Corcoran Design (CDE) 1112
Corcoran Digital Media Design (CDM) 1113
Corcoran Exhibition Design (CEX) 1125
Corcoran Fine Art (CFA) 1127
Corcoran First Year Foundation (CFN) 1136
Corcoran Graphic Design (CGD) 1137
Corcoran Interior Design (CID) 1139
Corcoran Painting (CPT) 1157
Corcoran Photography (CPH) 1145
Corcoran Photojournalism (CPJ) 1150

Corcoran Printmaking (CPR) 1153
Corcoran School of the Arts and Design 169
Corcoran Sculpture (CSL) 1159
Counseling (CNSL) 1161
Counseling and Human Development Department 560
Counseling and Life Transitions, Graduate Certificate 552
Counseling, Doctor of Philosophy 548
Counseling, Post-Master's Certificate 552
Courses 1018
CPS Certificate Programs 1501
CPS Graduate Programs 1501
CPS Undergaduate Programs 1502
Creative Writing and English, Bachelor of Arts 204
Creative Writing, Minor 208
Crime Scene Investigation, Master of Science 236
Criminal Justice, Bachelor of Arts 409
Criminal Justice, Minor 411
Criminology, Master of Arts 413
Cross-Cultural Communication, Minor 122
Curriculum and Instruction, Doctor of Education 541
Curriculum and Instruction, Elementary Education Concentration, Master of Arts in Education and Human Development 522
Curriculum and Instruction, Interdisciplinary Studies of Literacy and Reading Education Concentration, Master of Arts in Education and Human Development 523
Curriculum and Instruction, Master of Arts in Education and Human Development 522
Curriculum and Instruction, Secondary Education Concentration, Master of Arts in Education and Human Development 524
Curriculum and Pedagogy (CPED) 1164
Curriculum and Pedagogy Department 563
Cyber Attacks and Cyber Threats Analysis, Undergraduate Certificate 871
Cybersecurity in Computer Science, Master of Science 643
Cybersecurity Strategy and Information Management, Master of Professional Studies 852
Cybersecurity, Bachelor of Professional Studies 847
Cytotechnology, Bachelor of Science in Health Sciences 775

D

Dance, Bachelor of Arts 432
Dance, Master of Fine Arts 435
Dance, Minor 434
Data Science (DATS) 1168
Data Science Program 176
Data Science, Graduate Certificate 178
Data Science, Master of Science 177
Decision Science Department 494
Decision Sciences (DNSC) 1169
Design and Assessment of Adult Learning, Graduate Certificate 553
Digital Forensics, Master of Science 236
Digital Investigations, Graduate Certificate 238
Digital Media Design, Bachelor of Fine Arts 170
Digital Politics, Graduate Certificate 872
Disclaimer 1504
Doctor of Philosophy in the Field of Civil and Environmental Engineering 625
Doctor of Philosophy in the Field of Computer Engineering 665
Doctor of Philosophy in the Field of Computer Science 644
Doctor of Philosophy in the Field of Electrical Engineering 665
Doctor of Philosophy in the Field of Engineering Management 676
Doctor of Philosophy in the Field of Mechanical and Aerospace Engineering 698
Doctor of Philosophy in the Field of Systems Engineering 676
DRPH Graduation Requirements 1504
Dual Bachelor of Arts and Master of Arts Degree Programs, Columbian College of Arts and Sciences 301
Dual Degree Programs, School of Business 467
Dual Master of Arts and Master of Public Health 757

E

E-Learning, Graduate Certificate 554
Early Childhood Special Education, Master of Arts in Education and Human Development 524
East Asian Language and Literature (EALL) 1172
East Asian Languages and Literatures Department 178
Economics (ECON) 1173
Economics Department 183
Economics, Bachelor of Arts 190
Economics, Bachelor of Science 191
Economics, Combined Program 192
Economics, Doctor of Philosophy 194
Economics, Master of Arts 193
Economics, Master of Science 194
Economics, Minor 193
Education and Human Development Individualized Program, Master of Arts 529
Education Policy Studies, Master of Arts in Education and Human Development 525
Education Specialist 1506
Education Specialist Programs 538
Educational Administration and Policy Studies, Doctor of Education . 542

Educational Leadership (EDUC) 1179
Educational Leadership and Administration, Education Specialist 539
Educational Leadership and Administration, Master of Arts in Education and Human Development 526
Educational Leadership and Administration, Post Master's Certificate 553
Educational Leadership Department 568
Educational Science, Doctor of Philosophy 549
Educational Technology Leadership, Master of Arts in Education and Human Development 526
Electrical & Computer Engring (ECE) 1186
Electrical and Computer Engineering Department 645
Electrical Engineering, Bachelor of Science 656
Electrical Engineering, Energy Option, Bachelor of Science 657
Electrical Engineering, Master of Science 662
Electrical Engineering, Medical Preparation Option, Bachelor of Science 659
Electrical Engineering, Minor 660
Elementary Education, Master of Education 527
Elliot School of International Affairs, Certificate Programs 757
Elliot School of International Affairs, Graduate Programs 717
Elliot School of International Affairs, Minors 714
Elliot School of International Affairs, Undergraduate Programs 709
Elliott School of International Affairs 701
Emergency Health Services (EHS) 1194
Emergency Health Services, Minor 786
Emergency Management and Public Health, Graduate Certificate 677
Emergency Medical Services Leadership, Master of Science in Health Sciences 790
Emergency Medical Services Management, Bachelor of Science in Health Sciences 776
Energy Engineering and Management, Graduate Certificate 699
Engineering and Applied Science (SEAS) 1448
Engineering and Applied Science, School of Engineering and Applied Science 584
Engineering and Technology Management, Graduate Certificate 677
Engineering Management and Systems Engineering (EMSE) 1196
Engineering Management and Systems Engineering Department 666
Engineering Management, Doctor of Engineering 675
Engineering Management, Master of Science 673
English (ENGL) 1204
English Department 195
English for Academic Purposes (EAP) 1213
English for Academic Purposes Department 211
English with Optional Concentrations in English or American Literature, Doctor of Philosophy 210
English with Optional Concentrations in English or American Literature, Master of Arts 210
English, Bachelor of Arts 206
English, Combined Program 208
English, Minor 209
Enterprise Information Assurance, Graduate Certificate 678
Environmental and Energy Systems Management, Graduate Certificate 678
Environmental and Green Chemistry, Master of Science 161
Environmental and Occupational Health Department 911
Environmental and Occupational Health, Doctor of Public Health 920
Environmental Engineering, Graduate Certificate 625
Environmental Health Science and Policy, Master of Public Health 912
Environmental Health, Master of Public Health 951
Environmental Resource Policy (ENRP) 1213
Environmental Resource Policy Department 212
Environmental Resource Policy, Graduate Certificate 214
Environmental Resource Policy, Master of Arts 213
Environmental Studies Department 215
Environmental Studies, Bachelor of Arts 215
Epidemiology (EPID) 1214
Epidemiology and Biostatistics Department 921
Epidemiology, Doctor of Philosophy 937
Epidemiology, Master of Public Health 927
Epidemiology, Master of Science 931
ESIA Curriculum Requirements for the First Two Years 1504
ESIA Graduate Certificate Programs 1505
ESIA Graduate Program Requirements 1505
ESIA MA General Requirements 1505
ESIA Undergraduate Programs 1506
European and Eurasian Studies, Master of Arts 724
Exercise and Nutrition Sciences (EXNS) 1214
Exercise and Nutrition Sciences Department 940
Exercise Science with a Concentration in Strength and Conditioning, Master of Science 947
Exercise Science, Bachelor of Science 885
Exercise Science, Minor 897
Exercise Science, Pre-athletic Training/Sports Medicine, Bachelor of Science 887
Exercise Science, Pre-medical Professional Concentration, Bachelor of Science 890
Exercise Science, Pre-physical Therapy Concentration, Bachelor of Science 892
Exhibit Design, Graduate Certificate 306
Exhibition Design, Master of Arts 174

Experiential Education and Jewish Cultural Arts, Master of Arts in Education and Human Development 528
Explanation of Course Numbers 1507

F

Family Nurse Practitioner, Master of Science in Nursing 832
Family Nurse Practitioner, Post Master's Certificate 840
Family Specialty for Nurse Practitioners, Post Master's Certificate 840
Fees and Financial Regulations 47
Film Studies (FILM) 1218
Film Studies Department 216
Film Studies, Minor 217
Finance (FINA) 1219
Finance Department 497
Finance, Bachelor of Science 463
Finance, Master of Science 470
Financial Aid 51
Financial Mathematics, Graduate Certificate 292
Fine Art Photography, Bachelor of Arts 172
Fine Art, Bachelor of Fine Arts 171
Fine Arts (FA) 1222
Fine Arts and Art History Department 217
Fine Arts and Art History, Combined Program 226
Fine Arts, Bachelor of Arts 220
Fine Arts, Master of Fine Arts 228
Fine Arts, Minor 226
Forensic Chemistry, Master of Forensic Sciences 234
Forensic Investigation, Graduate Certificate 238
Forensic Molecular Biology, Master of Forensic Sciences 234
Forensic Psychology (FORP) 1228
Forensic Psychology, Master of Arts 371
Forensic Sciences (FORS) 1230
Forensic Sciences Department 228
Forensic Sciences, Master of Forensic Sciences 233
Forensic Toxicology, Master of Forensic Sciences 235
French (FREN) 1234
French Language, Literature, and Culture, Bachelor of Arts 402
French Language, Literature, and Culture, Minor 406
Friction Ridge Analysis, Master of Forensic Sciences 235
Friction Ridge Analysis, Master of Science 237

G

General Education Curriculum (G-PAC), Columbian College of Arts and Sciences 86
General Education Requirement, University 38
Geoenvironmental Engineering, Graduate Certificate 626
Geographic Information Systems, Minor 244
Geographical Information Systems, Graduate Certificate 246
Geography (GEOG) 1236
Geography Department 239
Geography, Bachelor of Arts 243
Geography, Master of Arts 245
Geography, Master of Science 246
Geography, Minor 244
Geological Sciences Department 247
Geological Sciences, Bachelor of Arts 249
Geological Sciences, Bachelor of Science 249
Geological Sciences, Minor 250
Geology (GEOL) 1240
German Language and Literature, Bachelor of Arts 403
German Language and Literature, Minor 406
Germanic Language and Literature (GER) 1242
GESHD Certificate Programs 1507
Global Communication, Master of Arts 729
Global Environmental Health, Master of Public Health 916
Global Gender Policy, Graduate Certificate 758
Global Health Department 948
Global Health, Doctor of Public Health 965
Global Leadership in Teams and Organizations, Graduate Certificate 554
Global Master of Business Administration 474
Global Public Relations, Graduate Certificate 873
Government Contracts (GCON) 1244
Government Contracts, Master of Science 472
Graduate Certificate in Business Analytics 489
Graduate Programs in the School of Nursing 829
Graduate School of Education and Human Development 514
Graduate School of Education and Human Development, Doctoral Programs 540
Graduate School of Education and Human Development, Master's Programs 519
Graduate School of Political Management 862
Graphic Design, Bachelor of Fine Arts 173
Greek (GREK) 1245
Greenhouse Gas Management, Graduate Certificate 678
GSEHD Doctoral Programs 1507
GSEHD Master's Programs 1509
GWSB Certificate Programs 1510
GWSB Graduate Programs 1510
GWSB Undergraduate Programs 1510

GWTeach and STEM Teaching 63

H

Health Administration Generalist, Graduate Certificate 982

Health Administration Online/Executive Program, Master of Health Administration 971

Health Administration with a Certificate in Health Care Corporate Compliance, Master of Health Administration 902

Health Administration, Master of Health Administration 968

Health and Wellness (HLWL) 1253

Health Behavior, Doctor of Public Health 1013

Health Care Corporate Compliance, Graduate Certificate 873

Health Care Quality (HCQ) 1245

Health Care Quality, Graduate Certificate 806

Health Care Quality, Master of Science in Health Sciences 790

Health Care Science (HCS) 1246

Health Communication, Master of Public Health 955

Health Epidemiology and Disease Control, Master of Public Health .. 958

Health Intervention and Disaster Response, Bachelor of Science in Health Sciences 777

Health Policy and Management Department 967

Health Policy with a Certificate in Corporate Compliance, Master of Public Health 907

Health Policy with a Certificate in Healthcare Corporate Compliance, Master of Science in Health Policy 903

Health Policy, Doctor of Public Health 981

Health Policy, Graduate Certificate 983

Health Policy, Master of Public Health 960

Health Policy, Master of Public Health 972

Health Policy, Master of Science 978

Health Program Design, Monitoring, and Evaluation, Master of Public Health 962

Health Promotion, Master of Public Health 1007

Health Sciences in Clinical Management and Leadership and Health Sciences in Health Care Quality, Dual Bachelor of Science and Master of Science 782

Health Sciences in Clinical Research Administration and Health Sciences in Regulatory Affairs, Dual Bachelor of Science and Master of Science 783

Health Sciences in Clinical Research Administration, Dual Bachelor of Science and Master of Science 780

Health Sciences in Emergency Health Services Management and Health Sciences in Clinical Management and Leadership, Dual Bachelor of Science and Master of Science 785

Health Sciences Laboratory Technology, Associate's Degree in Science 770

Health Sciences Laboratory Technology, Undergraduate Certificate . 803

Health Sciences Programs (HSCI) 1247

Health Sciences, Associate's Degree in Science 769

Health Sciences, Minor 786

Health Services Administration Specialist 979

Health Services Management and Leadership (HSML) 1250

Healthcare Master of Business Administration 480

Hebrew (HEBR) 1254

Hematology for Medical Laboratory Science, Minor 786

Hematology for Medical Laboratory Science, Post-baccalaureate Certificate 804

High-Performance Computing, Graduate Certificate 665

Higher Education Administration, Doctor of Education 544

Higher Education Administration, Master of Arts in Education and Human Development 528

History (HIST) 1255

History Department 250

History, Bachelor of Arts 262

History, Doctor of Philosophy 275

History, Master of Arts 274

History, Minor 274

Homeland Security, Emergency Preparedness, and Response, Graduate Certificate 679

Homeland Security, Master of Professional Studies 852

Hominid Paleobiology (HOMP) 1266

Honors (HONR) 1267

Honors Program, Undergraduate 69

Human and Organizational Learning Department 575

Human and Organizational Learning, Doctor of Education 545

Human Development (HDEV) 1268

Human Organizational Learning (HOL) 1269

Human Paleobiology Programs 275

Human Paleobiology, Doctor of Philosophy 276

Human Paleobiology, Master of Science 276

Human Services and Social Justice, Bachelor of Arts 410

Human Services and Social Justice, Minor 412

Human Services&Social Justice (HSSJ) 1272

I

Immunohematology and Biotechnology, Master of Science in Health Sciences 792

Immunohematology, Master of Science in Health Sciences 791

Incorporating International Perspectives in Education, Graduate Certificate 554

Information Systems and Technology Management Department 501

Information Systems Technology Management (ISTM) 1273

Information Systems Technology, Bachelor of Business Administration and Master of Science 504

Information Systems Technology, Master of Science 471

Innovation and Entrepreneurship, Bachelor of Business Administration 460
Instructional Design, Graduate Certificate 555
Integrated Information, Science, and Technology, Bachelor of Professional Studies 847
Integrating Technology into Education, Graduate Certificate 555
Integrative Medicine, Graduate Certificate 807
Integrative Medicine, Master of Science in Health Sciences 792
Interdisciplinary and Special Programs 63
Interior Architecture and Design (IAD) 1276
Interior Architecture and Design Department 278
Interior Architecture and Design, Bachelor of Fine Arts 280
Interior Architecture and Design, Master of Fine Arts 281
Interior Design (INTD) 1278
International Affairs (IAFF) 1279
International Affairs, Bachelor of Arts 711
International Affairs, Dual Master of Arts and Master of Public Health . 899
International Affairs, Master of Arts 734
International Baccalaureate Equivalents 36
International Business (IBUS) 1283
International Business Department 504
International Development Studies, Master of Arts 747
International Education, Master of Arts in Education and Human Development 530
International Policy and Practice, Master of International Policy and Practice 756
International Science and Technology Policy, Graduate Certificate ... 758
International Science and Technology Policy, Master of Arts 750
International Studies, Master of International Studies 756
International Trade and Investment Policy, Master of Arts 751
Investigation of Cyber Security Incidents, Undergraduate Certificate . 871
Islamic Studies, Graduate Certificate 401
Islamic Studies, Master of Arts 400
Italian (ITAL) 1286
Italian Language and Literature, Minor 407

J

Japanese (JAPN) 1287
Japanese Language and Literature, Bachelor of Arts 180
Japanese Language and Literature, Minor 182
Jazz Studies, Minor 312
Jewish Cultural Arts, Master of Arts 284
Job Development and Placement, Graduate Certificate 556
Journalism and Mass Communication, Bachelor of Arts 298
Journalism and Mass Communication, Minor 303
Judaic Studies (JSTD) 1288
Judaic Studies Department 281
Judaic Studies, Bachelor of Arts 282
Judaic Studies, Minor 283
Juris Doctor and Master of Arts Combined Program 757
Juris Doctor and Master of Arts in Education and Human Development in the Field of Education Policy Studies 550
Juris Doctor and Master of Public Health Combined Program 909
Justice and Public Safety Information Management, Graduate Certificate 874

K

Korean (KOR) 1289
Korean, Minor 182

L

Landscape Design, Graduate Certificate 874
Landscape Design, Master of Professional Studies 854
Latent Print Examination, Graduate Certificate 238
Latin (LATN) 1289
Latin American and Hemispheric Studies, Bachelor of Arts 712
Latin American and Hemispheric Studies, Master of Arts 752
Law (LAW) 1290
Law and Society, Minor 412
Law Firm Management, Master of Professional Studies 854
Leadership Development, Graduate Certificate 556
Leadership Education and Development (LEAD) 1326
Leadership Education and Development, Master of Arts 320
Leadership in Educational Technology, Graduate Certificate 556
Legal Institutions and Theory, Master of Arts 369
Legislative Affairs (LGAF) 1327
Legislative Affairs, Master of Professional Studies 863
LGBT and Sexuality Studies, Minor 443
LGBT Health Policy and Practice, Graduate Certificate 373
Lifestyle, Sport, and Physical Activity (LSPA) 1328
Linguistics (LING) 1329
Logic, Minor 344
Long-Term Care, Graduate Certificate 984

M

Management (MGT) 1330
Management Department 507
Management of Health Informatics Analytics, Master of Science 979
Marketing (MKTG) 1332
Marketing Department 509
Master of Business Administration (MBAD) 1334
Master of Science in the Field of Data Analytics 672

Maternal and Child Health, Master of Public Health 1009
Mathematics (MATH) 1336
Mathematics Department 284
Mathematics, Bachelor of Arts 289
Mathematics, Bachelor of Science 290
Mathematics, Doctor of Philosophy 292
Mathematics, Graduate Certificate 293
Mathematics, Master of Arts 292
Mathematics, Minor 291
Mechanical and Aerospace Engineering (MAE) 1341
Mechanical and Aerospace Engineering Department 679
Mechanical and Aerospace Engineering, Master of Science 697
Mechanical Engineering, Aerospace Option, Bachelor of Science 689
Mechanical Engineering, Bachelor of Science 688
Mechanical Engineering, Biomechanical Option, Bachelor of Science 691
Mechanical Engineering, Dual Bachelor of Science and Master of Science 696
Mechanical Engineering, Medical Preparation Option, Bachelor of Science 692
Mechanical Engineering, Minor 696
Mechanical Engineering, Patent Law Option, Bachelor of Science 693
Mechanical Engineering, Robotics Option, Bachelor of Science 695
Media and Public Affairs (SMPA) 1448
Media and Public Affairs Department 293
Media and Strategic Communication, Master of Arts 304
Medical Informatics, Bachelor of Science in Health Sciences 778
Medical Laboratory Science (MLS) 1349
Medical Laboratory Science, Bachelor of Science in Health Sciences . 779
Medical Laboratory Science, Master of Science in Health Sciences 793
Medical Laboratory Science, Post-baccalaureate Certificate 804
Medicine and Health Sciences, School of Medicine and Health Sciences 760
Medicine, Doctor of Medicine and Master of Public Health, Joint Program 909
MFS Core Requirements 1510
Microbiology and Immunology, Doctor of Philosophy 143
Microbiology for Medical Laboratory Science, Minor 786
Microbiology for Medical Laboratory Science, Post-baccalaureate Certificate 805
Microbiology, Immunology, and Tropical Medicine (MICR) 1353
Middle East Studies, Bachelor of Arts 713
Middle East Studies, Master of Arts 753
Milken Institute School of Public Health 878
Milken Institute School of Public Health, Graduate Programs 899
Milken Institute School of Public Health, Undergraduate Programs ... 885
Mind-Brain Studies, Minor 344
Molecular Biochemistry and Bioinformatics, Master of Science 130
Molecular Diagnostic Science, Master of Science in Health Sciences .. 793
Molecular Medicine (MMED) 1353
Molecular Medicine, Doctor of Philosophy 144
MPH Graduation Requirements 1511
MS Biostatistics 1511
MS Exercise Science Graduation Requirements 1512
Multimedia Development, Graduate Certificate 557
Museum Collections Management and Care, Graduate Certificate ... 307
Museum Education, Master of Arts in Teaching 530
Museum Studies (MSTD) 1354
Museum Studies Department 304
Museum Studies, Graduate Certificate 307
Museum Studies, Master of Arts 306
Music (MUS) 1355
Music Department 308
Music, Bachelor of Arts 312
Music, Minor 313

N

Naval Science (NSC) 1358
Naval Science, Naval Reserve Officers Training Corps Program 65
New Media Photojournalism, Master of Arts 175
Nonprofit Management, Graduate Certificate (administered by the Columbian College of Arts and Sciences) 392
Nonprofit Management, Graduate Certificate (administered by the School of Business) 489
Nuclear Policy, Graduate Certificate 759
Nurse-Midwifery, Master of Science in Nursing 834
Nursing (NURS) 1359
Nursing Education, Post-Master's Certificate 841
Nursing Leadership and Management, Master of Science in Nursing . 835
Nursing Pathway to Bachelor of Science in Nursing, Associate's Degree 824
Nursing Pathway to Bachelor of Science in Nursing/Master of Science in Nursing Adult-Gerontology Primary Care Nurse Practitioner, Associate's Degree 825
Nursing Pathway to Bachelor of Science in Nursing/Master of Science in Nursing Family Nurse Practitioner, Associate's Degree 826
Nursing Pathway to Bachelor of Science in Nursing/Master of Science in Nursing Nurse Midwifery, Associate's Degree 827
Nursing Pathway to Master of Science in Nursing, Associate's Degree 828
Nursing Practice, Doctor of Nursing Practice 837
Nursing, Bachelor of Science 829

Nursing, School of Nursing 808
Nutrition, Minor 898

O

Occupational Therapy (OT) 1367
Occupational Therapy, Doctorate 801
Online Master of Engineering in the Field of Cybersecurity Policy and Compliance 671
Operations Research, Minor 671
Organizational Communication, Minor 317
Organizational Leadership and Learning, Master of Arts in Education and Human Development 531
Organizational Learning and Change, Graduate Certificate 557
Organizational Sciences (ORSC) 1365
Organizational Sciences and Communication Department 313
Organizational Sciences, Bachelor of Arts 315
Organizational Sciences, Master of Arts 320
Organizational Sciences, Minor 318

P

PACs and Political Management, Graduate Certificate 874
Palliative Care Nurse Practitioner, Post Master's Certificate 841
Paralegal Studies with a Concentration in Healthcare Corporate Compliance, Master of Professional Studies 857
Paralegal Studies, Graduate Certificate 875
Paralegal Studies, Master of Professional Studies 855
Patent Practice (PATN) 1368
Peace Corp Masters International Program and Master of Public Health 908
Peace Studies (PSTD) 1368
Peace Studies Program 322
Peace Studies, Bachelor of Arts 323
Peace Studies, Minor 325
Persian (PERS) 1369
Pharmacogenomics (PHRG) 1369
Pharmacology (PHAR) 1370
PhD Biostatistics 1512
PhD Epi Graduation Requirements 1514
Philosophy (PHIL) 1371
Philosophy (Public Affairs Focus), Bachelor of Arts 332
Philosophy and Public Policy, Combined Program 343
Philosophy Department 326
Philosophy, Bachelor of Arts 332
Philosophy, Master of Arts 345
Philosophy, Minor 345
Photojournalism, Bachelor of Fine Arts 173
Physical Activity in Public Health, Master of Public Health 941
Physical Therapy (PT) 1376
Physical Therapy, Doctor of Physical Therapy 800
Physician Assistant (PA) 1379
Physician Assistant, Master of Sciences in Health Sciences 794
Physicians Assistant and Public Health, Dual Master of Science in Health Sciences and Master of Public Health 903
Physicians Assistant, Dual Master of Science in Health Sciences and Master of Public Health 796
Physics (PHYS) 1382
Physics Department 346
Physics, Bachelor of Arts 347
Physics, Bachelor of Science 349
Physics, Doctor of Philosophy 352
Physics, Master of Science 351
Physics, Minor 351
Physiology (PHYL) 1386
Police and Security Studies, Bachelor of Professional Studies 848
Political Communication and Governance (offered in Spanish only), Master of Professional Studies 869
Political Communication and Political Management, Dual Bachelor of Arts and Master of Professional Studies 849
Political Communication, Bachelor of Arts 300
Political Management (PMGT) 1387
Political Management and Survey Design and Analysis, Combined Master of Professional Studies and Graduate Certificate 870
Political Management, Master of Professional Studies 864
Political Psychology (PPSY) 1391
Political Science (PSC) 1391
Political Science (Public Policy Focus), Bachelor of Arts 363
Political Science and Advocacy in the Global Environment, Dual Bachelor of Arts and Master of Professional Studies 849
Political Science and Legislative Affairs, Dual Bachelor of Arts and Master of Professional Studies 850
Political Science and Political Management, Dual Bachelor of Arts and Master of Professional Studies 850
Political Science Department 352
Political Science, Bachelor of Arts 361
Political Science, Bachelor of Science 365
Political Science, Combined Program 367
Political Science, Doctor of Philosophy 370
Political Science, Master of Arts 369
Political Science, Minor 368
Portuguese (PORT) 1399
Pre-Medicine, Post-baccalaureate Certificate 805
Prevention and Community Health Department 985

Production Design, Master of Fine Arts 436
Professional Psychology (PSYD) 1412
Professional Psychology Program 370
Professional Studies, College of Professional Studies 843
Professional Studies-Advocacy Global Environment (PSAD) 1400
Professional Studies-Healthcare Corporate Complaince(PSHC) 1401
Professional Studies-Homeland Security (PSHS) 1401
Professional Studies-Integrated Information, Science, and Technology (PSIS) 1402
Professional Studies-Landscape Design (PSLD) 1403
Professional Studies-Law Firm Management (PSLM) 1404
Professional Studies-Middle-School Math (PSMM) 1408
Professional Studies-Middle-School Science (PSMS) 1409
Professional Studies-Molecular Biology (PSMB) 1404
Professional Studies-Paralegal Studies (PSLX) 1405
Professional Studies-Physics Education (PSPH) 1407
Professional Studies-Public Leadership (PSPL) 1406
Professional Studies-Public Relations (PSPR) 1407
Professional Studies-Publishing (PSPB) 1408
Professional Studies-Security & Safety Leadership (PSSL) 1409
Professional Studies-Urban Sustainability (PSUS) 1410
Project Management, Master of Science 472
Protection and Defense of Computer Networks, Undergraduate Certificate 872
Psychiatric Mental Health Nurse Practitioner, Post-Master's Certificate 841
Psychology (PSYC) 1414
Psychology Department 373
Psychology, Applied Social Concentration, Doctor of Philosophy 382
Psychology, Bachelor of Arts 380
Psychology, Clinical Psychology Concentration, Doctor of Psychology 382
Psychology, Cognitive Neuroscience Concentration, Doctor of Philosophy 383
Psychology, Combined Program 381
Psychology, Doctor of Philosophy 381
Psychology, Industrial/Organizational Psychology Concentration, Doctor of Philosophy 321
Psychology, Minor 381
Public Administration and Homeland Security Emergency Preparedness and Response, Combined Master of Public Administration and Graduate Certificate 390
Public Administration, Master of Public Administration 389
Public Health (PUBH) 1420
Public Health Communication and Marketing, Master of Public Health 1011
Public Health Microbiology and Emerging Infectious Diseases, Master of Science 933
Public Health Nutrition, Master of Public Health 944
Public Health, Bachelor of Science 895
Public Health, Dual Bachelor of Science and Master of Public Health 897
Public Health, Graduate Certificate 910
Public Health, Minor 898
Public Health: MPH@GW, Master of Public Health 900
Public Policy and Administration (Health Policy Track), Doctor of Philosophy 980
Public Policy and Administration, Doctor of Philosophy 391
Public Policy and Public Admin (PPPA) 1438
Public Policy and Public Administration Programs 384
Public Policy with a Concentration in Philosophy and Social Policy, Master of Arts 346
Public Policy with a Concentration in Women's, Gender, and Sexuality Studies, Master of Arts 444
Public Policy, Master of Public Policy 390
Public Policy, Minor 368
Public Relations, Graduate Certificate 875
Publishing, Master of Professional Studies 858

R

Regulatory Affairs (RAFF) 1442
Regulatory Affairs, Graduate Certificate 807
Regulatory Affairs, Master of Science in Health Sciences 795
Regulatory Biomedical Engineering, Master of Engineering 600
Rehabilitation Counseling, Master of Arts in Education and Human Development 532
Religion (REL) 1443
Religion Department 393
Religion, Bachelor of Arts 398
Religion, Minor 399
Responsible Management, Graduate Certificate 490
Romance, German, and Slavic Languages and Literatures Department 401
Russian Language and Literature, Bachelor of Arts 404
Russian Language and Literature, Minor 407

S

SAS Certificate in Business Analytics 491
School Counseling, Master of Arts in Education and Human Development 533
School of Business, Certificate Programs 489
School of Business, Graduate Programs 468
School of Business, Undergraduate Programs 452
School of Medicine and Health Sciences, Certificate Programs 802
School of Medicine and Health Sciences, Graduate Programs 787

School of Medicine and Health Sciences, Undergraduate Programs ..768
School of Nursing, Certificate Programs 839
School of Nursing, Undergraduate Programs 824
Secondary Education, Master of Education 534
Secondary Special Education and Transition Services, Graduate Certificate 557
Secondary Special Education and Transition Services, Master of Arts in Education and Human Development 535
Security Policy Studies, Master of Arts 754
Slavic Languages and Literature (SLAV) 1453
SMHS Certificate Programs 1514
SMHS Graduate Programs 1515
SMHS Undergraduate Programs 1515
Social and Behavioral Sciences in Public Health, Doctor of Philosophy 1014
Sociocultural Anthropology, Minor 123
Sociology (SOC) 1455
Sociology Department 409
Sociology, Bachelor of Arts 411
Sociology, Combined Program 411
Sociology, Master of Arts 413
Sociology, Minor 413
Spanish (SPAN) 1459
Spanish and Latin American Languages, Literatures and Cultures, Bachelor of Arts 405
Spanish and Latin American Languages, Literatures and Cultures, Minor 408
Special Education (SPED) 1462
Special Education and Disability Studies Department 578
Special Education for Children with Emotional and Behavioral Disabilities, Master of Arts in Education and Human Development 537
Special Education for Culturally and Linguistically Diverse Learners, Graduate Certificate 558
Special Education for Culturally and Linguistically Diverse Learners, Master of Arts in Education and Human Development 538
Special Education, Doctor of Education 547
Special Education, Education Specialist 539
Speech and Hearing Science (SPHR) 1467
Speech and Hearing Science Department 414
Speech, Language, and Hearing Sciences, Bachelor of Arts 418
Speech, Language, and Hearing Sciences, Minor 419
Speech–Language Pathology Post-Baccalaureate Program 420
Speech–Language Pathology, Master of Arts 419
SPH - Exercise Science Guided Electives 1516
SPH - Global Environmental Health 1517
SPH - Global Environmental Health Competencies 1518
SPH - Global Environmental Health Overview 1520
SPH - University General Education Requirements 1521
SPH Course Number Explanation 1521
SPH DrPH Core Competencies 1521
SPH Graduate Degree Programs 1523
SPH Undergraduate Programs 1523
Statistics (STAT) 1470
Statistics Department 421
Statistics, Bachelor of Science 425
Statistics, Doctor of Philosophy 426
Statistics, Master of Science 426
Statistics, Minor 426
STEM Master Teacher, Graduate Certificate 558
Strategic Management and Executive Leadership for Law Enforcement, Graduate Certificate 876
Strategic Management and Public Policy (SMPP) 1474
Strategic Management and Public Policy Department 511
Strategic Public Relations, Master of Professional Studies 870
Structural Engineering, Graduate Certificate 627
Survey Design and Data Analysis, Graduate Certificate 427
Sustainability (SUST) 1476
Sustainability Program 66
Sustainability, Minor 67
Sustainable Landscapes, Graduate Certificate 876
Sustainable Urban Planning, Graduate Certificate 876
Sustainable Urban Planning, Master of Professional Studies 859
Systems Engineering, Bachelor of Science 669
Systems Engineering, Graduate Certificate 679
Systems Engineering, Master of Science 674
Systems Engineering, Minor 671

T

Teacher Education (TRED) 1476
Teaching English to Speakers of Other Languages 559
Telecommunications Engineering, Master of Science 664
The Graduate School of Education and Human Development, Graduate Certificate Programs 550
Theatre and Dance (TRDA) 1476
Theatre and Dance Department 427
Theatre, Bachelor of Arts 433
Theatre, Minor 435
Tourism Administration, Master of Tourism Administration 473
Tourism Studies (TSTD) 1481

Training and Educational Technology, Graduate Certificate 559
Translational Health Sciences (THS) 1483
Translational Health Sciences, Doctor of Philosophy 799
Translational Microbiology, Master of Science in Health Sciences 795
Transportation Engineering, Graduate Certificate 627
Turkish (TURK) 1483

U

Undergraduate Admissions 44
University General Education Requirement 38
University Regulations 21
University Writing (UW) 1485

V

Vietnamese (VIET) 1485

W

Walkable Urban Development, Graduate Certificate 491
Women and Leadership Program (WLP) 1486
Women's Leadership Program 71
Women's Studies (WSTU) 1486
Women's, Gender, and Sexuality Studies Department 437
Women's, Gender, and Sexuality Studies, Combined Program 443
Women's, Gender, and Sexuality Studies, Graduate Certificate 445
Women's, Gender, and Sexuality Studies, Master of Arts 445
Women's, Gender, and Sexuality Studies, Minor 443
Women’s, Gender, and Sexuality Studies, Bachelor of Arts 441
World Executive Master of Business Administration 487
Writing Program, Undergraduate 436

Y

Yiddish (YDSH) 1489